

*High-Level Preparatory (HLP) Meeting for the Regional Committee  
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## **MEASLES**

The global goal for measles control is reducing measles mortality by 90% in 2010 in comparison to 2000. Nevertheless, the Americas (2002), Eastern Mediterranean (2010), Europe (2012) and Western Pacific regions(2012) have set a measles elimination goal. The African Region has set a pre-elimination goal of reducing measles mortality by 98% in 2012 compared to 2000 estimates. In the South-East Asia Region which has a measles mortality reduction goal, four Member States are implementing the strategies for measles elimination and all Member States except India have reached an advanced stage of measles mortality reduction.

With the success in the Americas and progress in three regions with an elimination goal, there is interest in exploring the feasibility of setting a global measles elimination goal. Accordingly, the 125<sup>th</sup> Session of the WHO Executive Board directed the WHO Secretariat to submit a report on the “feasibility of global elimination of measles” to the 126<sup>th</sup> Executive Board in January 2010. In line with this, SEARO will organize a regional consultation from 25-27 August 2009 to consider the feasibility of a regional measles elimination goal.

This paper presents an update on the progress in achieving the goal of measles mortality reduction in the Region and important considerations in establishing a measles elimination goal. The considerations for setting the elimination goal include achieving high and sustainable routine immunization coverage, developing a highly sensitive surveillance system, availability of funding, ensuring vaccine supply of assured quality, considering lessons from polio eradication and competing priorities, and developing political will and support from society.

This paper is submitted to the High-Level Preparatory (HLP) meeting for its consideration and to seek advice regarding the next steps on the “feasibility of measles elimination goal”.



## **Feasibility of setting a measles elimination goal in the South-East Asia Region**

1. In 2003, the World Health Assembly (WHA) through resolution WHA56.20 endorsed the goal of reducing measles mortality by 50% by 2005 relative to 1999 estimates. Although Member States in the South-East Asia Region had been implementing measles control activities since 2000, the resolution provided the impetus for Member States to accelerate the implementation of intensified measles control strategies.
2. In line with the resolution, in 2003, the SEAR Technical Consultative Group for Polio Eradication and Control of Vaccine Preventable Diseases (TCG) endorsed the *Regional Strategic Plan for Measles Mortality Reduction for 2003-2005*. The plan provided a framework for countries to contribute to the global measles goal. *The key strategies were:*
  - a. Improving and sustaining routine immunization coverage;
  - b. Providing second dose of measles vaccine through catch-up immunization campaigns and routine second dose/follow up immunization campaigns;
  - c. Improving measles surveillance by including tracking and investigating suspected measles outbreaks and laboratory confirmation of outbreaks; and
  - d. Improving case management including administration of vitamin A.
3. With a 60% global mortality reduction by 2005, this goal was achieved<sup>1</sup>.
4. In 2005, World Health Assembly resolution WHA58.15 endorsed the Global Immunization Vision and Strategies (GIVS) goal, that by 2010 or earlier, mortality due to measles will be reduced by 90% compared to the 2000 level. Hence, the current global goal is sustainable measles mortality reduction.
5. In 2007, taking into account the regional progress in measles control, the *Regional Measles Strategic Plan, 2007-2010*, was revised to incorporate the 90% measles mortality reduction goal.
6. According to the implementation status of this plan, the Region can be categorized into:
  - a. Member States implementing elimination strategies: Bhutan, DPR Korea, Maldives, and Sri Lanka have successfully implemented all WHO recommended strategies and have achieved the measles mortality reduction goal.
  - b. Member States at an advanced stage of measles mortality reduction, Bangladesh, Indonesia, Myanmar, Nepal, and Timor-Lesté, have successfully implemented strategies for measles mortality reduction and have achieved or are close to achieving the 90% measles mortality reduction goal.

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<sup>1</sup> Wolfson, L.J., Strebel, P.M., et al; Has the 2005 measles mortality reduction goal been achieved? A natural history modeling study. *Lancet* 2007, 369: 191-200

