

Global elimination of measles

Report by the Secretariat

1. Measles remains a leading cause of death among young children, despite the availability of a safe, effective and inexpensive vaccine used for nearly 50 years. Millennium Development Goal Four (MDG 4) aims to reduce overall child deaths by two-thirds by 2015 compared with 1990 level. Recognizing the important contribution of measles to child mortality, routine measles vaccination coverage is used as an indicator of progress towards MDG 4 and measles mortality reduction will make an important contribution to achieving this goal¹.
2. In resolution WHA56.20, the World Health Assembly urged full implementation of the WHO-UNICEF strategic plan for measles mortality reduction 2001-2005 and attainment of the goal to reduce global measles mortality by 50% compared with the 1999 level. At the end of 2005, this goal had been surpassed, with a reduction of 60%.
3. In resolution WHA58.15, the Health Assembly welcomed the WHO-UNICEF *Global Immunization Vision and Strategy 2006-2015*², one of whose goals is to reduce global measles deaths by 90% by 2010 (or earlier) compared with the 2000 level. In resolution WHA61.15, the Health Assembly reaffirmed its commitment to achieving the 90% global measles mortality reduction goal³.
4. At present, there is no global goal for the elimination of measles. However, maintenance of or progress towards elimination is being carried out at regional level. The WHO Region of the Americas has achieved regional measles elimination in 2002. Three WHO regions have also established elimination goals: Eastern Mediterranean (2010), Europe (2010) and Western Pacific (2012). The WHO African Region established a pre-elimination goal in 2008 that aims to reduce measles mortality by 98% by 2012 compared to 2000 estimates. The WHO South-East Asia Region is the only region without an elimination or pre-elimination goal. It is currently focusing its efforts on achieving the global measles mortality reduction goal. The 123rd Executive Board meeting requested the Director-General to report to the Executive Board in May 2009 on the feasibility of global measles elimination.

SUCCESS OF MEASLES MORTALITY REDUCTION EFFORTS

5. Between 2000 and 2007, global measles mortality declined by 74% from an estimated 750 000 deaths in 2000 to 197 000 in 2007. The largest regional percent reduction in estimated measles mortality during this period occurred in the Eastern Mediterranean (90%) and African (89%) regions, accounting for 16% and 63% of the global reduction in measles deaths, respectively. Global routine coverage with the first dose of measles-containing vaccine (MCV1) reached 82% in 2007,

¹ The Millennium Development Goals report 2008

http://www.un.org/millenniumgoals/2008highlevel/pdf/newsroom/mdg%20reports/MDG_Report_2008_ENGLISH.pdf

² Document WHA58/2005/REC/1.

³ Document WHA/2008/A61/10.

increasing from 72% in 2000. In the 47 measles priority countries⁴ — that accounted for 98% of the total estimated number of deaths globally in 2007 — MCV1 vaccination coverage increased from 58% in 2000 to 72% in 2007.

6. These public health accomplishments helped to prevent an estimated 3.6 million measles deaths between 2000 and 2007. They were made possible by the concentrated focus of immunization partners to control measles rapidly and through emphasis on regions with the highest levels of measles mortality. The sharp decline in measles deaths is the direct result of: (a) commitment of Member States severely affected by measles to provide better access to routine childhood immunization; (b) Member States conducting measles supplementary immunization activities (SIAs)⁵ in which an estimated 576 million children aged nine months to 14 years were vaccinated against measles between 2000 and 2007 in the 47 priority countries; (c) technical and financial support provided through the Measles Initiative, a partnership formed in 2001 and spearheaded by WHO, UNICEF, the American Red Cross, the Centers for Disease Control and Prevention (Atlanta, Georgia, United States of America), and the United Nations Foundation; and (d) implement effective laboratory-supported disease surveillance.
7. Measles mortality reduction efforts have been a major force for child survival. In 2008, integrated measles SIAs resulted in the distribution of over 35 million doses of vitamin A, 30 million doses of deworming medicine and more than 5.6 million of insecticide-treated nets. This integration promotes greater health equity, reduces costs, improves efficiency and contributes towards the achievement of MDG 4.

REMAINING CHALLENGES IN MEASLES MORTALITY REDUCTION EFFORTS

8. Although estimated global routine MCV1 vaccination coverage reached 82% in 2007, this coverage — which is below the target of >90% — varied substantially by geographical region. While the largest percent increase in routine coverage from 2000 to 2007 occurred in the African and South-East Asia regions, the 2007 coverage estimates in these two regions remain <80%. Of the estimated 23.2 million infants in 2007 who missed receiving their MCV1 through routine immunization services by the age of 12 months, 15.3 million (65%) reside in eight countries: India (8.5 million children), Nigeria (2.0 million), China (1.0 million), Ethiopia (1.0 million), Indonesia (0.9 million), Pakistan (0.8 million), the Democratic Republic of the Congo (0.6 million) and Bangladesh (0.5 million).
9. In 2007, there were an estimated 197 000 measles deaths globally, of which more than 90% (177 000) occurred among children under the age of five. This figure

⁴ The 47 priority countries worst affected by measles are Afghanistan, Angola, Bangladesh, Benin, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Guinea-Bissau, India, Indonesia, Kenya, Lao People's Democratic Republic, Liberia, Madagascar, Mali, Mozambique, Myanmar, Nepal, Niger, Nigeria, Pakistan, Papua New Guinea, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Timor-Leste, Togo, Uganda, United Republic of Tanzania, Viet Nam, Yemen and Zambia.

