

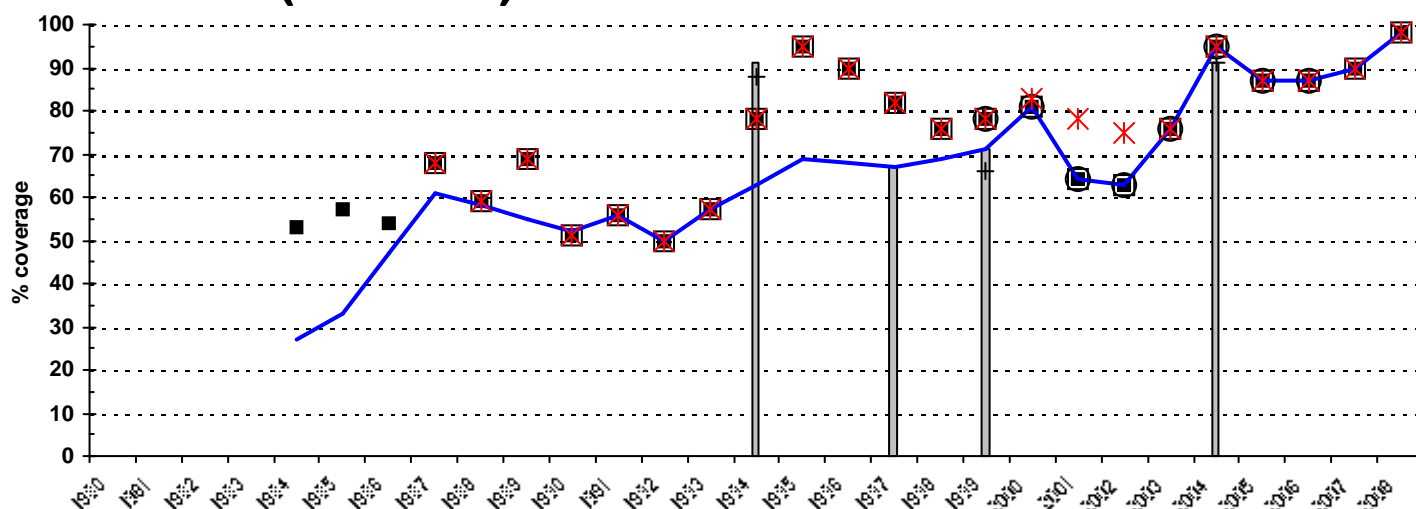
**WHO/UNICEF
Review of National Immunization Coverage
1980-2008**

Cambodia

July, 2009

Cambodia

BCG (1980-2008)



Description of trend

Nationally reported data until 1994 reflects increasing access to different regions of the country. The trend during the 1990s is based on survey results. 2000-2002 estimates are based on administrative coverage adjusted for accuracy by the Ministry of Health following a data quality assessment. In 2003 the official estimates were similar to the administrative immunization coverage with better quality data as confirmed by a Data Quality Assessment in 2003 as well as the continuous expansion of post activity assessment implementation in 2003. In 2004 the Ministry of Health and Ministry of Planning revised downward the estimated number of children resulting in an increased percentage of children vaccinated. Increase in 2008 due to change in denominator, based on the General Population Census of Cambodia, 2008.

Data presented in chart

Year	WHO/ UNICEF estimate (%)	Reported to:*		Government official estimate (%)	Reported doses administered (%)**	Survey data (%)***	
		WHO (%)	UNICEF (%)			Survey 12-23 months	Survey <12 months
1980							
1981							
1982							
1983							
1984	27		53				
1985	33		57				
1986	47		54				
1987	61	68	68		68		
1988	58	59	59		59		
1989	55	69	69		69		
1990	52	51	51		51		
1991	56	56	56		56		
1992	50	50	50		50		
1993	57	57	57		57		
1994	63	78	78		78	91	88
1995	69	95	95		95		
1996	68	90	90		90		
1997	67	82	82		82	67	
1998	69	76	76		76		
1999	71	78	78	78	78	71	66
2000	81	81	81	81	83		
2001	64	64	64	64	78		
2002	63	63	63	63	75		
2003	76	76	76	76	76		
2004	95	95	95	95	95	91	91
2005	87	87	87	87	87		
2006	87	87	87	87	87		
2007	90	90	90	90	90		
2008	98	98	98	98	98		

