

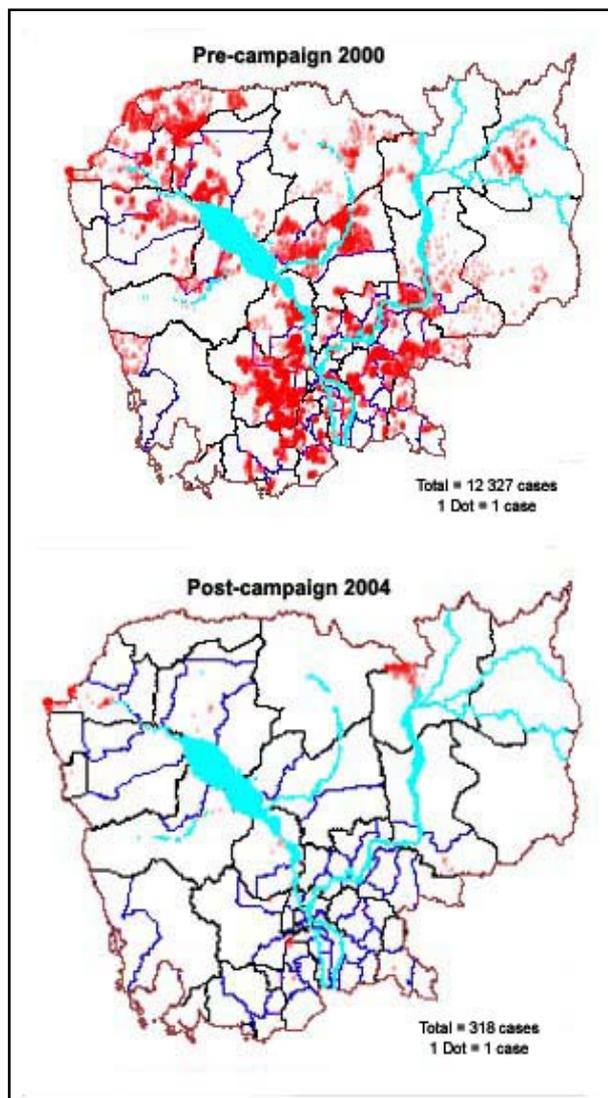
# MEASLES BULLETIN



World Health Organization  
Regional Office for the Western Pacific  
Expanded Programme on Immunization

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## Progress towards measles elimination in Cambodia, 2000-2004



Cambodia has been heavily endemic with measles for many years with the latest outbreak in 2000 (12 327 cases reported). Despite the Government of Cambodia's effort to improve routine immunization after recovering from decades of civil war and the latest resurgence of civil unrest in 1997, the measles immunization coverage had reached only 63% (Ministry of Health [MOH] data in 1999). This suggested that the interruption of domestic circulation of measles virus by routine immunization alone has been difficult.

In response to the outbreak in 2000, National Immunization Programme Cambodia decided to conduct a nationwide measles catch-up supplementary

immunization activity (SIA) campaign, targeting all children aged 9 months to 14 years old. The campaign was supported by WHO, Australian Agency for International Development, Centers for Disease Control and Prevention, Government of Japan and the United Nations Children's Fund (total cost approximately US\$ 3.0 million). Due to the difficulties in accessing many parts of country and limited skilled human resources and supervision in 2000, the nationwide SIA was conducted in four phases from the end of 2000 until early 2004.

Phase I (December 2000-May 2001) targeted children aged 9 months to 4 years in the nine remotest provinces. The measles campaign was combined with oral polio vaccine and vitamin A for children under 5 years, mebendazole for children 1-4 years, tetanus toxoid for child-bearing age women, iodine salt, routine antigens and impregnated mosquito bednets. Phase II (October 2001-April 2002) and Phase III (October 2002-April 2003) targeted children aged 9 months to 14 years in the most populous provinces, combined with vitamin A and mebendazole for children 2-12 years. Phase IV (January-May 2004) supplemented the remote provinces of Phase I and targeted children 7-14 years combined with other services in Phase I, except bednets. The total number of children targeted was 5 084 930 and a total of 5 061 006 children received measles vaccine. The coverage was high in Phase II (98%) and Phase III (103%), reaching 4.5 million children, and low in Phase I (80%) and IV (87%), reaching only 570 000 children in the remote provinces; this was mainly due to inaccessible areas with possibly many service combinations.

