

**APPENDIX G
Data and Statistics**

**Reported Cases and Deaths
from Vaccine-Preventable Diseases: 1950-2009G-1**

Impact of Vaccines in the 20th & 21st CenturiesG-7

Vaccine Coverage Levels: 1962-2009G-8

Appendix G

Reported Cases and Deaths from Vaccine Preventable Diseases, United States, 1950-2009

Year	Diphtheria		Tetanus		Pertussis		Polio (paralytic)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1950	5,796	410	486	336	120,718	1,118	33,300	1,904
1951	3,983	302	506	394	68,687	951	28,386	1,551
1952	2,960	217	484	360	45,030	402	57,879	3,145
1953	2,355	156	506	337	37,129	270	35,592	1,450
1954	2,041	145	524	332	60,886	373	38,476	1,368
1955	1,984	150	462	265	62,786	467	28,985	1043
1956	1,568	103	468	246	31,732	266	15,140	566
1957	1,211	81	447	279	28,295	183	5,485	221
1958	918	74	445	303	32,148	177	5,787	255
1959	934	72	445	283	40,005	269	8,425	454
1960	918	69	368	231	14,809	118	3,190	230
1960	617	68	379	242	11,468	76	1,312	90
1962	444	41	322	215	17,749	83	910	60
1963	314	45	325	210	17,135	115	449	41
1964	293	42	289	179	13,005	93	122	17
1965	164	18	300	181	6,799	55	72	16
1966	209	20	235	158	7,717	49	113	9
1967	219	32	263	144	9,718	37	41	16
1968	260	30	178	66	4,810	36	53	24
1969	241	25	192	89	3,285	13	20	13
1970	435	30	148	79	4,249	12	33	7
1971	215	13	116	64	3036	18	21	18
1972	152	10	128	58	3,287	6	31	2
1973	228	10	101	40	1,759	5	8	10
1974	272	5	101	44	2,402	14	7	3
1975	307	5	102	45	1,738	8	13	9
1976	128	7	75	32	1,010	7	10	16
1977	84	5	87	24	2,177	10	19	16
1978	76	4	86	32	2,063	6	8	13

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Year	Diphtheria		Tetanus		Pertussis		Polio (paralytic)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1979	59	1	81	30	1,623	6	22	1
1980	3	1	95	28	1,730	11	9	2
1981	5	0	72	31	1,248	6	10	0
1982	2	1	88	22	1,895	4	12	0
1983	5	0	91	22	2,463	5	13	0
1984	1	0	74	20	2,276	7	9	0
1985	3	0	83	23	3,589	4	8	0
1986	0	0	64	22	4,195	6	10	0
1987	3	1	48	16	2,823	1	9	0
1988	2	0	53	17	3,450	4	9	0
1989	3	0	53	9	4,157	12	10	0
1990	4	1	64	11	4,570	12	6	0
1991	5	0	57	11	2,719	0	9	1
1992	4	1	45	9	4,083	5	6	0
1993	0	0	48	11	6,586	1	3	0
1994	2	0	51	9	4,617	8	8	0
1995	0	1	41	5	5,137	6	6	1
1996	2	0	36	1	7,796	4	7	0
1997	4	0	50	4	6,564	6	7	0
1998	1	1	34	7	6,279	5	2	0
1999	1	1	40	7	7,288	7	2	0
2000	1	0	35	5	7,867	12	0	0
2001	2	0	37	5	7,580	17	0	0
2002	1	0	25	5	9,771	18	0	0
2003	1	1	20	4	11,647	11	0	0
2004	0	0	34	4	25,827	16	0	0
2005	0	0	27	1	25,616	31	1 [†]	0
2006	0	0	41	4	15,632	9	0	0
2007	0	1	28	5	10,454	9	0	0
2008	0	NA	19	NA	13,278	NA	0	NA
2009	0	NA	18	NA	16,858	NA	1 [§]	NA

