Progress in Reducing Global Measles Deaths, 1999–2004

Measles remains a substantial cause of global childhood mortality, particularly in developing countries. In their joint strategic plan for Measles Mortality Reduction, 2001–2005, the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) targeted 45 priority countries* (Figure 1) with the highest measles mortality for implementation of a comprehensive strategy for accelerated and sustained measles mortality reduction (1). Components of this strategy include achieving high routine vaccination coverage (>90%) in every district and ensuring that all children receive a second opportunity for measles vaccination. In May 2003, the World Health Assembly endorsed a resolution urging member countries to achieve a goal (adopted in 2002 by the United Nations General Assembly Special Session on Children) to reduce 1999 deaths resulting from measles by half by the end of 2005. This report updates progress toward this goal and introduces a new goal for measles mortality reduction by 2010.


Immunization Activities

By July of each year, all countries are asked to submit information on measles vaccination coverage from the previous year using the WHO/UNICEF Joint Reporting Form. Estimates of routine coverage with 1 dose of measles vaccine are based on review of coverage data from administrative records, surveys, national reports, and consultation with local and regional experts. Coverage achieved during nationwide supplementary immunization activities (SIAs) against measles are reported on the basis of the reported number of doses administered, divided by the target population.

WHO/UNICEF estimates indicate that global routine measles vaccination coverage increased from 71% in 1999 to 76% in 2004. Coverage varied significantly by geographic region† (Table). Substantial increases in routine coverage were evident in Sub-Saharan Africa (from 49% to 65%) and South Asia (54% to 61%). Moreover, an increase has occurred in the proportion of countries offering children a second opportunity for measles vaccination, through either SIAs or routine services. During 2004, a total of 168 (88%) countries offered children a second opportunity, compared with 150 (78%) countries in 2001. During 2000–2004, SIAs were offered in 36 of the 45 priority countries: 28 (78%) of these SIAs were nationwide and 24 (67%) were in Sub-Saharan Africa (Figure 1). Of the SIAs in Sub-Saharan Africa, 18 (75%) were nationwide. Of the 232 million (93%) children aged 9 months–14 years targeted to receive measles vaccine through these SIAs, an estimated 215 million (93%) were vaccinated.

†Data reported for World Bank geographic regions are for countries classified as having low-income and middle-income economies only. A list of countries by classification is available at http://www.worldbank.org. Four member states (Cook Islands, Nauru, Niue, and Tuvalu) not classified by World Bank were added to East Asia and Pacific.
### TABLE. Routine measles vaccination coverage and estimated number of measles deaths, by World Bank geographic region* — worldwide, 1999 and 2004

<table>
<thead>
<tr>
<th>Geographic region</th>
<th>1999</th>
<th>Estimated no. of deaths</th>
<th>Uncertainty bounds†</th>
<th>2004</th>
<th>Estimated no. of deaths</th>
<th>Uncertainty bounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>49</td>
<td>530,000</td>
<td>(387,000–689,000)</td>
<td>65</td>
<td>216,000</td>
<td>(160,000–279,000)</td>
</tr>
<tr>
<td>South Asia</td>
<td>54</td>
<td>263,000</td>
<td>(192,000–341,000)</td>
<td>61</td>
<td>202,000</td>
<td>(145,000–264,000)</td>
</tr>
<tr>
<td>East Asia and Pacific</td>
<td>83</td>
<td>68,000</td>
<td>(47,000–96,000)</td>
<td>83</td>
<td>32,000</td>
<td>(21,000–47,000)</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>92</td>
<td>8,000</td>
<td>(5,000–11,000)</td>
<td>92</td>
<td>4,000</td>
<td>(2,000–5,000)</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>92</td>
<td>&lt;1,000</td>
<td></td>
<td>92</td>
<td>&lt;1,000</td>
<td></td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>92</td>
<td>&lt;1,000</td>
<td></td>
<td>92</td>
<td>&lt;1,000</td>
<td></td>
</tr>
<tr>
<td>High-income countries</td>
<td>90</td>
<td>&lt;1,000</td>
<td></td>
<td>92</td>
<td>&lt;1,000</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>871,000</td>
<td>(633,000–1,139,000)</td>
<td>76</td>
<td>454,000</td>
<td>(329,000–596,000)</td>
</tr>
</tbody>
</table>

* Data reported for World Bank geographic regions are for countries classified as having low-income and middle-income economies only. A list of countries by classification is available at http://www.worldbank.org. The four member states (Cook Islands, Nauru, Niue, and Tuvalu) not classified by World Bank were added to East Asia and Pacific.

