

A Summary of Global Routine Immunization Coverage Through 2010

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Abstract: This brief report summarizes the 2010 revision (July 2011) of the WHO and UNICEF estimates of national routine immunization coverage. In spite of improvements in immunization coverage (DTP3: 74% during 2000 vs 85% during 2010; MCV: 72% during 2000 vs 85% during 2010), the benefits of vaccination continue to elude many of the world's children suggesting the need for a renewed commitment and investment in routine immunization programmes worldwide.

Keywords: Immunization coverage, statistics, immunization, monitoring.

The annual collection and review of national immunization coverage data plays an important role in further reducing the morbidity, and mortality associated with vaccine-preventable diseases and is critical to evaluating progress toward the Global Immunization Vision and Strategy (GIVS). The GIVS, a framework for protecting children from preventable childhood diseases such as measles, tetanus, and whooping cough, calls for raising global immunization coverage for these common diseases to at least 90 per cent in every country over the next five years — a challenge that must be addressed if the world is to achieve the Millennium Development Goal (MDG) of a two thirds reduction in mortality among children under five by 2015.¹ Each year since 2000, the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO) have jointly reviewed, prepared and published estimates of national immunization coverage for selected “vaccine-preventable” diseases. This report summarizes the 2010 revision (July 2011) of the WHO and UNICEF estimates of national routine immunization coverage made for each of 194 countries and territories. Coverage data are available online at www.childinfo.org/immunization.html and www.who.int/immunization_monitoring/data/en/index.html.

The WHO recommends that all children receive one dose of bacille Calmette-Guérin vaccine (BCG), three doses of diphtheria–tetanus–pertussis vaccine (DTP), three doses of either oral polio vaccine (OPV) or inactivated polio vaccine (IPV), three doses of hepatitis B vaccine (HebB3), and one dose of a measles containing vaccine (MCV).² Since 2000, WHO and UNICEF have jointly reviewed reports by national authorities regarding national immunization coverage for these and other antigens as well as survey data from the published and grey literature. Based on these data, with due consideration to potential biases and the views of

local experts (primarily national immunization system managers and WHO/UNICEF regional and national staff), WHO and UNICEF jointly estimate the most likely immunization coverage levels for each country or territory. A more detailed explanation of the estimation methods is provided elsewhere.³ It is important to emphasise that while the WHO and UNICEF estimates are informed by data from national authorities and may not differ from official government reported data, they constitute an independent technical assessment by WHO and UNICEF of national routine immunization system performance.

In this report, we present data on global and regional coverage for BCG, first and third dose of DTP (DTP1, DTP3), third dose of polio (Pol3), third dose of HebB (HebB3), third dose of *Haemophilus influenzae* type B (Hib3) vaccine and first dose of MCV during 2000, 2005 and 2010. We also report global DTP3 coverage from 1980 as well as the estimated number of children unimmunised with three doses of DTP. Immunization coverage levels are presented as the percentage of a target population that has been vaccinated. For example, DTP3 coverage is calculated by dividing the number of children receiving the third dose of DTP vaccine by the number of children who survived to their first birthday. It is important to emphasize that the WHO and UNICEF estimates of national immunization coverage refer to immunizations given during routine immunization services to children less than 12 months of age where such services are recorded; not included are supplementary immunization activities such as polio, tetanus and measles campaigns. The WHO and UNICEF estimates are not the result of a formal modelling exercise and no statistical or mathematical models are used with two exceptions. Coverage for the first dose of DTP vaccine is based on the result of a simple ordinary least squares model of the relationship between DTP1 and DTP3 in those instances where DTP1 data are missing or where a country reports DTP1 coverage below DTP3. The second exception concerns protection-at-birth, which was based on modelled results until 2009.⁴ While there are frequently general trends in immunization coverage levels, no attempt is made to fit data points with smoothing techniques or time series

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methods though the estimation process does allow for interpolation within the time series and extrapolation at the end of the time series.

