

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

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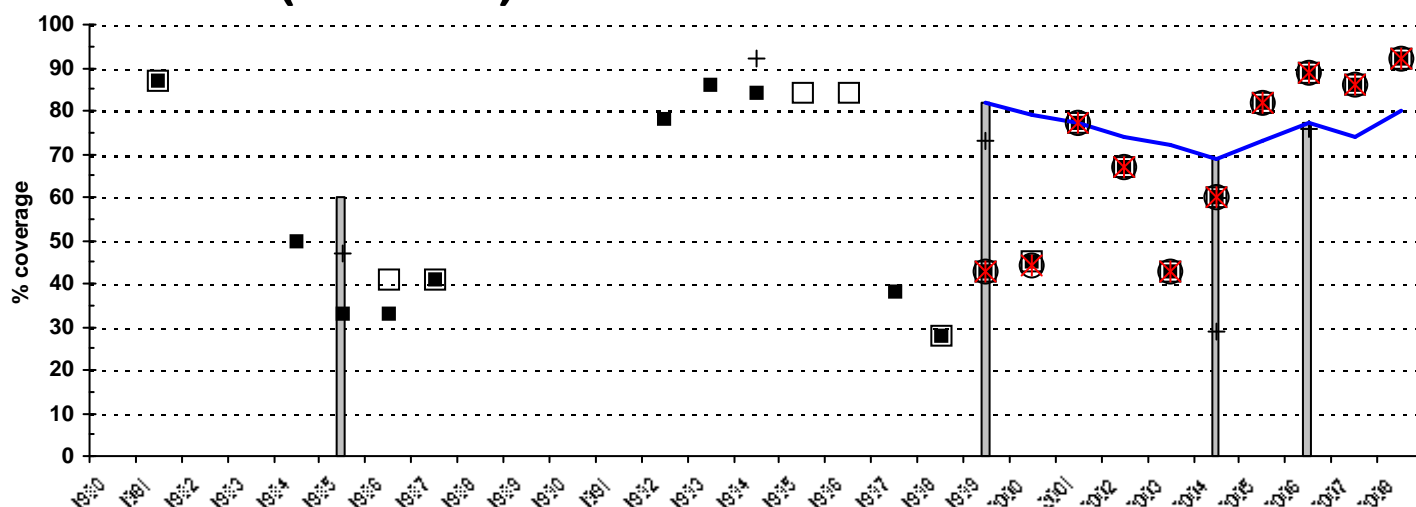
***Liberia***

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**July, 2009**

# Liberia

## BCG (1980-2008)



### Description of trend

Because of insufficient administrative and survey data during the late 1980s and most of the 1990s the preparation of a trend estimate is not possible. The unavailability of consistent data can be attributed to the unstable situation in the country. Survey data for 1995 (MICS) cover on three regions of the country. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimates are based on survey results.

### 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		87	87				
1982							
1983							
1984			50				
1985			33			60	47
1986		41	33				
1987		41	41				
1988							
1989							
1990							
1991							
1992			78				
1993			86				
1994			84				92
1995		84					
1996		84					
1997			38				
1998		28	28				
1999	82	43	43	43	43	82	73
2000	79	45	45	44	44		
2001	77	77	77	77	77		
2002	74	67	67	67	67		
2003	72	43	43	43	43		
2004	69	60	60	60	60	69	29
2005	73	82	82	82	82		
2006	77	89	89	89	89	77	76
2007	74	86	86	86	86		
2008	80	92	92	92	92		