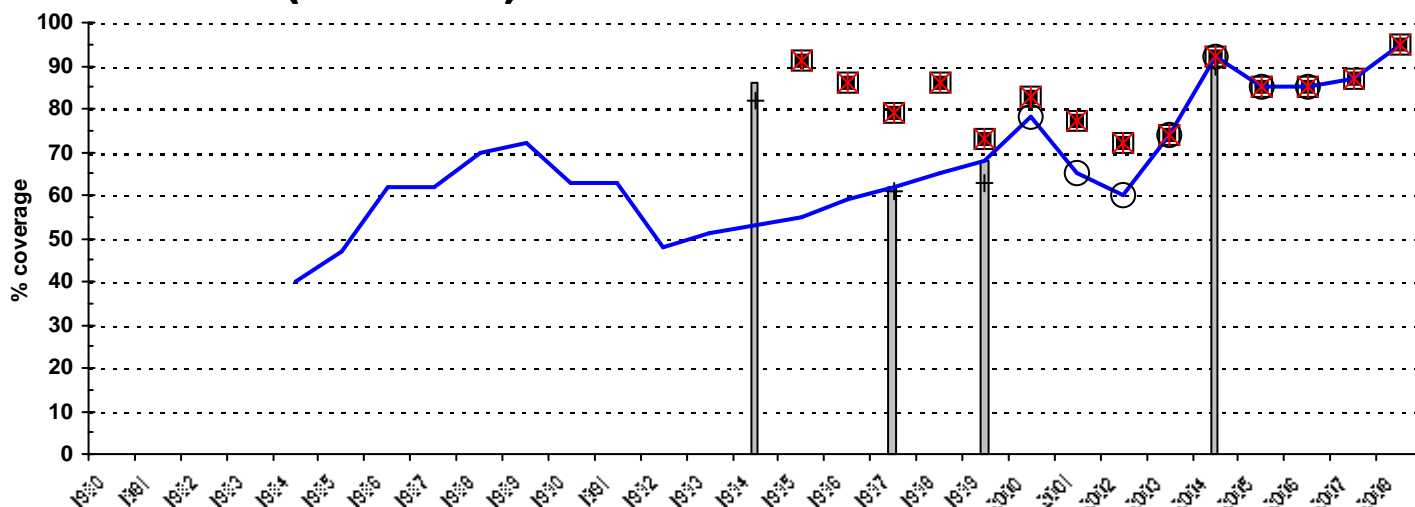
*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

**Coverage based on registration of doses administered by health care providers.

***In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

Cambodia

DTP1 (1980-2008)



Description of trend

WHO and UNICEF began requesting data on DTP1 coverage in 2001 and have received national reports reflecting DTP1 coverage from 1999 onward. The DTP1 estimates from 2000 onward are based on these reports. For years prior to 2000 the estimates are derived from the WHO/UNICEF estimates of DTP3 and the relationship between the levels of DTP3 coverage and the drop-out between DTP1 and DTP3, calibrated to the levels of the 1997 and 1999 surveys. This relationship results from an analysis of 282 surveys conducted in 101 countries which were published between 1980 and 2004. In 2004 the Ministry of Health and Ministry of Planning revised downward the estimated number of children resulting in an increased percentage of children vaccinated. Increase in 2008 due to change in denominator, based on the General Population Census of Cambodia, 2008.