† Based on Monte Carlo simulations (3) that account for uncertainty in key input variables (i.e., vaccination coverage and case-fatality ratios).

§ Numbers do not sum to totals because of rounding.

### Mortality Estimates

Annual estimates of global measles deaths were generated for the years 1999 through 2004 using the same method used to calculate 1999–2003 estimates of measles deaths (2). Data sources included updates to information on both historical and 2004 measles vaccination coverage (including both routine and SIAs) and 2004 United Nations population estimates (including updates for 1999–2004).

Results from surveillance data combined with the natural history model§ indicate that overall global measles mortality decreased 48%, from 871,000 deaths (uncertainty bounds: 633,000–1,139,000) in 1999 to 454,000 deaths (uncertainty bounds: 329,000–596,000) in 2004 (Table, Figure 2). The largest percentage reduction during this period (59%) was in Sub-Saharan Africa, followed by East Asia and the Pacific (52%) and the Middle East and North Africa (50%).

### Reported by:


### Editorial Note:

During 1999–2004, improvements in routine measles vaccination coverage and implementation of measles SIAs in the 45 priority countries targeted by the WHO/UNICEF joint strategic plan have resulted in a 48% decrease in the estimated number of global measles deaths. Worldwide, since 1999, an estimated 500 million persons have received measles vaccine through SIAs, and an estimated 1.4 million measles deaths have been averted as a result of implementing the strategy of improving routine vaccination coverage with the first dose along with providing a second opportunity for measles vaccination. The largest decrease in estimated measles deaths (59%) was seen in Sub-Saharan Africa. The reduction in South Asia (23%) was smaller because certain large countries had not yet begun large-scale measles SIAs by the end of 2004. If global progress has continued at the rates achieved in recent years, data for 2005 likely will reveal that the 2005 measles mortality reduction goal was met. The mortality estimates based on the natural history model have been corroborated by data from countries that have fully implemented recommended vaccination strategies and strengthened measles surveillance. An analysis of the effect of intensified vaccination efforts in 19 African countries observed a 92% reduction in reported measles cases; only one country (Burkina Faso) experienced a large outbreak after an SIA. This outbreak resulted, in part, from large-scale popu-
vaccination to >90% of every birth cohort. Fourth, disease surveillance systems at district, provincial, and national levels need to be strengthened to enable case-based surveillance with testing of clinical specimens from suspected cases in laboratories participating in the global measles and rubella laboratory network (4). Finally, measles case management, including appropriate vitamin A supplementation, should be strengthened.

References


During February 19–25, 2006,* the number of states reporting widespread influenza activity† increased to 21. Fourteen states reported regional activity, 10 reported local activity, and five reported sporadic activity (Figure 1).§

The percentage of specimens testing positive for influenza increased in the United States overall. During the preceding 3 weeks (weeks 6–8), the percentage of specimens testing positive for influenza ranged from 39.7% in the East North Central region to 7.5% in the Pacific region. The percentage of outpatient visits for influenza-like illness (ILI)¶ increased dur-

* Provisional data reported as of March 3. Additional information about influenza activity is updated each Friday and is available from CDC at http://www.cdc.gov/flu.
† Levels of activity are 1) widespread: outbreaks of influenza or increases in influenza-like illness (ILI) cases and recent laboratory-confirmed influenza in at least half the regions of a state; 2) regional: outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least two but less than half the regions of a state; 3) local: outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of a state; 4) sporadic: small numbers of laboratory-confirmed influenza cases or a single influenza outbreak reported but no increase in cases of ILI and 5) no activity.
¶ Temperature of ≥100.0°F (≥37.8°C) and cough and/or sore throat in the absence of a known cause other than influenza.