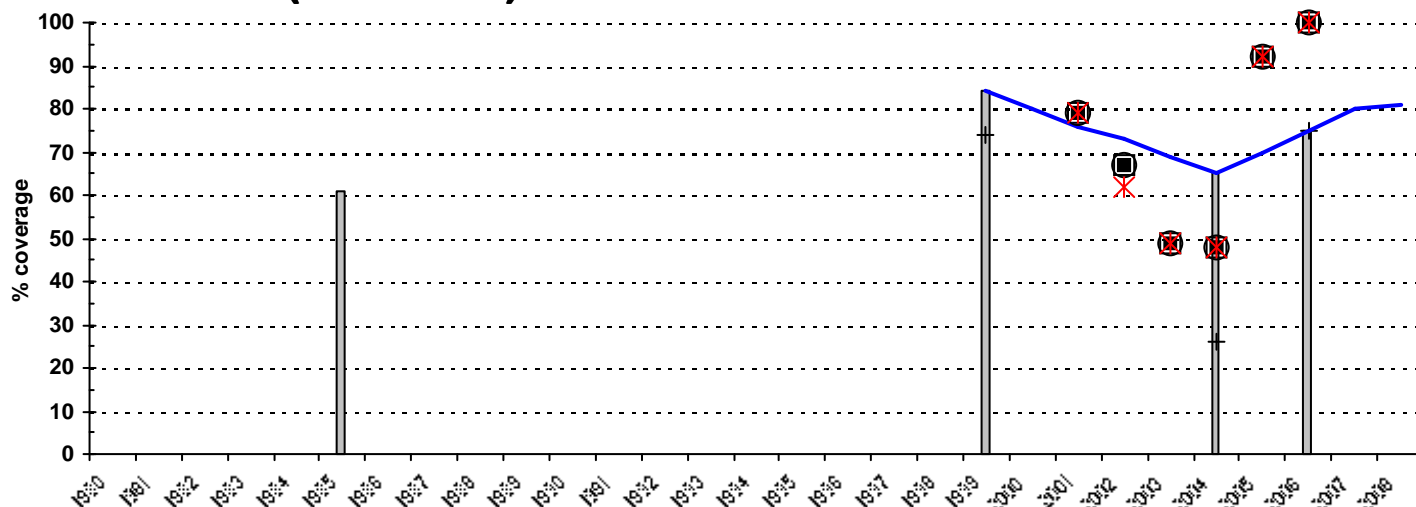
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*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.

# Liberia

## 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 2001 onward. Because of insufficient administrative and survey data during the late 1980s and most of the 1990s the preparation of a trend estimate is not possible. The unavailability of consistent data can be attributed to the unstable situation in the country. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimates are based on survey results.

### 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						61	
1986							
1987							
1988							
1989							
1990							
1991							
1992							
1993							
1994							
1995							
1996							
1997							
1998							
1999	84					84	74
2000	80						
2001	76	79	79	79	79		
2002	73	67	67	67	62		
2003	69	49	49	49	49		
2004	65	48	48	48	48	65	26
2005	70	92	92	92	92		
2006	75	100	100	100	100	75	75
2007	80	105	105	105	105		
2008	81	106	106	106	106		

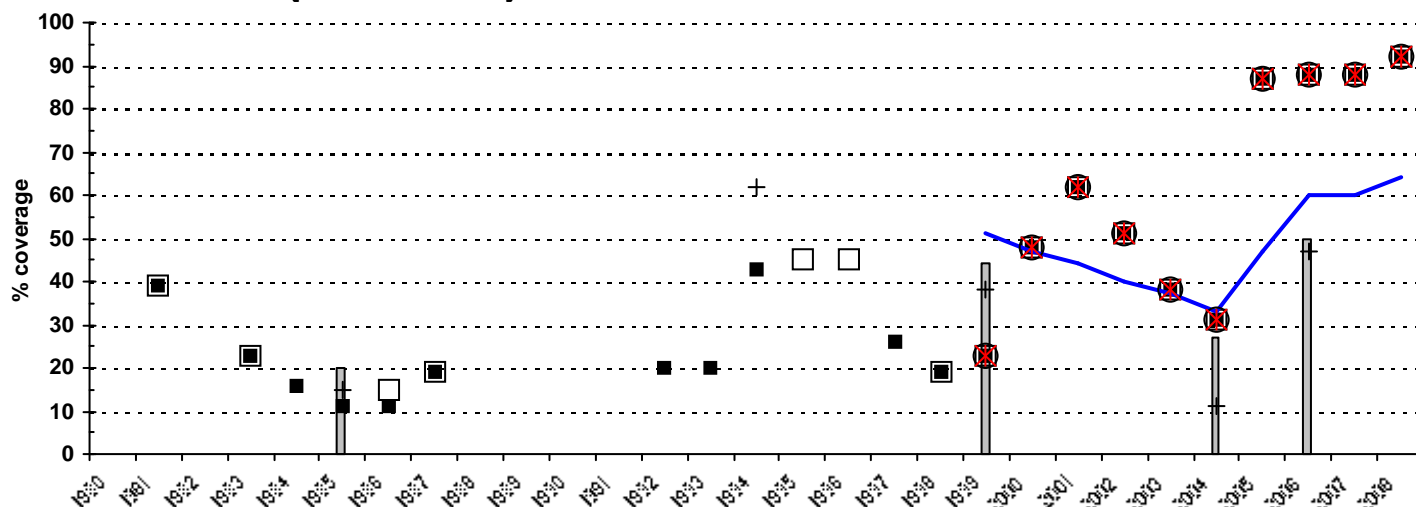
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*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.