Data presented in chart

Year	WHO/ UNICEF estimate (%)	Reported to:*		Government official estimate (%)	Reported doses administered (%)**	Survey data (%)***	
		WHO (%)	UNICEF (%)			Survey 12-23 months	Survey <12 months
1980							
1981							
1982							
1983							
1984	40						
1985	47						
1986	62						
1987	62						
1988	70						
1989	72						
1990	63						
1991	63						
1992	48						
1993	51						
1994	53					86	82
1995	55	91	91		91		
1996	59	86	86		86		
1997	62	79	79		79	62	61
1998	65	86	86		86		
1999	68	73	73		73	68	63
2000	78	83	83	78	83		
2001	65	77	77	65	77		
2002	60	72	72	60	72		
2003	74	74	74	74	74		
2004	92	92	92	92	92	91	90
2005	85	85	85	85	85		
2006	85	85	85	85	85		
2007	87	87	87	87	87		
2008	95	95	95	95	95		

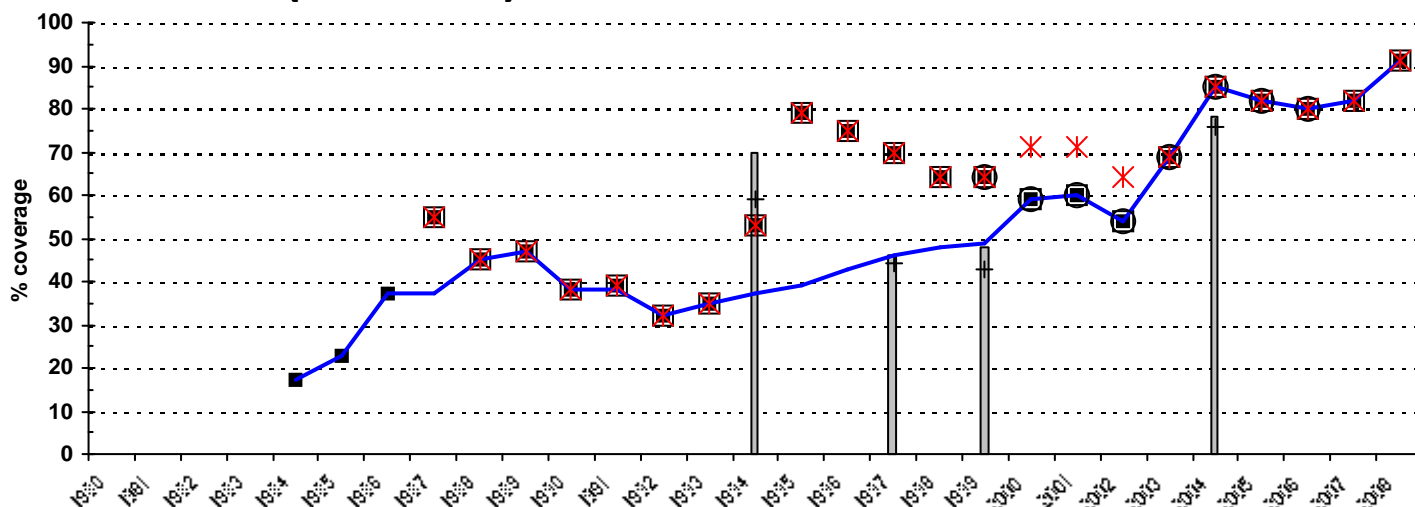
*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

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Cambodia

DTP3 (1980-2008)



Description of trend

Nationally reported data until 1994 reflects increasing access to different regions of the country. Survey data for 1998 suggests an 11% drop rate between BCG and DTP3 based on information from the card. This difference has been used to estimate DTP3 coverage based on the B estimate. 2000-2002 estimates are based on administrative coverage adjusted for accuracy by the Ministry of Health following a data quality assessment. In 2003 the official estimates are similar to the administrative immunization coverage with better quality data as confirmed by a Quality Assessment in 2003 as well as the continuous expansion of post activity assessment implementation in 2003. In 2004 the Ministry of Health and Ministry of Planning revised downward the estimated number of children resulting in an increased percentage of children vaccinated in 2008 due to change in denominator, based on the General Population Census of Cambodia, 2008.