Global and regional averages are obtained by multiplying the country-specific coverage and a population weight for each country whereby the weight is the country-specific proportion of the global (or regional) total population. The estimated number of births and surviving infants for each country is obtained from the United Nations Population Division.⁵ The number of children unreached with DTP3 is obtained by multiplying the value (1 – coverage level; e.g., 0.85) for each country and the estimated number of surviving infants for each country obtained from the United Nations Population Division.

Global averages for BCG, DTP1, DTP3, Pol3, HepB3, Hib3 and MCV coverage during 2000, 2005 and 2010 are shown in Table 1. Our review of national routine immunization coverage estimates demonstrates substantial progress has been made since 2000. Globally, DTP3 coverage was 85% during 2010, an increase from 74% during 2000. Similarly, global MCV coverage increased from 72% during 2000 to 85% during 2010. Improvements in coverage were also observed among the developing or least developed countries since 2000 (data not shown). Among 137 developing or least developed countries during 2000, 54 countries attained DTP3 coverage > 90% (average DTP3 coverage for developing countries, 75%; for least developed countries, 61%) and 50 countries attained MCV coverage > 90% (average MCV coverage for developing

countries, 73%; for least developed countries, 59%); by 2010, 80 of 138 developing or least developed countries reached 90% DTP3 coverage (average DTP3 coverage for developing countries, 85%; for least developed countries, 80%) and 76 countries reached 90% MCV coverage (average MCV coverage for developing countries, 86%; for least developed countries, 78%) (note: developing and least developed country classification based on classifications used by the United Nations in the World Economic Social Survey 2011, available online at www.un.org/en/development/desa/policy/wess/).

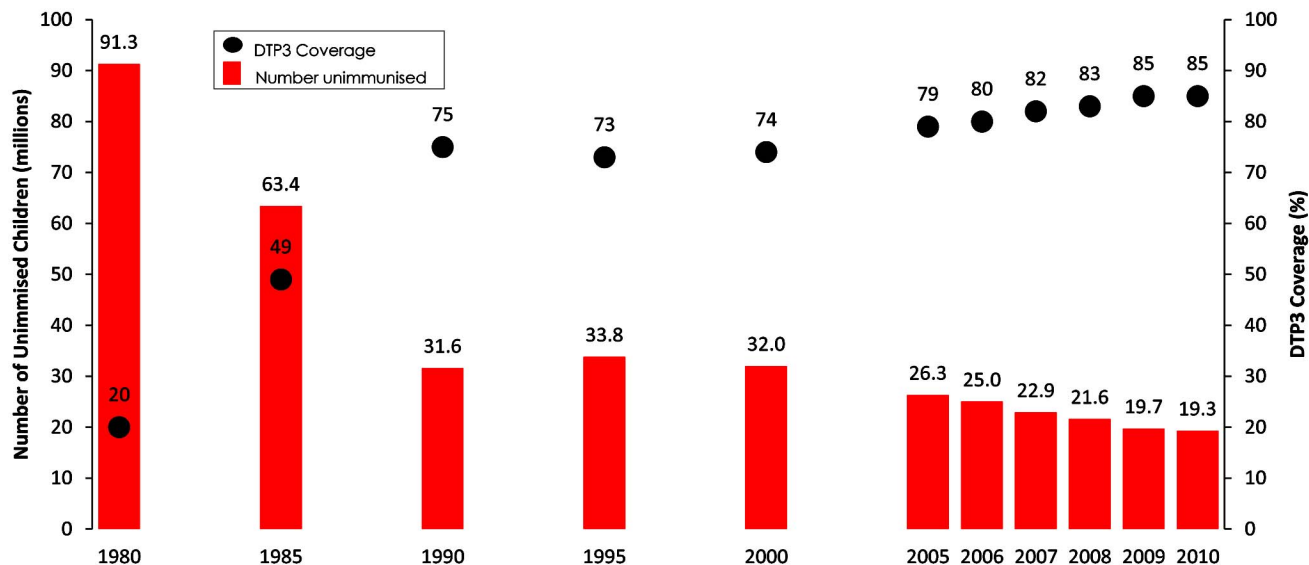
Although there have been enormous and increasingly successful efforts to address the global burden of vaccine-preventable diseases and to improve immunization coverage, opportunities remain to improve routine immunization coverage globally. The benefits of vaccination continue to elude many of the world's children; in fact, an estimated 19.3 million infants, or 150 per 1000 surviving infants, were unimmunized with three doses of DTP during 2010 (Fig. 1). While global coverage with three doses of DTP has improved greatly since the 1980s (Fig. 1), improvements at the global level since 2005 have been more modest suggesting the need for a renewed commitment and investment in routine immunization programmes worldwide. The United Nations Children's Fund and the World Health Organization with their partners continue to work with governments to ensure appropriate coordinated and coherent action is taken to improve routine immunization programmes in order to have maximal impact on children's lives.