# Liberia

## DTP3 (1980-2008)



### Description of trend

Because of insufficient administrative and survey data during the late 1980s and most of the 1990s the preparation of a trend estimate is not possible. The unavailability of consistent data can be attributed to the unstable situation in the country. Survey data for 1995 (MICS) cover on three regions of the country. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimates are based on survey results adjusted for recall bias.

### 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		39	39				
1982							
1983		23	23				
1984			16				
1985			11			20	15
1986		15	11				
1987		19	19				
1988							
1989							
1990							
1991							
1992			20				
1993			20				
1994			43				62
1995		45					
1996		45					
1997			26				
1998		19	19				
1999	51	23	23	23	23	44	38
2000	47	48	48	48	48		
2001	44	62	62	62	62		
2002	40	51	51	51	51		
2003	37	38	38	38	38		
2004	33	31	31	31	31	27	11
2005	47	87	87	87	87		
2006	60	88	88	88	88	50	47
2007	60	88	88	88	88		
2008	64	92	92	92	92		

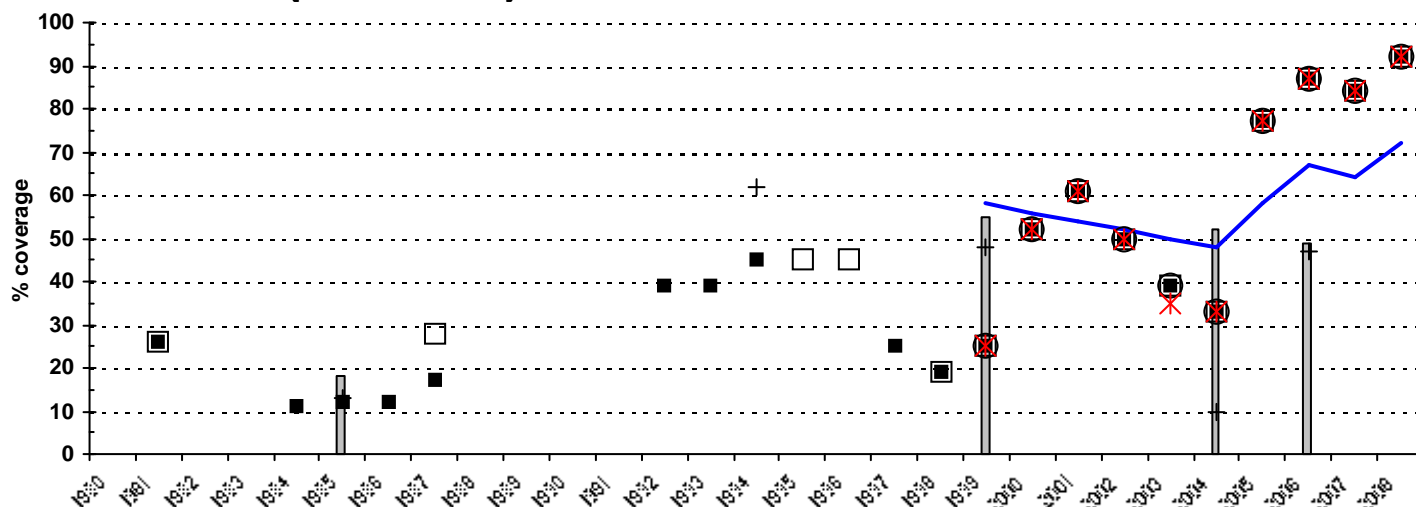
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*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.