- c. Member States with delayed or partial implementation of measles mortality reduction strategies: India has developed a strategic plan for measles mortality reduction. However, full implementation has been delayed and India has not conducted a catch-up campaign. Thailand has achieved high-level coverage for routine first and second doses of the measles vaccine, but has not conducted a catch-up campaign yet.
7. Consequent to the implementation of the recommended strategies, measles routine immunization coverage in the Region increased from 61% in 2000 to 73% in 2007. Weighted average coverage of all member States other than India increased from 77% to 85%. From 2000-2008 all Member States except India and Thailand have conducted measles catch-up campaigns and immunized 120 million children. WHO has estimated that between 2000 and 2007 the annual number of measles deaths in SEAR reduced by 42% (from 235 000 to 136 000). However, achievement by the Region of the 90% measles mortality reduction goal depends on India accelerating implementation of its measles mortality reduction strategic plan.
8. Although there is no global goal for measles elimination, the WHO Region of the Americas achieved regional measles elimination in 2002. The Eastern Mediterranean Region (2010), European Region (2010) and Western Pacific Region (2012) have a measles elimination goal. Measles elimination is technically feasible because the causative organism has only a human host, there is an effective intervention available (measles vaccine with high efficacy), and sensitive and specific diagnostic tools are available.
9. With the success in the Americas and progress in three regions with an elimination goal, there is interest in exploring the feasibility of setting a global measles elimination goal. Accordingly, the 125<sup>th</sup> Session of the WHO Executive Board directed the WHO secretariat to submit a report on the “feasibility of global elimination of measles” to the 126<sup>th</sup> Executive Board in January 2010. In line with this, SEARO will organize a regional consultation from 25-27 August 2009 to consider the feasibility of a regional measles elimination goal.
10. The important considerations in establishing a measles elimination goal include the following:
- a. **Definition of elimination and eradication:** There is no consensus on the definition of global eradication and global elimination. The recently concluded meeting of WHO’s Strategic Advisory Group of Experts (April 2009) is of the opinion that the sum of elimination in all WHO regions would equate to global eradication. At least one Region (AMR) has defined Regional elimination as a situation where endemic transmission of measles cannot occur and sustained transmission does not occur for more than 12 months following the occurrence of an imported case.
  - b. **High and sustainable immunization coverage:** Achieving elimination would require reaching and sustaining >95% coverage with two routine doses of measles vaccine in all districts of a country, conducting one-time measles nationwide catch-up campaign to cover all susceptible individuals and conducting periodic follow-up campaigns until routine immunization coverage for both doses reaches > 95%.
  - c. **A highly sensitive surveillance system:** The surveillance system must be strengthened to achieve high sensitivity (i) at national level to detect at least two non-

measles suspected measles cases per 100,000 population, (ii) more than 80% districts of the country to detect more than one non-measles suspected measles case per 100,000 population, (iii) 80% of the suspected measles cases are tested in a laboratory for measles IgM, and (iv) virus isolation of 80% of the transmission chains (outbreaks).

- d. **Availability of funding:** Achieving and sustaining immunization and surveillance standards will be a huge challenge in some of the large countries of the Region and will require substantial investment of financial and human resources. Because the international funding available from the Measles Initiative for mortality reduction has dramatically reduced for the next biennium, the cost implications need to be carefully considered.
- e. **Vaccine supply of assured quality:** A regional elimination goal would require a cohort of 274 million children aged less than 10 years to be immunized against measles through a catch-up campaign in India alone. In addition, large countries like Thailand need to conduct measles catch-up campaigns for susceptible children. India, Indonesia, Bangladesh, Myanmar and Nepal need to conduct periodic follow-up campaigns every 3/4 years for children born after the previous campaign. This would create challenges of supplying vaccine of assured quality and programmatic issues related to injection safety, adverse events after immunization (AEFI) and waste management.
- f. **Lessons from polio eradication:** There are important lessons to be learned from polio eradication such as the importance of government ownership of the programme, the need to work within and strengthen the primary health care approach, the critical importance of a strong routine immunization system and high routine immunization coverage, the investments needed both financial and technical, the contribution of the polio eradication infrastructure to the successes achieved in measles mortality reduction, etc.
- g. **Competing priorities:** Polio eradication is unfinished business in this Region and the continued demands on technical and financial resources are substantial and will continue to be so until the job is finished. Most of these resources will be needed in India which also has the largest estimated burden of measles mortality in the Region. Member States are also faced with other health priorities which compete for resources, such as tuberculosis, malaria, HIV/AIDS, and other emerging infections.
- h. **Political will and support from society:** In order to set an elimination goal for the Region, political and societal support will be needed together with the technical/epidemiological conditions necessary to define it.

11. The challenges identified above are not overwhelming; nor should the persistent nature of some of the challenges preclude the Member States from pursuing measles elimination and the Region from considering a measles elimination goal. The progress in mortality reduction made in the Region so far demonstrates that a goal of measles elimination in the South-East Asia Region is

technically feasible. The Region of the Americas has demonstrated this by achieving regional measles elimination. The Eastern Mediterranean Region adopted a Regional measles elimination goal despite having endemic polio in two of its Member States. Although external funding for measles control has recently declined, establishing a regional elimination goal could revive global interest and generate increased levels of funding. There is also the potential for fostering commitment at country level and this could result in internal funding too. Financial support from GAVI to several recipient countries in the Region also provides them an opportunity to strengthen their routine immunization system in parallel, which is the foundation of a successful measles elimination programme.