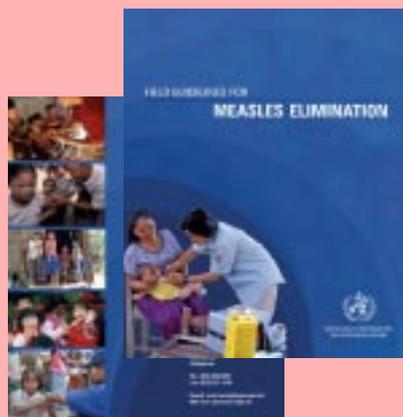
During the measles catch-up campaign, each immunization team targeted 80-150 children per day; they worked at fixed posts in the morning and moved to villages as mobile teams in the afternoon. Due to low school enrollment in rural areas (<50%), house-to-house activity in the villages was a tough task for vaccinators who had to chase a large cohort of children who were often working in the field, and sometimes running away.

After the 2000-2004 measles catch-up campaign, the incidence of reported measles cases showed a significant reduction from 94/100 000 in 2000, to 4.8/100 000 in 2003 (reported 653 cases) to 2.3/100 000 in 2004 (reported 322 cases).

However, the underreporting of measles cases is notable, as most of the clinicians and health workers in the provinces do not clearly understand the case definitions of "rash and fever"; rubella was hardly reported in the past.

Even after the special emphasis on measles surveillance at the provincial level in 2004, the blood sample collection rate of suspect measles (20%) did not change much between 2003 and 2004. The measles IgM positive rate is declining (75% in 2002, 66% in 2003 to 51% in 2004), and the rubella IgM positive rate is increasing (0 in 2002 and 2003 to 12% in 2004). These data suggest that surveillance still has a far way to go, but steps are being made towards the elimination goal. The Government of Cambodia is now planning to conduct a follow-up campaign targeting children under 5 years in 2006.

## Western Pacific Regional Office Field Guidelines for Measles Elimination



The Field Guidelines for Measles Elimination is designed to help countries in the Western Pacific Region move closer to measles elimination. This field guide provides guidance for countries to implement the Western Pacific Regional Plan of Action for Measles Elimination as urged by the 2003 Regional Committee Meeting. The field guide will help countries develop and implement national plans based on the key strategies: immunization, surveillance, and laboratory diagnosis. The field guide provides health workers, immunization programme managers, public health professionals, and policy makers at national and subnational levels with advice on what needs to be done and how to do it. The field guide will be distributed in early 2005.



## Country progress towards elimination

WHO Western Pacific Regional Office was charged to assess countries' progress towards measles elimination and to set a target date for regional measles elimination [RCM resolution WPR/RC54.R3]. As reported in the last Measles Bulletin, the Measles Task Force has completed these tasks.

Table 1 was used as part of the assessment of progress. This data will now be used to assess progress in eliminating measles in accordance with the indicators. The table shows the current status of countries with respect to the regional measles plan's three strategies: immunization, surveillance and laboratory support.

A key requirement for measles immunity is to achieve and maintain very high population immunity (>95%). It is critical to have high population immunity to interrupt transmission of the virus. This immunity is achieved by having high coverage (>95%) with two doses of measles vaccine. At

present, there are data on first dose coverage, delivery of the second dose and campaigns. These data will serve as a foundation for estimating population immunity.

Core surveillance functions are case detection, reporting, investigation (including confirmation of diagnosis), analysis, interpretation and dissemination of information. A case-based surveillance system, and analysis of that data is a key requirement. In addition, there needs to be reported indicators of surveillance quality to be sure that zero reports of measles indicate lack of disease rather than poor surveillance (See Measles Field Guidelines for indicators).

Laboratory testing to confirm a clinical diagnosis of measles is an essential part of the surveillance system. As the Measles Laboratory Network develops, the requirement will be for an accredited laboratory. In addition, it will be important that most suspect cases are tested to confirm (or discard) a diagnosis of measles.

**Table 1. Country progress towards elimination (2004)**

Country	Routine immunization			Immunization campaigns			Case-based surveillance	Access to national laboratory
	MV1 Reported coverage*	When introduced	MV2 Schedule	Year	Target	Reported coverage		
Australia	93%	1994	4 yrs	1998	5-12 yrs	96%	Yes	Yes
Brunei Darussalam	99%	1997	10-13 yrs	-	-	-	Yes	Yes
Cambodia	65%	-	-	2000-2004	9 mos-4 yrs	87%	Yes	Yes
China	84%	1986	7 yrs	2003	8 mos-12 yrs	99% <sup>∞</sup>	Planned	Yes
Hong Kong (China)	81%	1996	6 yrs	2002	≥11 yrs	99%	Yes	Yes
Japan	99%	-	-	-	-	-	Sentinel	Yes
Republic of Korea	97.2%	2000	4-6 yrs	2001	8-16 yrs	96%	Yes	Yes
Lao People's Democratic Republic	42%	-	-	2001	9-59 mos	86%	Yes	Yes
Malaysia	92%	2002	7 yrs	2004	-	-	Planned	Yes
Macao (China)	90%	1991	15 mos	-	-	-	Yes	Yes
Mongolia	98%	1987**	14-21 mos	2000	9 mos-7 yrs	97%	Yes	Yes
New Zealand	85%	1992	4 yrs	1997	2-10 yrs	75%	Yes	Yes
Philippines	80%	-	-	2004	9 mos-8 yrs	94%	Yes	Yes
Papua New Guinea	42% <sup>∅</sup>	-	-	2003-2004	6 mos-14 yrs	99% <sup>∅</sup>	No Data	Yes
Singapore	88%	1998**	11-12 yrs	-	-	-	Yes	Yes
Viet Nam	93%	-	-	2002-2003	9 mos-10 yrs	99%	Yes	Yes
Pacific island countries	82%	Variable		Variable			Variable	Subregional