# Liberia

## Pol3 (1980-2008)



### Description of trend

Because of insufficient administrative and survey data during the late 1980s and most of the 1990s the preparation of a trend estimate is not possible. The unavailability of consistent data can be attributed to the unstable situation in the country. Survey data for 1995 (MICS) covers or regions of the country. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimates are based on survey results adjusted for recall bias.

### 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		26	26				
1982							
1983							
1984			11				
1985			12			18	13
1986			12				
1987		28	17				
1988							
1989							
1990							
1991							
1992			39				
1993			39				
1994			45				62
1995		45					
1996		45					
1997			25				
1998		19	19				
1999	58	25	25	25	25	55	48
2000	56	52	52	52	52		
2001	54	61	61	61	61		
2002	52	50	50	50	50		
2003	50	39	39	39	35		
2004	48	33	33	33	33	52	10
2005	58	77	77	77	77		
2006	67	87	87	87	87	49	47
2007	64	84	84	84	84		
2008	72	92	92	92	92		

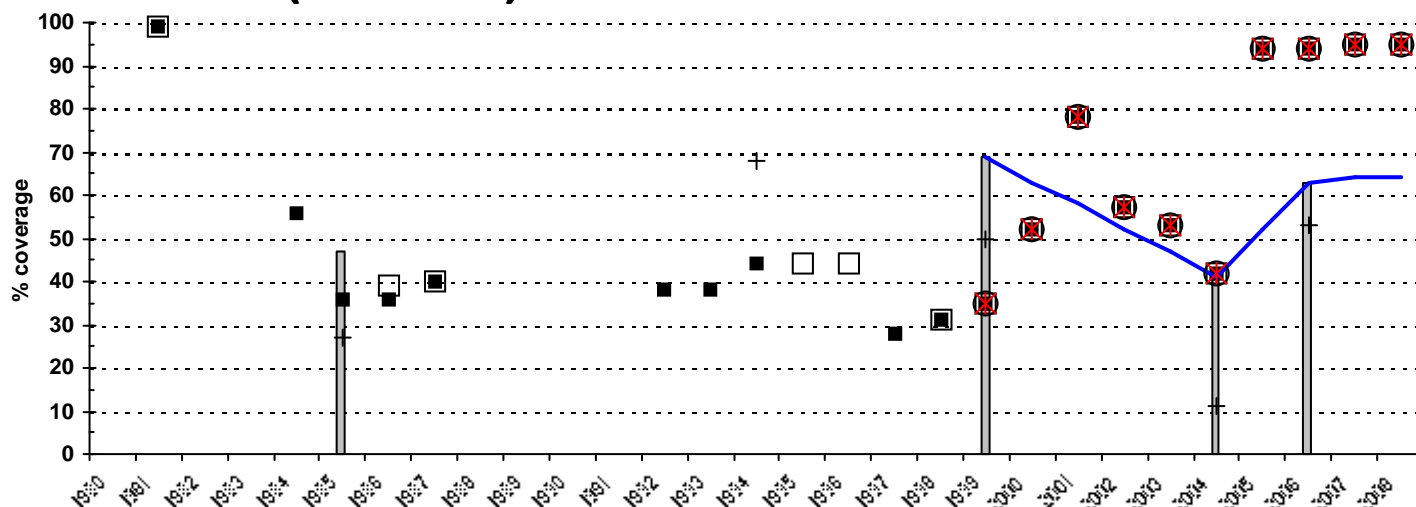
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*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.