Data presented in chart

Year	WHO/ UNICEF estimate (%)	Reported to:*		Government official estimate (%)	Reported doses administered (%)**	Survey data (%)***	
		WHO (%)	UNICEF (%)			Survey 12-23 months	Survey <12 months
1980							
1981							
1982							
1983							
1984	17		17				
1985	23		23				
1986	37		37				
1987	37	55	55		55		
1988	45	45	45		45		
1989	47	47	47		47		
1990	38	38	38		38		
1991	38	39	39		39		
1992	32	32	32		32		
1993	35	35	35		35		
1994	37	53	53		53	70	59
1995	39	79	79		79		
1996	43	75	75		75		
1997	46	70	70		70	46	44
1998	48	64	64		64		
1999	49	64	64	64	64	48	43
2000	59	59	59	59	71		
2001	60	60	60	60	71		
2002	54	54	54	54	64		
2003	69	69	69	69	69		
2004	85	85	85	85	85	78	76
2005	82	82	82	82	82		
2006	80	80	80	80	80		
2007	82	82	82		82		
2008	91	91	91		91		

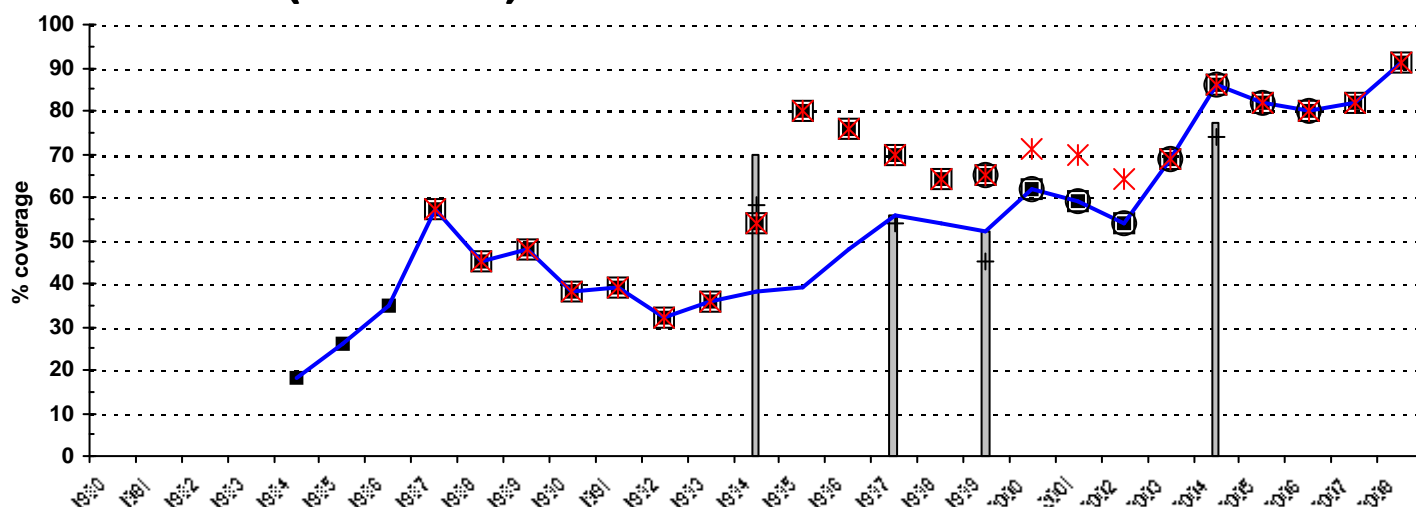
*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

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***In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

Cambodia

Pol3 (1980-2008)