[†]Vaccine-associated polio acquired outside the United States

[§]Vaccine-associated polio in an immunosuppressed person

Year	Measles		Mumps		Rubella		CRS
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases
1950	319,124	468	NR		NR		NR
1951	530,118	683	NR		NR		NR
1952	683,077	618	NR		NR		NR
1953	449,146	462	NR		NR		NR
1954	682,720	518	NR		NR		NR
1955	555,156	345	NR		NR		NR
1956	611,936	530	NR		NR		NR
1957	486,799	389	NR		NR		NR
1958	763,094	552	NR		NR		NR
1959	406,162	385	NR		NR		NR
1960	441,703	380	NR	42	NR	12	NR
1961	423,919	434	NR	53	NR	14	NR
1962	481,530	408	NR	43	NR	8	NR
1963	385,156	364	NR	48	NR	16	NR
1964	458,083	421	NR	50	NR	53	NR
1965	261,904	276	NR	31	NR	16	NR
1966	204,136	261	NR	43	46,975	12	NR
1967	62,705	81	NR	37	46,888	16	NR
1968	22,231	24	152,209	25	49,371	24	NR
1969	25,826	41	90,918	22	57,686	29	62
1970	47,351	89	104,953	16	56,552	31	67
1971	75,290	90	124,939	22	45,086	20	44
1972	32,275	24	74,215	16	25,507	14	32
1973	26,690	23	69,612	12	27,804	16	30
1974	22,094	20	59,128	6	11,917	15	22
1975	24,374	20	59,647	8	16,652	21	32
1976	41,126	12	38,492	8	12,491	12	22
1977	57,345	15	21,436	5	20,395	17	29
1978	26,871	11	16,817	3	18,269	10	30
1979	13,597	6	14,255	2	11,795	1	57
1980	13,506	11	8,576	2	3,904	1	14
1981	3,124	2	4,941	1	2,077	5	10

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Year	Measles		Mumps		Rubella		CRS
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases
1982	1,714	2	5,270	2	2,325	4	13
1983	1,497	4	3,355	2	970	3	7
1984	2,587	1	3,021	1	752	1	2
1985	2,822	4	2,982	0	630	1	2
1986	6,282	2	7,790	0	55	1	13
1987	3,655	2	12,848	2	306	0	3
1988	3,396	3	4,866	2	225	1	2
1989	18,193	32	5,712	3	396	4	2
1990	27,786	64	5,292	1	1,125	8	32
1991	9,643	27	4,264	1	1,401	1	34
1992	2,237	4	2,572	0	160	1	11
1993	312	0	1,692	0	192	0	4
1994	963	0	1,537	0	227	0	7
1995	309	2	906	0	128	1	3
1996	508	1	751	1	238	0	2
1997	138	2	683	0	181	0	9
1998	100	0	666	1	364	0	9
1999	100	2	387	1	267	0	6
2000	86	1	338	2	176	0	8
2001	116	1	266	0	23	2	3
2002	44	0	270	1	18	0	1
2003	56	1	231	0	7	0	4
2004	37	0	258	0	10	1	0
2005	66	1	314	0	11	0	1
2006	55	0	6,584	1	11	0	1
2007	43	0	800	0	12	1	0
2008	140	NA	454	NA	16	NA	0
2009	71	NA	1,991	NA	3	NA	2

Year	Hepatitis A		Hepatitis B		Haemophilus		Varicella	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1966	32,859	NA	1,497	NA	NR	NR	NR	
1967	38,909	NA	2,458	NA	NR	NR	NR	
1968	45,893	NA	4,829	NA	NR	NR	NR	
1969	48,416	NA	5,909	NA	NR	NR	NR	
1970	56,797	NA	8,310	NA	NR	NR	NR	
1971	59,606	NA	9,556	NA	NR	NR	NR	
1972	54,074	NA	9,402	NA	NR	NR	164,114	122
1973	50,749	NA	8,451	NA	NR	NR	182,927	138
1974	40,358	NA	10,631	NA	NR	NR	141,495	106
1975	35,855	NA	13,121	NA	NR	NR	154,248	83
1976	33,288	NA	14,973	NA	NR	NR	183,990	106
1977	31,153	NA	16,831	NA	NR	NR	188,396	89
1978	29,500	NA	15,016	NA	NR	NR	154,089	91
1979	30,407	129	15,452	260	NR	NR	199,081	103
1980	29,087	112	19,015	294	NR	NR	190,894	78
1981	25,802	93	21,152	394	NR	NR	200,766	84
1982	23,403	83	22,177	375	NR	NR	167,423	61
1983	21,532	82	24,318	438	NR	NR	177,462	57
1984	22,040	77	26,115	465	NR	NR	221,983	53
1985	23,210	80	26,611	490	NR	NR	178,162	68
1986	23,430	65	26,107	557	NR	NR	183,243	47
1987	25,280	77	25,916	595	NR	NR	213,196	89
1988	28,507	70	23,177	621	NR	NR	192,857	83
1989	35,821	88	23,419	711	NR	NR	185,441	89
1990	31,441	76	21,102	816	NR	NR	173,099	120
1991	24,378	71	18,003	912	2,764	17	147,076	81
1992	23,112	82	16,126	903	1,412	16	158,364	100
1993	24,238	95	13,361	1041	1,419	7	134,722	100
1994	26,796	97	12,517	1120	1,174	5	151,219	124
1995	31,582	142	10,805	1027	1,180	12	120,624	115
1996	31,032	121	10,637	1082	1,170	7	83,511	81