Legend for Coverage:  
■ ≥ 90%  
■ 80% - 90%  
■ < 80%

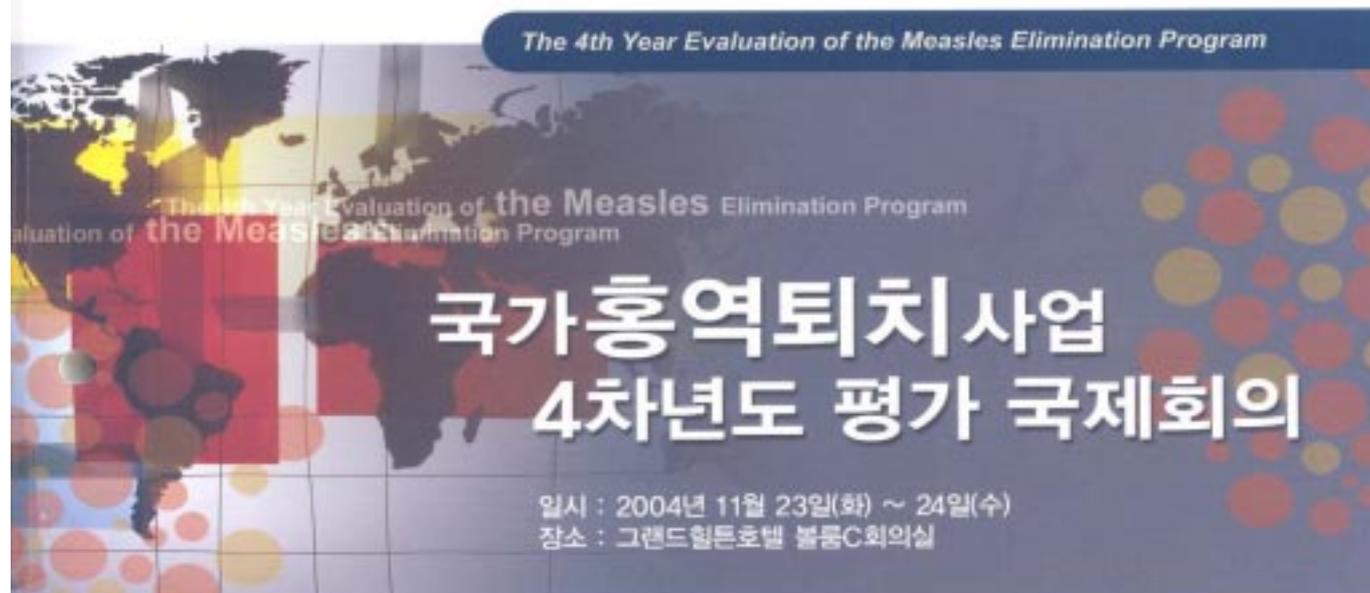
\* Based on WHO-UNICEF best estimates

\*\* Part of country only

<sup>∅</sup> Supplemental dose at 6 months

<sup>∞</sup> one pilot prefecture

<sup>∅</sup> three provinces



## Republic of Korea evaluates measles elimination programme

The International Conference on the 4th Year Evaluation of the Measles Elimination Program was held in Seoul from 23 to 24 November 2004. Participants included the United Nations Children's Fund, Centers for Disease Control and Prevention, Ministry of Health, Labour and Welfare – Japan and WHO Western Pacific Regional Office. The Republic of Korea has made significant progress towards achieving measles elimination and plans to undertake a final evaluation in 2005. The area of emphasis during this fourth year is enhancing and evaluating measles surveillance after the national measles immunization campaign of 2001. The Republic of Korea started routine two-dose measles-mumps-rubella vaccination with >95% coverage, added a school-entry requirement certification in 2001, held a catch-up campaign for children 8-16 years and increased surveillance to monitor elimination. The comprehensive surveillance programme was clearly and precisely delineated and a strict case definition of measles was developed. The country adopted the measles surveillance indicators established by WHO. The progress of the Republic of Korea measles surveillance programme appears in Table 2:

**Table 2: Indicator for measles elimination in the Republic of Korea**



	2002	2003	2004
<input type="checkbox"/> Incidence per 1 million population	<input type="checkbox"/> 1.01/1 million <input type="checkbox"/> 0.28/1 million for laboratory confirmed only	<input type="checkbox"/> 0.60/1 million <input type="checkbox"/> 0.33/1 million for laboratory confirmed only	<input type="checkbox"/> 0.20/1 million <input type="checkbox"/> 0.31/1 million for laboratory confirmed only
<input type="checkbox"/> Incidence of suspected case per 100 000 in 80% of all districts	<input type="checkbox"/> 0.31/100 000 (nationwide)	<input type="checkbox"/> 0.16/100 000 (nationwide)	<input type="checkbox"/> 0.16/100 000 (nationwide)
<input type="checkbox"/> % of adequate serum of IgM	<input type="checkbox"/> 86%	<input type="checkbox"/> 60%	<input type="checkbox"/> 78.1%
<input type="checkbox"/> % of virus isolation	<input type="checkbox"/> 0%	<input type="checkbox"/> 6.9%	<input type="checkbox"/> 10%
<input type="checkbox"/> Vaccine coverage	<input type="checkbox"/> 97.6 (7~17 yrs)	<input type="checkbox"/> 97.7 (7~18 yrs)	<input type="checkbox"/> >97.9% (7~19 yrs)
<input type="checkbox"/> % of imported cases	<input type="checkbox"/> 2.0% (1/49)	<input type="checkbox"/> 6.9% (2/29)	<input type="checkbox"/> 0% (0/15)

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**Table 3. Measles cases, vaccination status and deaths (as of December 2004)\***

	Reported suspected cases	Classification						Indicators		Latest date reported to Western Pacific Regional Office (WPRO)	Type of report
		Confirmed cases			Incidence rate <sup>ⓐ</sup> (Total confirmed)	Discarded	Pending	Suspected cases immunized <sup>ⓑ</sup>	Deaths		
		Laboratory confirmed	Epi-linked	Clinical							
American Samoa											
Australia	33	0	0	26	0.13 (26)	0	0	12% (4)	0	30-Nov-04	case data
Brunei Darussalam	3	1	0	2	0.84 (3)	0	0	67% (2)	0	12-May-04	case data
Cambodia	322	61	0	261	2.28 (322)	0	0	14% (44)	3	15-Nov-04	case data
China											
Cook Islands	0	0	0	0	0.00 (0)	0	0	-	-	08-Dec-04	aggregate
Federated States of Micronesia											
Fiji											
French Polynesia											
Guam											
Hong Kong (China)	61	-	-	-	0.87 (61)	0	0	-	-	30-Dec-04	aggregate
Japan											
Kiribati											
Lao People's Democratic Republic	1340	-	-	-	23.69 (1340)	0	0	-	10	15-Sep-04	aggregate
Macao (China)	2	-	-	-	0.43 (2)	0	0	-	-	12-Nov-04	aggregate
Malaysia											
Marshall Islands											
Mongolia	36	2	0	0	0.08 (2)	34	0	-	-	06-Dec-04	case data
Nauru											
New Caledonia											
New Zealand	26	-	-	-	0.67 (26)	0	0	-	-	20-Dec-04	aggregate
Niue											
Northern Mariana Islands											
Palau											
Papua New Guinea											
Philippines	2872	23	6	1651	2.10 (1680)	1192	0	23% (665)	16	28-Dec-04	case data
Republic of Korea	55	10	0	0	0.02 (10)	39	6	11% (6)	0	23-Nov-04	case data
Samoa	0	0	0	0	0.00 (0)	0	0	-	0	08-Dec-04	aggregate
Singapore	96	-	-	-	2.26 (96)	0	0	-	-	31-Dec-04	aggregate
Solomon Islands											
Tokelau											
Tonga											
Tuvalu											
Vanuatu											
Viet Nam	767	29	21	13	0.08 (63)	633	71	48% (371)	0	24-Nov-04	case data
Wallis and Futuna											
<b>Western Pacific Region</b>	<b>5613</b>				<b>1.36 (3631)</b>			<b>19% (1092)</b>	<b>29</b>		

\* Data are based on country reports and other sources available to EPI/Western Pacific Regional Office.

<sup>ⓐ</sup> Incidence rate per 100 000 population (World Population Prospects: The 2002 Revision, New York, United Nations, 2002).

<sup>ⓑ</sup> Suspected cases immunized does not distinguish between 1 or 2 doses.



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