Description of trend

Nationally reported data until 1994 reflects increasing access to different regions of the country. Survey data for 1998 suggests an 11% drop in coverage between BCG and Pol3 based on information from the card. This difference has been used to estimate Pol3 coverage based on the BCG estimate. 2000-2002 estimates are based on administrative coverage adjusted for accuracy by the Ministry of Health following a data quality assessment. In 2003 the official estimates are similar to the administrative immunization coverage with better quality data as confirmed by a Data Quality Assessment in 2003 as well as the continuous expansion of post activity assessment implementation in 2003. In 2004 the Ministry of Health revised the estimated number of children resulting in an increased percentage of children vaccinated. In 2008 due to change in denominator, based on the General Population Census of Cambodia, 2008.

Data presented in chart

Year	WHO/ UNICEF estimate (%)	Reported to:*		Government official estimate (%)	Reported doses administered (%)**	Survey data (%)***	
		WHO (%)	UNICEF (%)			Survey 12-23 months	Survey <12 months
1980							
1981							
1982							
1983							
1984	18		18				
1985	26		26				
1986	35		35				
1987	57	57	57		57		
1988	45	45	45		45		
1989	48	48	48		48		
1990	38	38	38		38		
1991	39	39	39		39		
1992	32	32	32		32		
1993	36	36	36		36		
1994	38	54	54		54	70	58
1995	39	80	80		80		
1996	48	76	76		76		
1997	56	70	70		70	56	54
1998	54	64	64		64		
1999	52	65	65	65	65	52	45
2000	62	62	62	62	71		
2001	59	59	59	59	70		
2002	54	54	54	54	64		
2003	69	69	69	69	69		
2004	86	86	86	86	86	77	74
2005	82	82	82	82	82		
2006	80	80	80	80	80		
2007	82	82	82		82		
2008	91	91	91		91		

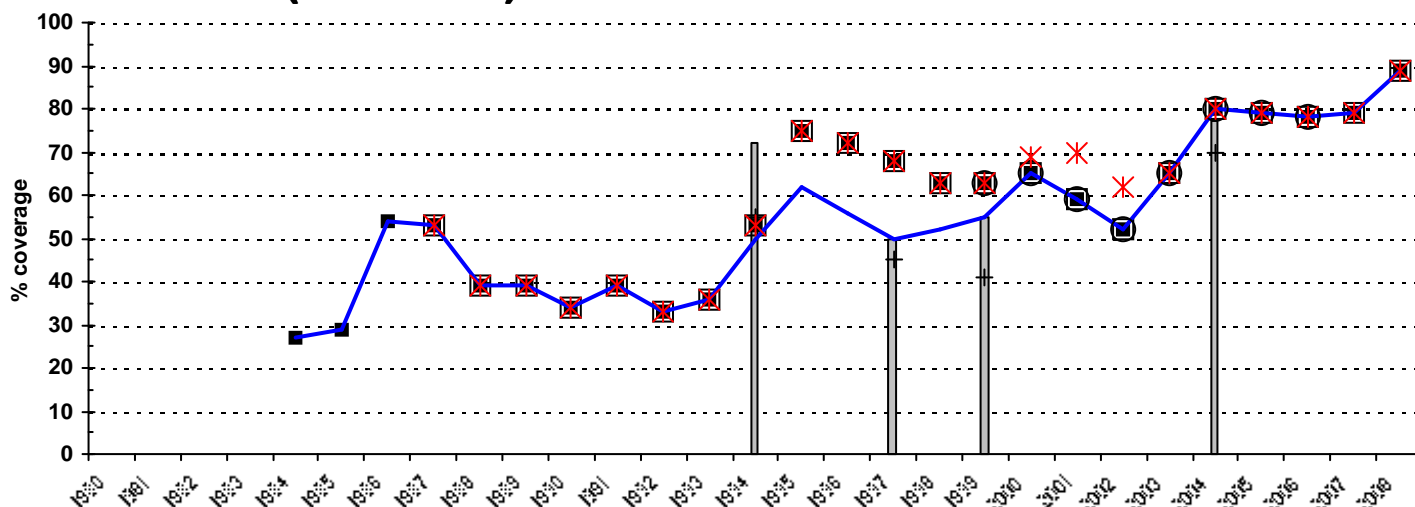
*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

