An Analysis of the Feasibility of Global Measles Elimination

Preamble:

Remarkable progress has been made in the fight against measles in the past 10 years. The Americas has stopped transmission of indigenous measles viruses and, since November 2002, is experiencing only small outbreaks linked to importations from abroad. The European, E. Mediterranean, and W. Pacific Regions of WHO have established measles elimination goals but continue to experience outbreaks and report an incidence that is in excess of elimination levels. Globally between 2000 and 2006, estimated mortality due to measles has decreased by 68%, largely driven by progress in the African Region (91% reduction).

At the May 2008 Meeting of the Executive Board (EB) of the World Health Assembly (WHA) the representative from The Bahamas, noting the recent progress in global measles control, made the following statement and request:

“I think measles vaccine is one of the most effective public health interventions. Given the gains with the measles eradication to date, I'd like for the EB members to consider a request to WHO to examine the feasibility of global measles elimination and to present its report to the EB in May 2009”.

This request was seconded by the Representative from Oman and accepted by the EB.

Recognizing that a comprehensive approach that includes wide consultation will be needed to address the topic of the feasibility of global elimination of measles, WHO/IVB has begun to plan a programme of work that will result in a preliminary report to the EB in May 2009 and a full report on the feasibility at and at the January 2010 EB. In 2011, a progress report of the 2010 measles mortality reduction goal along with recommendations for setting anew global goal will be presented to the EB. The following two sections present a draft scope of work needed to address the topic and a draft time line for completing this work. These will be adapted based on comments and suggestions from within WHO and partner organizations.
SECTION I: Scope of the work

Below is a draft outline of the key elements that need to be analysed in order to be able to address the following questions:

1. Is global measles elimination desirable?
2. If yes, is global measles elimination feasible?
3. If yes, what are the information gaps and programme challenges that should be addressed in order to achieve global measles elimination?

A. Introduction
   1. Measles as public health problem and measles vaccine
   2. Defining elimination and eradication

B. Current Status
   1. Progress with the global goal of mortality reduction
   2. Progress in regions with mortality reduction goal
      a. AFRO - pre-elimination phase
      b. SEARO
   3. Progress with regional elimination (experiences and lessons learnt from regions with an elimination goal):
      a. AMRO:
         How elimination was achieved:
         i. Strategies (including strategies used for advocacy and fund raising strategies)
         ii. Costs incurred
         iii. Time taken
         iv. Enabling factors (e.g. introduction of rubella and CRS eliminations goals)
         v. Challenges
         vi. Role of rubella and CRS elimination goals in maintaining momentum/sustaining measles elimination
         vii. Certification of elimination in the region
         viii. Sustainability of elimination in AMRO with current risks of importation (1-2 routine doses ± campaigns)
         ix. Sustainability of elimination once global elimination is achieved
      b. c. & d. EURO, WPRO and EMRO; For each region discuss:
         i. Strategies
         ii. Progress
         iii. Challenges
         iv. Feasibility of reaching the 2010/2012 goal

C. Lessons Learnt from other Public Health Eradication/Elimination Efforts
   1. Smallpox
   2. Polio
   3. Other eradication/elimination programmes
D. Impact of Global Elimination:
1. Public health impact
   a. Impact on the general population
   b. Impact on vulnerable groups (immunocompromised who can’t be vaccinated)
   c. Effects of elimination efforts on public health system (does it benefit or detract from routine health services? Analyse how the strategies used can contribute to routine and or health strengthening )
2. Programmatic implications of elimination (analysis of different vaccination options once elimination is achieved; stopping vaccination, reducing number of doses, use of new vaccines and delivery methods (e.g., aerosol administration, needle-free devices)
3. Financial implications of elimination (cost-effectiveness and cost-benefit analyses using different vaccinations strategies/scenarios (from D.2 above) and different time lines (Section F) for achieving elimination. Compare to other public health interventions in terms of DALYs prevented.

E. Desirability of Global Measles Elimination:
1. Is global elimination desirable? Take into account expected impact of setting such a goal in the presence and current challenges with the current mortality reduction goal. Establish an algorithm for decision making based on the estimated impact in D above.

F. Estimated Time Needed to Achieve Global Elimination:
Describe scenarios with different time lines to reach global elimination.