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Year	Hepatitis A		Hepatitis B		Haemophilus		Varicella	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1997	30,021	127	10,416	1,030	1,162	7	98,727	99
1998	23,229	114	10,258	1,052	1,194	11	82,455	81
1999	17,047	134	7,694	832	1,309	6	46,016	48
2000	13,397	106	8,036	886	1,398	6	27,382	44
2001	10,609	83	7,843	769	1,597	11	22,536	26
2002	8,795	76	7,996	762	1,743	7	22,841	32
2003	7,653	54	7,526	685	2,013	5	20,948	16
2004	5,970	58	6,741	643	2,085	11	26,659	19
2005	4,488	43	5,119	553	2,304	4	32,242	13
2006	3,579	34	4,713	700	2,436	4	48,445	18
2007	2,979	34	4,519	719	2,541	10	40,146	14
2008	2,585	NA	4,033	NA	2,886	NA	30,386	NA
2009	1,987	NA	3,405		3,022	NA	20,480	NA

Notes

NA - Not Available

NR - Not nationally reportable

CRS: Congenital Rubella Syndrome

Prior to 1966, hepatitis A and B were not separated from other types of hepatitis. Prior to 1978, deaths from hepatitis A and B were not separated from deaths from other types of hepatitis.

Haemophilus (Hi) reporting includes all serotypes and all ages. In 2009, 35 cases of invasive Hi type B disease were reported among children <5 years of age.

Varicella was removed from the nationally notifiable disease list in 1991. In 2009, varicella cases were reported from 33 states, the District of Columbia, Guam, and Puerto Rico.

Sources:

Final totals for 2009: *MMWR* 2010;59(32):1025-39

Final totals for 2008: *MMWR* 2009;58(31):856-69

Final totals for 2007: *MMWR* 2008;57(33):903-13.

Final totals for 2006: *MMWR* 2007;56(33):851-64.

Final totals for 2005: *MMWR* 2006;55(32):883-93.

Final totals for 2004: Summary of Notifiable Diseases, United States, 2004. *MMWR* 2006;53(53):18-19.

Reportable disease (1950-2003): Earlier editions of Summary of Notifiable Diseases, published annually in *MMWR*.

Deaths: National Center for Health Statistics Mortality Report for respective years.

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Impact of Vaccines in the 20th & 21st Centuries

Comparison of 20th Century Annual Morbidity & Current Morbidity

Disease	20 th Century Annual Morbidity*	2010 Reported Cases [†]	% Decrease
Smallpox	29,005	0	100%
Diphtheria	21,053	0	100%
Pertussis	200,752	21,291	89%
Tetanus	580	8	99%
Polio (paralytic)	16,316	0	100%
Measles	530,217	61	>99%
Mumps	162,344	2,528	98%
Rubella	47,745	6	>99%
CRS	152	0	100%
<i>Haemophilus influenzae</i> (<5 years of age)	20,000 (est.)	270 (16 serotype b and 254 unknown serotype)	99%

Sources:

* JAMA. 2007;298(18):2155-2163

† CDC. MMWR January 7, 2011;59(52);1704-1716. (Provisional MMWR week 52 data)

Comparison of Pre-Vaccine Era Estimated Annual Morbidity with Current Estimate

Disease	Pre-Vaccine Era Annual Estimate	2008 Estimate	% Decrease
Hepatitis A	117,333*	11,049	91%
Hepatitis B (acute)	66,232*	11,269	83%
Pneumococcus (invasive)			
All ages	63,067*	44,000 [†]	30%
<5 years of age	16,069*	4,167 [¶]	74%
Rotavirus (hospitalizations <5 years of age)	62,500 [§]	7,500 [‡]	88%
Varicella	4,085,120*	449,363	89%