**Coverage based on registration of doses administered by health care providers.

***In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

Cambodia

MCV (1980-2008)



Description of trend

Nationally reported data until 1994 reflects increasing access to different regions of the country. The 1998 survey suggests that measles coverage is the same as DPT3 coverage. Coverage for measles is the same as the one estimated for DPT3. The 2000-2002 estimates are based on administrative coverage adjusted for accuracy by the Ministry of Health following a data quality assessment. In 2003 the official estimates are similar to the administrative immunization coverage with better quality data as confirmed by a Data Quality Assessment in 2003 as well as the continuous expansion of post activity assessment implementation in 2003. In 2004 the Ministry of Health and Ministry of Planning revised downward the estimated number of children resulting in an increased percentage of children vaccinated. Increase in 2008 due to change in denominator, based on the General Population Census of Cambodia, 2008.

Data presented in chart

Year	WHO/ UNICEF estimate (%)	Reported to:*		Government official estimate (%)	Reported doses administered (%)**	Survey data (%)***	
		WHO (%)	UNICEF (%)			Survey 12-23 months	Survey <12 months
1980							
1981							
1982							
1983							
1984	27		27				
1985	29		29				
1986	54		54				
1987	53	53	53		53		
1988	39	39	39		39		
1989	39	39	39		39		
1990	34	34	34		34		
1991	39	39	39		39		
1992	33	33	33		33		
1993	36	36	36		36		
1994	50	53	53		53	72	55
1995	62	75	75		75		
1996	56	72	72		72		
1997	50	68	68		68	50	45
1998	52	63	63		63		
1999	55	63	63	63	63	55	41
2000	65	65	65	65	69		
2001	59	59	59	59	70		
2002	52	52	52	52	62		
2003	65	65	65	65	65		
2004	80	80	80	80	80	77	70
2005	79	79	79	79	79		
2006	78	78	78	78	78		
2007	79	79	79	79	79		
2008	89	89	89	89	89		

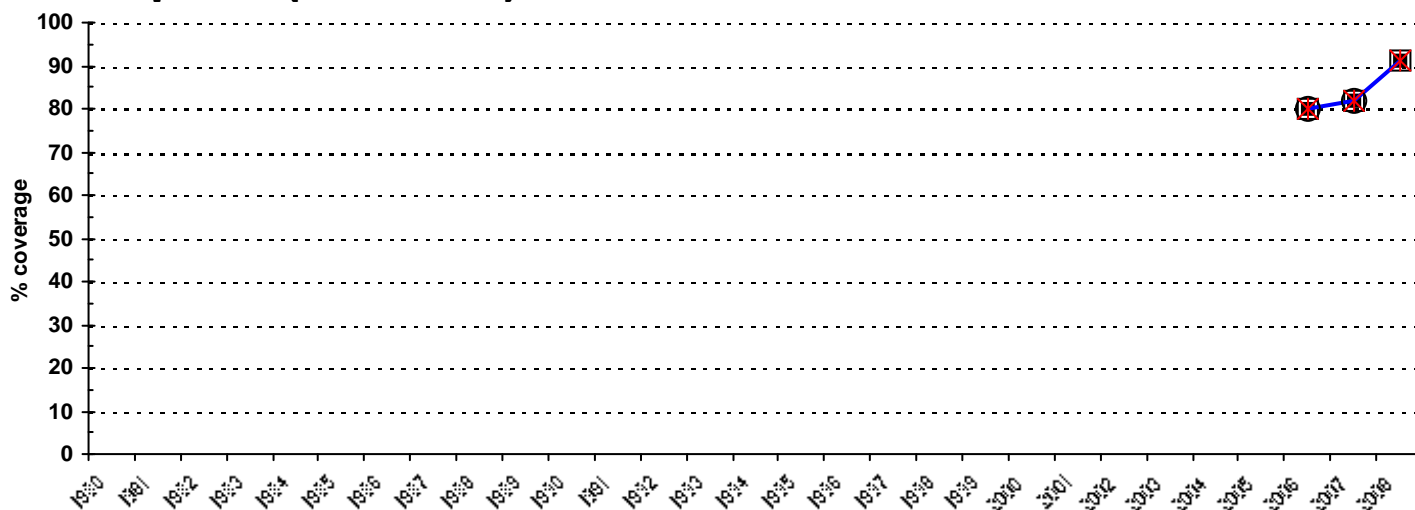
*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