⁵ Nationwide *catch-up* SIAs target all children in a particular age group (most frequently children aged 9 months to 14 years) and have the goal of eliminating susceptibility to measles in the general population. Periodic *follow-up* SIAs target all children born since the last SIA. *Follow-up* SIAs are generally conducted nationwide every two to four years and target children aged 9 to 59 months, with the goal of eliminating any measles susceptibility that has developed in recent birth cohorts as well as protecting children who did not respond to their first measles vaccination.

can be reduced, but only if the following serious efforts are undertaken: (a) accelerated activities to reduce measles mortality need to be successfully implemented in India, since it is the major contributor to the global disease burden of measles; (b) vaccination systems need to be improved to ensure >90% of infants worldwide are vaccinated against measles through routine health services before their first birthday; (c) priority countries must continue conducting SIAs every two to four years, targeting children born since the last campaign until their routine immunization systems are capable of reaching >90% of all children; and (d) the funding gap — which currently stands at US \$176 million for 2009-2010, of which US \$35 million is needed for 2009 — has to be addressed.

REGIONAL MEASLES ELIMINATION GOALS: PROGRESS AND CHALLENGES

10. The WHO Region of the Americas interrupted indigenous measles virus transmission in 2002, hence achieving the elimination of measles in the region. This major achievement was made possible by the successful implementation of the measles-rubella (MR) vaccination strategy — which includes improving routine immunization services and conducting SIAs — and as a result, all countries in the region provide at least two doses of MR-containing vaccine to their populations. High vaccination coverage attained via routine immunization and SIAs has reinforced measles elimination and brought the region closer to achieving the regional goal of rubella elimination by 2010. The effective implementation of the MR vaccination strategy has resulted in an historically low number of reported measles cases — which ranges between 85 to 237 cases annually over the period 2003 and 2008 following importations from abroad. Given that measles remains endemic in other WHO regions, the Region of the Americas is concerned with the risk of disease importations and needs to maintain its elimination strategy and associated costs until all regions have eliminated measles.
11. The WHO Eastern Mediterranean Region achieved the global goal of a 90% reduction in measles mortality in 2007 and has made good progress towards the 2010 regional measles elimination goal. The region's MCV1 vaccination coverage has increased from 70% in 1997 to 84% in 2007 and measles incidence decreased by 83% from 146 cases/1 000 000 population in 1998 to 25 cases/1 000 000 population in 2007. However, the region may not achieve the goal to eliminate measles by next year because measles outbreaks continue to occur in many countries in the region and the implementation of measles elimination strategy varies between countries. Establishing comprehensive measles control activities have been difficult in a number of countries — notably Afghanistan, Iraq, Pakistan, Somalia and Sudan — due to civil unrest, natural disasters and competing public health priorities.
12. The WHO European Region has made considerable progress towards the 2010 regional measles elimination goal. Measles incidence has dropped to an historical low of <10 cases/1 000 000 population in 2007 and 2008. In addition, routine immunization coverage among children aged 12–23 months with MCV1 reached a high of 93-94% in 2007-2008, up from 90-91% in the 2000-2004 period. However, two substantial challenges remain towards achieving the elimination

goal: (a) suboptimal immunization coverage with 32% of the countries in the region not achieving the target MCV1 coverage of 95% in 2007 leading to continued outbreaks and the resurgence of indigenous measles in some western European countries; and (b) setbacks in the implementation of SIAs in eastern Europe in 2008. Philosophical and religious beliefs as well as misplaced concerns about vaccine safety are the principle barriers to achieving measles elimination.

13. The WHO Western Pacific Region has made significant progress towards the 2012 regional measles elimination goal. From 2005 to 2007, 15 out of 21 countries achieved at least 90% MCV1 vaccination coverage. The number of countries using two routine doses of MCV has increased to 31, up from 27 during the same period. In 2007 and 2008, seven priority countries — Cambodia, China, Lao People's Democratic Republic, Mongolia, Papua New Guinea, Philippines and Viet Nam — conducted SIAs. With the exception of Papua New Guinea, all the above countries achieved vaccination coverage of 95% or higher. Despite successes, major challenges remain. The greatest burden of measles is in China and Japan, which account for 97% of all measles cases in the region. Both countries contribute greatly to the region's reported incidence of 81.5 cases/1 000 000 population in 2008. In addition, both countries have been experiencing large, ongoing measles epidemics. To improve MCV1 coverage in the Lao People's Democratic Republic and Papua New Guinea, the health infrastructure and case-based surveillance have to be strengthened.

IS GLOBAL MEASLES ELIMINATION FEASIBLE?

1. Recognizing that the global elimination of measles would be an ambitious goal, a thorough and comprehensive analysis of its feasibility and appropriateness needs to be undertaken. WHO has initiated a programme of work to examine the issues related to global measles elimination including: (a) reviewing the biological aspects and cost-effectiveness of global elimination as well as the current and future supply of measles vaccine; (b) examining the impact of global elimination activities on the routine immunization programmes and national health systems; and (c) convening a global consultation meeting to review the evidence and assessments by experts on feasibility and appropriateness of a global elimination goal. A report outlining the findings and recommendations will be prepared for the Executive Board and the World Health Assembly in 2011.

ACTION BY THE EXECUTIVE BOARD

1. The Executive Board is invited to note the report.