## Annex

**Table 1: Reported number of measles cases in South-East Asia Region (1990-2008)**

Country	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bangladesh	1,705	5,098	4,414	3,484	4,067	9,743	25,935	6,192	2,924	2660
Bhutan	173	418	756	27	0	3	11	2	11	7
DPR Korea	-		-	-	-	0	0	0	3,550	82
India	89,612	22,236	37,969	51,780	44,004	51,546	52,454	60,751	36,900	48181
Indonesia	92,105	47,788	21,595	19,534	24,457	29,171	15,853	20,422	19,456	15266
Maldives	0	20	0	926	77	37	1,395	47	20	0
Myanmar	7,900	861	1,639	736	830	1,274	302	735	1,088	333
Nepal	182	9,397	10,849	6,749	13,344	12,074	5,023	2,838	1,415	2089
Sri Lanka	4,004	16,527	309	139	65	35	3	0	44	33
Thailand	29,244	4,074	7,319	10,241	4,565	4,165	3,328	3,499	3,893	7016
Timor Leste				0	94	41	203	90	0	0
<b>SEA Region</b>	<b>224,925</b>	<b>106,419</b>	<b>84,850</b>	<b>93,616</b>	<b>91,503</b>	<b>108,089</b>	<b>104,507</b>	<b>94,576</b>	<b>69,301</b>	<b>75,667</b>

Source: WHO/UNICEF JRF

**Table 2: Measles vaccination coverage during infancy in South-East Asia Region (1990-2008)**

Country	1990	2000	2001	2002	2003	2004	2005	2006	2007	2008*
Bangladesh	65	76	77	75	76	81	88	88	88	85
Bhutan	93	76	78	78	88	87	93	90	95	99
DPR Korea	98	78	92	98	95	95	96	96	99	98
India	56	54	55	56	59	61	64	67	67	102
Indonesia	58	72	70	72	72	72	72	72	72	80
Maldives	96	99	99	99	96	97	97	97	97	97
Myanmar	90	84	73	77	76	78	72	78	80	82
Nepal	57	71	71	71	75	73	74	85	81	79
Sri Lanka	80	99	99	99	99	96	99	99	98	98
Thailand	80	94	94	94	96	96	96	96	96	98
Timor Leste	ND	ND	ND	39	55	55	48	64	63	73

Source: 1990-2007: WHO/UNICEF Coverage Estimates; \*2008-Country Official Estimates  
N.B. - ND = No data

**Table 3: Measles Supplementary immunization campaigns conducted in countries of the South-East Asia Region (2000-2008)**

Country	Year	Type	Target age group	Coverage		Percentage Coverage
				Target	Vaccinated	
Bangladesh	2005 - 2006	Catch Up	9M- 10 Y	35,680,911	36,012,154	100.9
Bhutan	2006	Catch Up	9M-15 Y & 15-44Y( F)	338,040	332,041	98.2
DPR Korea	2007	Catch Up	6 M-45 Y	16,123,376	16,109,432	99.9
Indonesia	2000- 2007	Catch Up	6M - 15 Y	42,712,567	40,316,089	94.4
Maldives	2005/2006	Catch Up	6-25 Y & 25-34Y( F)	144,997	123,642	85.3
Myanmar	2002 - 2004	Catch Up	9m - 5 Y	5,670,597	4,910,950	86.6
	2007	Follow Up	9 M - 5 Y	6,056,000	5,706,351	94.2
Nepal	2004 - 2005	Catch Up	9M - 15 Y	9,423,867	9,839,723	104.4
	2008	Follow Up	9M- 5 Y	3,903,515	3,634,277	93.1
Sri Lanka	2003 - 2004	Catch Up	10 - 14 Y and 16 to 20 Y	3,878,173	3,259,281	84.0
Timor-Leste	2003- 2004	Catch Up	9M - 15 y	519,005	285,126	54.9
<b>SEA Region</b>	<b>2000 - 2008</b>			<b>124,451,048</b>	<b>120,529,066</b>	<b>96.8</b>

### Fatal adverse events following measles immunization in the South-East Asia Region

**Bangladesh:** In 2003 Bangladesh reported three deaths following measles immunization in a routine immunization clinic. On investigation it was found that deaths were likely to have occurred. This was due to toxic shock syndrome that could have resulted due to contamination of the reconstituted vaccine.

**Myanmar:** In 2005 and 2006 there were nine fatal adverse events following all EPI vaccines in routine immunization clinics. However on investigation it was found that eight were due to coincidental events. In one case, the cause of death was unknown.

**India:** India had three clusters of fatal adverse events following measles immunization in routine immunization clinics of three states in 2008. In one cluster, where there were four deaths, the cause of death was found to be due to toxic shock syndrome. The investigations in respect of the other two clusters have detected no apparent cause of death.

**Discussion on AEFI episodes:** In the case of all the episodes mentioned above, after excluding the coincidental events, it was found that the errors made by EPI programme staff in the handling and usage of vaccines that had mainly resulted in these episodes. The vaccine itself was not implicated.

WHO monitors AEFI across the Region through monthly reports submitted by the Member States. WHO has also been invited by government(s) concerned to investigate most of these episodes. It remains committed to supporting governments in the strengthening of AEFI monitoring systems through the formation of AEFI committees and training the members of these committees on AEFI causality assessment.