# Liberia

## MCV (1980-2008)



### Description of trend

Because of insufficient administrative and survey data during the late 1980s and most of the 1990s the preparation of a trend estimate is not possible. The unavailability of consistent data can be attributed to the unstable situation in the country. Survey data for 1995 (MICS) covers three regions of the country. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimates are based on survey results.

### 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		99	99				
1982							
1983							
1984			56				
1985			36			47	27
1986		39	36				
1987		40	40				
1988							
1989							
1990							
1991							
1992			38				
1993			38				
1994			44				68
1995		44					
1996		44					
1997			28				
1998		31	31				
1999	69	35	35	35	35	69	50
2000	63	52	52	52	52		
2001	58	78	78	78	78		
2002	52	57	57	57	57		
2003	47	53	53	53	53		
2004	41	42	42	42	42	41	11
2005	52	94	94	94	94		
2006	63	94	94	94	94	63	53
2007	64	95	95	95	95		
2008	64	95	95	95	95		

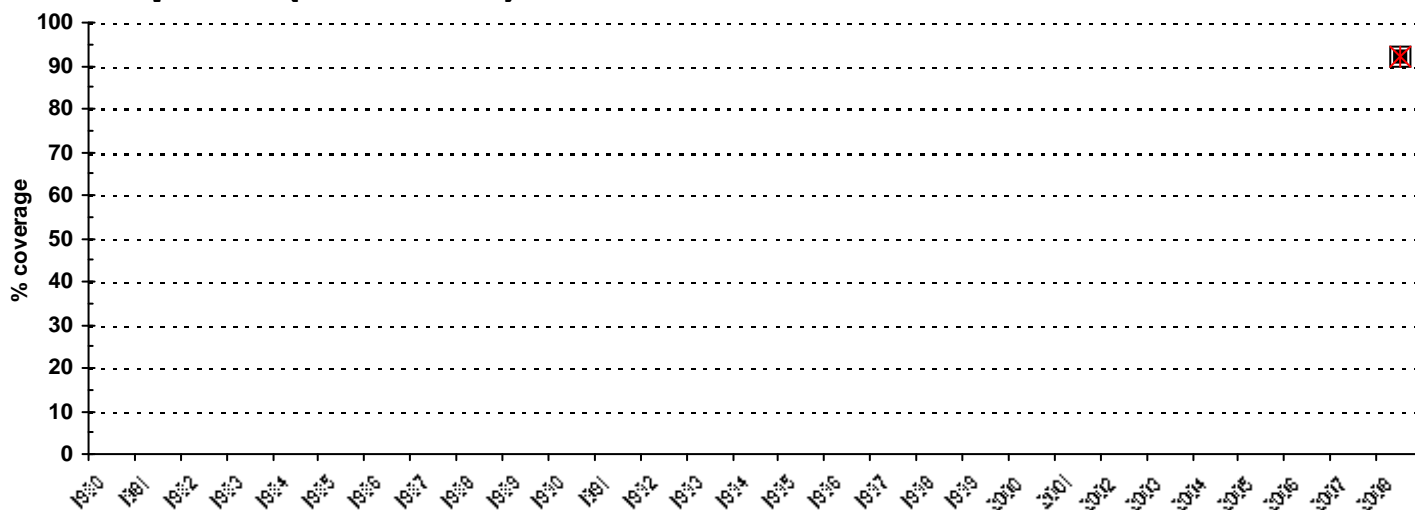
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*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.

# Liberia

## HepB3 (1980-2008)



### Description of trend

DTP-HepB-Hib pentavalent combination vaccine introduced in 1998. Estimates are based on DTP3 estimates.