**Coverage based on registration of doses administered by health care providers.

***In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

Cambodia

HepB3 (1980-2008)



Description of trend

Hepatitis B introduced in 2001 and DPT-HepB available nationwide. Estimates based on nationally reported data. Increase in 2008 due to change in denominator based on the General Population Census of Cambodia, 2008.

Data presented in chart

Year	WHO/ UNICEF estimate (%) —	Reported to:*		Government official estimate (%) ○	Reported doses administered (%)** ✕	Survey data (%)***	
		WHO (%) □	UNICEF (%) ■			Survey 12-23 months 	Survey <12 months +
1980							
1981							
1982							
1983							
1984							
1985							
1986							
1987							
1988							
1989							
1990							
1991							
1992							
1993							
1994							
1995							
1996							
1997							
1998							
1999							
2000							
2001							
2002							
2003							
2004							
2005							
2006	80	80	80	80	80		
2007	82	82	82	82	82		
2008	91	91	91		91		

*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

**Coverage based on registration of doses administered by health care providers.

***In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

Cambodia

Details Survey Data

Year Source

Antigen	Confirmation method	% coverage	Compliance with schedule	Age group	Sample size	% cards seen	Survey year	Comments
2004 Cambodia Demographic and Health Survey 2005								
BCG	Card or History	91.4		12-23 m	1517	66.7	2005/2006	
BCG	C or H <12 month	91		12-23 m	1517	66.7	2005/2006	
DTP1	Card or History	90.6		12-23 m	1517	66.7	2005/2006	
DTP1	C or H <12 month	89.7		12-23 m	1517	66.7	2005/2006	
DTP3	Card or History	78.3		12-23 m	1517	66.7	2005/2006	
DTP3	C or H <12 month	75.5		12-23 m	1517	66.7	2005/2006	
Pol3	Card or History	76.9		12-23 m	1517	66.7	2005/2006	
Pol3	C or H <12 month	74.2		12-23 m	1517	66.7	2005/2006	
MCV	Card or History	76.9		12-23 m	1517	66.7	2005/2006	
MCV	C or H <12 month	70.2		12-23 m	1517	66.7	2005/2006	
1999 Cambodia Demographic and Health Survey 2000, 2001								
BCG	Card or History	71.4		12-23 m	1253	47.5	2000	
BCG	C or H <12 month	66.1		12-23 m	1253	47.5	2000	
DTP1	Card or History	68		12-23 m	1253	47.5	2000	
DTP1	C or H <12 month	63.4		12-23 m	1253	47.5	2000	
DTP3	Card or History	48.5		12-23 m	1253	47.5	2000	
DTP3	C or H <12 month	42.7		12-23 m	1253	47.5	2000	
Pol3	Card or History	51.5		12-23 m	1253	47.5	2000	
Pol3	C or H <12 month	45.3		12-23 m	1253	47.5	2000	
MCV	Card or History	55.4		12-23 m	1253	47.5	2000	
MCV	C or H <12 month	41.4		12-23 m	1253	47.5	2000	
1997 National Health Survey Cambodia 1998, 1999								
BCG	Card or History	66.7		12-23 m	804		1998	
BCG	C or H <12 month			12-23 m	804		1998	
DTP1	Card or History	62		12-23 m	804		1998	
DTP1	C or H <12 month	60.9		12-23 m	804		1998	
DTP3	Card or History	46.5		12-23 m	804		1998	
DTP3	C or H <12 month	44.4		12-23 m	804		1998	
Pol3	Card or History	56.1		12-23 m	804		1998	
Pol3	C or H <12 month	53.8		12-23 m	804		1998	
MCV	Card or History	49.5		12-23 m	804		1998	
MCV	C or H <12 month	45.4		12-23 m	804		1998	
1994 Vaccine Coverage Surveys: Children 12-23 months of age, 12 Provinces, Kingdom of Cambodia 1995, in: Cambodia Disease Bulletin, 1996, No. 7								
BCG	Card or History	91.3		12-23 m	2520	72.1	1995	Confirmation method also includes Scar
BCG	C or H <12 month	87.8		12-23 m	2520	72.1	1995	Confirmation method also includes Scar
DTP1	Card or History	86.2		12-23 m	2520	72.1	1995	
DTP1	C or H <12 month	82.5		12-23 m	2520	72.1	1995	
DTP3	Card or History	70.1		12-23 m	2520	72.1	1995	
DTP3	C or H <12 month	58.6		12-23 m	2520	72.1	1995	
Pol3	Card or History	70.2		12-23 m	2520	72.1	1995	
Pol3	C or H <12 month	58.4		12-23 m	2520	72.1	1995	
MCV	Card or History	71.8		12-23 m	2520	72.1	1995	
MCV	C or H <12 month	55.4		12-23 m	2520	72.1	1995	