Table 1. Global and Regional Averages of WHO and UNICEF Estimates of National Routine Immunization Coverage (%) for Selected Antigens, 2000, 2005, 2010

MDG Region*	BCG			DTP1			DTP3			Pol3			MCV			HepB3			Hib3		
	2000	2005	2010	2000	2005	2010	2000	2005	2010	2000	2005	2010	2000	2005	2010	2000	2005	2010	2000	2005	2010
Sub-Saharan Africa	69	74	84	69	75	85	55	65	77	54	66	79	55	63	75	<10	39	74	<10	17	61
Northern Africa	97	97	98	97	97	98	95	96	97	95	96	97	93	95	96	68	95	97	::	<10	41
Western Asia	92	87	86	92	91	92	84	84	86	85	85	87	85	83	85	67	82	85	<10	38	71
Caucasus & Central Asia	96	88	94	95	96	96	93	93	94	94	94	94	93	94	94	24	89	92	::	::	81
Eastern Asia	84	86	99	94	95	99	85	87	99	87	87	99	84	87	99	60	85	99	::	::	::
South-Eastern Asia	88	88	95	90	89	93	80	82	88	81	85	92	81	84	91	41	67	87	<10		17
Southern Asia	76	83	88	74	81	86	65	72	77	66	64	76	59	69	78	<10	23	52	::	::	21
Oceania	83	76	81	86	82	82	65	66	62	56	57	66	66	66	59	64	67	62	<10	10	60
Caribbean	85	88	88	88	91	92	73	78	79	73	80	79	76	77	76	41	58	56	24	58	54
Latin America	97	97	96	97	97	97	92	94	94	93	94	94	94	94	94	67	90	93	72	94	94
Developed	92	93	95	97	98	98	93	96	95	94	95	95	92	94	94	50	70	72	61	66	73
Global	81	84	90	83	87	91	74	79	85	75	77	86	72	78	85	30	54	75	13	21	42

Source: WHO and UNICEF estimates of national routine immunization coverage, 2010 data revision (July 2011).

* Millennium Development Goal Region, available at <http://www.un.org/millenniumgoals/index.shtml>.



Source: WHO and UNICEF estimates of national routine immunization coverage, 2010 data revision (July 2011); Population data for surviving infants obtained from United Nations, Department of Economic and Social Affairs, Population Division (2011). *World Population Prospects: The 2010 Revision, CD-ROM Edition*.

Fig. (1). Global routine immunization coverage with three doses of diphtheria and tetanus toxoid with pertussis (DTP3) vaccine among surviving infants and number of surviving infants unimmunised with DTP3, 1980 – 2010.

CONFLICT OF INTEREST

None declared.

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None declared.

DISCLAIMER

The findings and views expressed herein are those of the authors alone and do not necessarily reflect those of their respective institutions.

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