### 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							
2007							
2008	64	92	92		92		

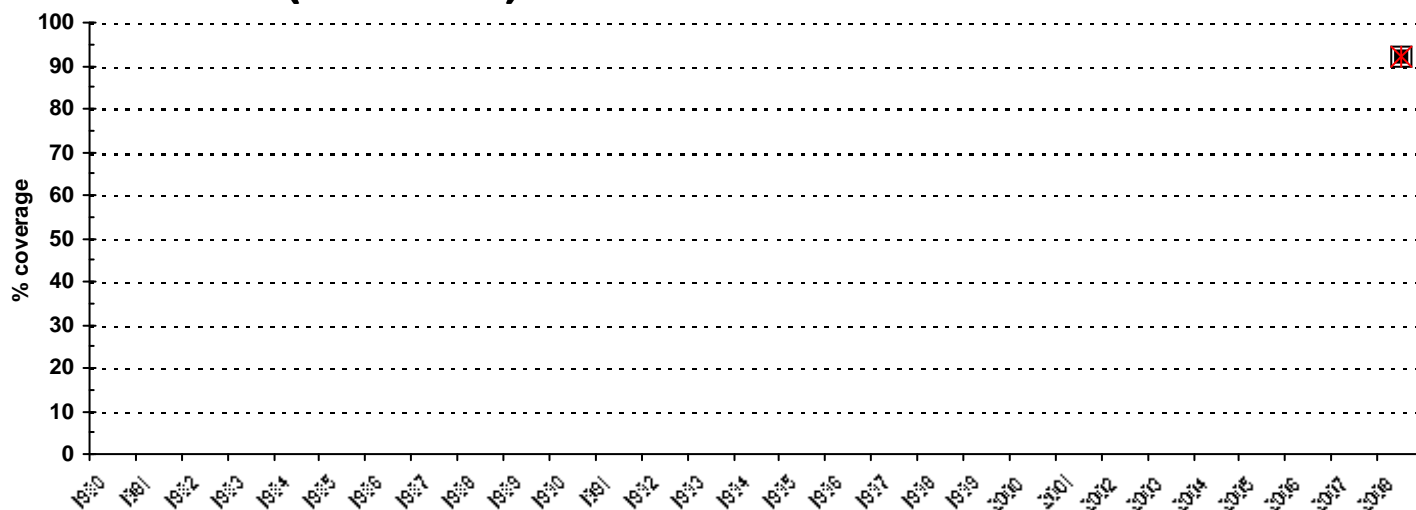
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*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.

# Liberia

## Hib3 (1980-2008)



### Description of trend

DTP-HepB-Hib pentavalent combination vaccine introduced in 2008. Estimates are based on DTP3 estimates.

### 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							
2007							
2008	64	92	92		92		

\*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.