Sources:

* JAMA. 2007;298(18):2155-2163

† CDC. Active Bacterial Core surveillance Report; *S. pneumoniae* 2008. (www.cdc.gov/abcs/survreports/spnew08.pdf)

¶ 2008 Active Bacterial Core surveillance

§ CDC. MMWR. February 6, 2009 / 58(RR02); 1-25

‡ New Vaccine Surveillance Network

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Vaccine Coverage Levels – United States, 1962-2009

Year	DTP 3+	DTP4+	Polio 3+	MMR*	Hib3+	Var	PCV3+	HepB3+	Combined 4-3-1	Combined 4-3-1-3
1962	67.3									
1963	71.4									
1964	74.6									
1965	72.7									
1966	74.0									
1967	77.9			60.0						
1968	76.8			61.5						
1969	77.4			61.4						
1970	76.4			58.4						
1971	77.8			62.2						
1972	74.1			62.8						
1973	71.7		59.5	61.0						
1974	72.4		60.0	63.4						
1975	73.2		63.6	65.5						
1976	72.7		61.3	66.3						
1977	69.6		62.6	65.0						
1978	66.6		59.5	63.6						
1979	64.4		59.7	66.5						
1080	66.0		58.9	66.6						
1981	68.1		59.2	66.8						
1982	67.1		57.0	67.6						
1983	65.4		56.9	66.3						
1984	65.0		53.2	65.8						
1985	63.6		53.6	61.2						
1986 [†]										
1987 [†]										
1988 [†]										
1989 [†]										
1990 [†]										
1991	68.8		53.2	82.0						
1992	83.0	59.0	72.4	82.5	28.2			8.0	68.7	55.3
1993	88.2	72.1	78.9	84.1	55.0			16.3	67.1	
1994	93.0	77.7	83.0	89.0	86.0			37.0	75.0	
1995	94.7	78.5	87.9	87.6	91.7			68.0	76.2	74.2
1996	95.0	81.1	91.1	90.7	91.7	16.0		81.8	78.4	76.5
1997	95.5	81.5	90.8	90.5	92.7	25.9		83.7	77.9	76.2
1998	95.6	83.9	90.8	92.0	93.4	43.2		87.0	80.6	79.2
1999	95.9	83.3	89.6	91.5	93.5	57.5		88.1	79.9	78.4
2000	94.1	81.7	89.5	90.5	93.4	67.8		90.3	77.6	76.2
2001	94.3	82.1	89.4	91.4	93.0	76.3		88.9	78.6	77.2
2002	94.9	81.6	90.2	91.6	93.1	80.6	40.8	88.9	78.5	77.5
2003	96.0	84.8	91.6	93.0	93.9	84.8	68.1	92.4	82.2	81.3
2004	95.9	85.5	91.6	93.0	93.5	87.5	73.2	92.4	83.5	82.5
2005	96.1	85.7	91.7	91.5	93.9	87.9	82.8	92.9	83.1	82.4
2006	95.8	85.2	92.9	92.4	93.4	89.3	87.0	93.4	83.2	82.3
2007	95.5	84.5	92.6	92.3	92.6	90.0	90.0	92.7	82.8	81.1
2008		84.6	93.6	92.1	90.9	90.7	80.1 [§]	93.5		
2009	94.0	83.9	92.8	90.0	92.1	89.6	92.6	92.4	81.5	

*Previously reported as measles-containing vaccine (MCV)

†No national coverage data were collected from 1986 through 1990.

§In 2008, data are for PCV4+.

Combined 4-3-1: Four or more doses of DTP/DTaP/DT, three or more doses of poliovirus vaccine, and one or more doses of any measles-containing vaccine.

Combined 4-3-1-3: Four or more doses of DTP/DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of any measles-containing vaccine, and three or more doses of *Haemophilus influenzae* type b vaccine.

Data prior to 1993 were collected by the National Health Interview Survey and represent 2-year-old children. Data from 1993 forward are from the National Immunization Survey and represent 19-35 month-old children. Different methods were used for the two surveys.

Data are available for combinations of vaccines not reflected on this table. For more information about annual coverage figures from 1994 to the present, see <http://www.cdc.gov/vaccines/stats-surv/nis/default.htm>.

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