G. Feasibility of Global Elimination/Eradication:
1. biological feasibility
For each time frame scenario in F above, assess the following:
2. Programmatic feasibility (outline based on experience of regions in elimination and mortality reduction goals including the reliability of the surveillance system to monitor and document elimination),
3. logistical feasibility (vaccine supply and market analysis, injection safety, cold chain capacity)
4. financial feasibility (estimated cost for global elimination and funding gap)

H. Challenges/Barriers
1. political commitment,
2. country ownership
3. cost
4. donor fatigue
5. policy maker/community fatigue
6. insecurity
7. increased urbanization with high population density
8. increased global travel
9. Decreased demand:
   a. loss of public confidence in vaccines (concerns about vaccine safety)
   b. perception of measles as a mild disease in some settings and as the disease incidence becomes very low
10. others
I. The Way Forward
1. Addressing the gaps and barriers:
   i. information gaps
   ii. logistical and programmatic gaps
   iii. funding gaps (how much will countries pay for? How much would donors have to commit to? Donors receptivity to another eradication goal?)
   iv. developing sustained political commitment
2. A proposed time line and algorithm for decision making
   - including timeline and the necessity to achieve milestones

SECTION II: Key steps and draft timeline

The following key steps are proposed:

June 2008: Initial briefing and discussions with the Regions and Measles Initiative Partners through teleconference.
July 2008: Discussion of the programme of work and proposed timeline during a conference call with the SAGE WG members.
August 2008: Prepare and post RFP on work to be contracted out
September 2008: Brain storming workshop with the measles regional focal points and partners at the SAGE working group on measles (Geneva) and the measles partners meeting (Washington DC)
October 2008: Review of proposals for economic analyses by QUIVER
November 2008: Presentation of the programme of work and proposed time line to the SAGE.
March 2009: Submission of 1-2 pager to the EB to be held in May 2009 (to include at a minimum a summary of the analysis of the current status and biological feasibility).
April 2009: Submit written report to the SAGE
September 2009: Hold a global consultative meeting to discuss the results of the technical work
November 2009: Present and discuss the report from the global meeting to the SAGE
January 2010: Present a short final report to the EB summerizing the conclusions of the global consultative meeting.
September 2010: Discuss next goal with Regional Committees
May 2011: Report to EB on measles progress (as part of the GIVS report) and setting the next measles goal
Analytic work:

Six key areas of work are envisaged (see figure 1), most of these are likely to be contracted out to independent experts through an independent process where a Request for Proposals (RFP) is issued and posted on the WHO/IVB website. Recognizing the importance of having unbiased analysis and conclusions, the submitted proposals will be reviewed and selected by an independent review committee. WHO will coordinate a global consultative meeting to discuss the results of the key areas of work highlighted below and provide conclusions. A report of the meeting proceedings and conclusions will be produced and a summary of this report will be submitted to the EB.

The following 6 activities need to be carried out in order to assess the feasibility and appropriateness of global measles elimination. These areas of work will be further developed after discussion and feedback with experts, regional focal points and key partners.

1. Programmatic feasibility:

Describe the current status in all regions and globally. For each region, provide a detailed analysis of the strategies (including strategies used for advocacy and fund raising); estimated costs incurred so far, progress (describe changing disease epidemiology in past 20 years and impact of each of the strategies); enabling factors; challenges (programmatic, logistical, financial, political and social); interactions between measles elimination with other immunization activities (e.g. routine immunization, rubella elimination, polio eradication, introduction of new vaccines, etc.) and other public health interventions; progress with the process of validation/verification of elimination in regions with elimination goals; and feasibility of reaching the regional goal by the target year for the region. Information obtained from this report will be used for other analyses below such as the economic analysis.

2. Biological feasibility:

Carry out an evidence based analysis of the biological feasibility of global measles elimination/eradication. This entails a thorough review of published literature and discussions of experts on disease eradication and elimination. This work will be carried out in collaboration with the Carter Center International Task Force for Disease Eradication.

3. Economic analysis:

The objectives of this work are to address the economic considerations needed to assess the appropriateness of global measles elimination. More specifically, the work aims to assess the cost and cost-effectiveness (CE) of global measles elimination in comparison to the cost and CE of achieving and sustaining the current global goal of 90% reduction in measles mortality compares to 2000 levels.
4. **Impact on health systems:**

Assess the impact of global measles elimination activities on the routine immunization programme and on the health system as a whole. The impact assessed will include the impact on human resources (knowledge, motivation, training and supervision); infrastructure (e.g. cold chain, waste disposal, etc.); financing; immunization coverage; surveillance and monitoring (including adverse events monitoring); linkages and partnerships.

5. **Vaccine market analysis:** Carry out a vaccine market analysis highlighting issues relating to supply and demand. This work will be carried out by the BMGF in collaboration with WHO and UNCEF.

6. **Global context and political feasibility:** Carry out an analysis of lessons learnt from the regional measles elimination efforts and from other public health eradication/elimination efforts. Discuss the challenges, barriers and political climate (e.g. progress with the polio eradication goal and political commitment of countries and donors) for an elimination goal.

Figure 1: Summary of key determinants of the feasibility and appropriateness of global measles elimination