# Liberia

## Details Survey Data

### Year Source

Antigen	Confirmation method	% coverage	Compliance with schedule	Age group	Sample size	% cards seen	Survey year	Comments
<b>2006 Liberia Demographic and Health Survey 2007</b>								
BCG	Card or History	77.1		12-23 m	977	47.6	2006/07	
BCG	C or H <12 month	76.5		12-23 m	977	47.6	2006/07	
DTP1	Card or History	75.3		12-23 m	977	47.6	2006/07	
DTP1	C or H <12 month	74.6		12-23 m	977	47.6	2006/07	
DTP3	Card or History	50.3		12-23 m	977	47.6	2006/07	
DTP3	C or H <12 month	47.2		12-23 m	977	47.6	2006/07	
Pol3	Card or History	49.4		12-23 m	977	47.6	2006/07	
Pol3	C or H <12 month	46.9		12-23 m	977	47.6	2006/07	
MCV	Card or History	63		12-23 m	977	47.6	2006/07	
MCV	C or H <12 month	52.6		12-23 m	977	47.6	2006/07	
PAB	n.a.	78.2		CBAW	3928		2006/07	
<b>2004 Liberia 2005 EPI Cluster Survey</b>								
BCG	Card or history	69.3	Crude	12-23 m	2907	44	2005	
BCG	Card	57.7	Crude	12-23 m	2907	44	2005	
BCG	Card	29.2	Valid	12-23 m	2907	44	2005	
DTP1	Card or history	65.2	Crude	12-23 m	2907	44	2005	
DTP1	Card	26.3	Valid	12-23 m	2907	44	2005	
DTP1	Card	34.8	Crude	12-23 m	2907	44	2005	
DTP3	Card or history	27.3	Crude	12-23 m	2907	44	2005	
DTP3	Card	10.6	Valid	12-23 m	2907	44	2005	
DTP3	Card	17.6	Crude	12-23 m	2907	44	2005	
Pol3	Card or history	51.7	Crude	12-23 m	2907	44	2005	
Pol3	Card	18.2	Crude	12-23 m	2907	44	2005	
Pol3	Card	9.5	Valid	12-23 m	2907	44	2005	
MCV	Card or history	40.6	Crude	12-23 m	2907	44	2005	
MCV	Card	25.1	Crude	12-23 m	2907	44	2005	
MCV	Card	10.9	Valid	12-23 m	2907	44	2005	
PAB	n.a.	14.6	Crude	CBAW	2962	53	2005	
<b>1999 Liberia National Nutrition Survey 1999-2000, 2001</b>								
BCG	Card or History	82.2		12-23 m	1000	26.6	1999/2000	
BCG	C or H <12 month	73		12-23 m	1000	26.6/52.6	1999/2000	
DTP1	Card or History	84.3		12-23 m	1000	26.6	1999/2000	
DTP1	C or H <12 month	74.2		12-23 m	1000	26.6/52.6	1999/2000	
DTP3	Card or History	44.3		12-23 m	1000	26.6	1999/2000	
DTP3	C or H <12 month	38.4		12-23 m	1000	26.6/52.6	1999/2000	
Pol3	Card or History	55.4		12-23 m	1000	26.6	1999/2000	
Pol3	C or H <12 month	48.2		12-23 m	1000	26.6/52.6	1999/2000	
MCV	Card or History	68.6		12-23 m	1000	26.6	1999/2000	
MCV	C or H <12 month	49.8		12-23 m	1000	26.6/52.6	1999/2000	
<b>1994 Liberia Multiple-Indicator Cluster Survey 1995</b>								
BCG	C or H <12 month	92		12-23 m	528		1995	
DTP1	C or H <12 month			12-23 m	528		1995	
DTP3	C or H <12 month	62		12-23 m	528		1995	
Pol3	C or H <12 month	62		12-23 m	528		1995	
MCV	C or H <12 month	68		12-23 m	528		1995	

# Liberia

## Details Survey Data

### Year Source

Antigen	Confirmation method	% coverage	Compliance with schedule	Age group	Sample size	% cards seen	Survey year	Comments
<b>1985 Demographic and Health Surveys Comparative Studies No. 1, Immunization, Boerma et al., Institute for Resource Development/Macro Systems, 1990</b>								
BCG	Card or History	60		12-23 m	816		1986	
BCG	C or H <12 month	47		12-23 m	816		1986	
DTP1	Card or History	61		12-23 m	816		1986	
DTP1	C or H <12 month			12-23 m	816		1986	
DTP3	Card or History	20		12-23 m	816		1986	
DTP3	C or H <12 month	15		12-23 m	816		1986	
Pol3	Card or History	18		12-23 m	816		1986	
Pol3	C or H <12 month	13		12-23 m	816		1986	
MCV	Card or History	47		12-23 m	816		1986	
MCV	C or H <12 month	27		12-23 m	816		1986	

## **Liberia**

### **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.

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<sup>1</sup> 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.

## Liberia

<b>Year</b>	<b>PAB coverage estimate (%)</b>
1980	
1981	54
1982	48
1983	41
1984	25
1985	18
1986	22
1987	20
1988	24
1989	28
1990	33
1991	38
1992	43
1993	47
1994	52
1995	55
1996	57
1997	60
1998	56
1999	44
2000	51
2001	59
2002	64
2003	56
2004	59
2005	60
2006	73
2007	90
2008	91