Cambodia

WHO/UNICEF Estimates of Protection at Birth (PAB) against tetanus

In countries where tetanus is recommended for girls and women coverage is usually reported as "TT2+", i.e. the proportion of (pregnant) women who have received their second or superior TT dose in a given year. TT2 + coverage, however, can under-represent the actual proportion of births that are protected against tetanus as it does not include women who have previously received protective doses, women who received one dose without documentation of previous doses, and women who received doses in TT (or Td) supplemental immunization activities (SIA). In addition, girls who have received DTP in their childhood and are entering childbearing age, may be protected with TT booster doses.

WHO and UNICEF have developed a model that takes into account the above scenarios, and calculates the proportion of births in a given year that can be considered as having been protected against tetanus - "Protection at Birth".

In this model, annual cohorts of women are followed from infancy through their life. A proportion receive DTP in infancy (estimated based on the WHO-UNICEF estimates of DTP3 coverage). In addition some of these women also receive TT through routine services when they are pregnant and may also receive TT during SIAs. The model also adjusts reported data, taking into account coverage patterns in other years, and/or results available through surveys. The duration of protection is then calculated, based on WHO estimates of the duration of protection by doses ever received. The proportion of births that are protected against tetanus as a result of maternal immunization reflects the tetanus immunization received by the mother throughout her life rather than simply the TT immunizations received during the current pregnancy.

¹ This model is described in: Griffiths U., Wolfson L., Quddus A., Younus M., Hafiz R.. Incremental cost-effectiveness of supplementary immunization activities to prevent neo-natal tetanus in Pakistan. Bulletin of the World Health Organization 2004; 82:643-651.

Cambodia

Year	PAB coverage estimate (%)
1980	
1981	
1982	
1983	6
1984	8
1985	9
1986	10
1987	10
1988	10
1989	10
1990	11
1991	11
1992	11
1993	26
1994	34
1995	45
1996	47
1997	46
1998	47
1999	50
2000	58
2001	62
2002	64
2003	71
2004	79
2005	81
2006	84
2007	87
2008	87