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International Notes

National Poliomyelitis Immunization Days — People's Republic of China, 1993

In 1988, the World Health Organization (WHO) established the goal of global eradication of poliomyelitis by the year 2000 (*1*). Based on cases officially reported to WHO, progress toward eradication has been substantial: in 1992, a total of 15,445 paralytic poliomyelitis cases were reported worldwide, compared with 32,419 cases in 1988. Beginning in December 1993, the People's Republic of China will conduct a series of two National Immunization Days that target approximately 100 million children (all children aged <4 years) to receive oral poliovirus vaccine (OPV) in each of two separate rounds of vaccination, possibly representing the largest public health event of its kind in history. This report summarizes the plans for National Immunization Days and efforts in China to eradicate poliomyelitis by 1995.

Because of the large population in China (approximately 21% of the world's population) and the proportion of worldwide poliomyelitis cases occurring in China, this vaccination initiative is crucial to the global eradication effort. In 1990, of the 21,627 total poliomyelitis cases reported to WHO, 5065 (23.4%) occurred in China; in 1992, however, the number reported by China decreased to 1191 (7.7%) of 15,445 total cases. The absolute and relative decreases in poliomyelitis in China have been associated with initiation of supplementary vaccination activities by an increasing number of provincial health departments. These activities have been conducted in addition to routine vaccination of children with three doses of OPV at ages 2, 3, and 4 months.

Supplemental vaccination activities in China have included administering one or two extra doses of OPV to young children (generally those aged <4 years) at 1–2-month intervals during the low-incidence season for poliomyelitis (i.e., December–April). The number of provinces conducting the WHO-recommended two rounds of supplemental vaccination activities during low-incidence season increased from six of 30 during 1991–92 to 25 provinces during 1992–93. As a consequence, the number of supplemental doses of OPV administered during the low-incidence season increased from 71 million during 1990–91 to 186 million during 1992–93 (Figure 1). During January–August 1993, 348 poliomyelitis cases were reported through the notifiable diseases reporting system, compared with 877 cases during January–August

Poliomyelitis — Continued

1992; in addition, there was no characteristic summertime seasonal increase in reported cases during 1993 (Figure 2).

Although reported cases of poliomyelitis in 1993 have occurred throughout China, a high proportion have been reported from southern provinces. Of the 348 cases reported through August 1993, 107 (31%) were from one southern province (Guangdong); in addition, 231 (66%) have been reported from six southern provinces (Fujian, Guangdong, Guangxi, Guizhou, Hainan, and Jiangxi), which comprise 19% of the population of China.

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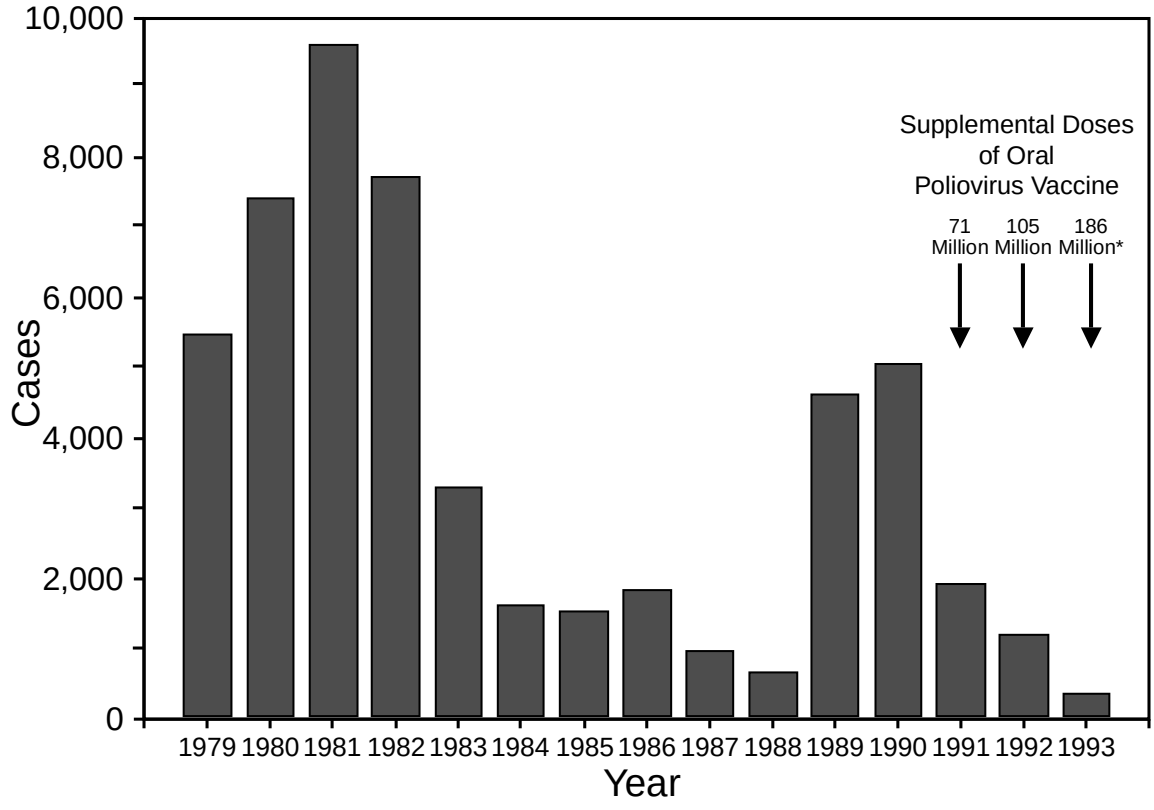
Editorial Note: The plan for implementing National Immunization Days in China has been based on three factors: 1) the success of the provincial supplemental vaccination activities, 2) concerns about the potential accumulation of susceptible children since the nationwide poliomyelitis outbreak during 1989–1990 (Figure 1) in parts of China still not adequately covered by previous provincial supplemental vaccination activities, and 3) the goal of eradicating poliomyelitis from the Western Pacific Region (WPR) of WHO by 1995. China and other member countries in the WPR have

FIGURE 1. Reported cases of poliomyelitis and supplemental doses of vaccine administered, by year — People's Republic of China, January 1979–August 1993



*Provisional data.

Poliomyelitis — Continued

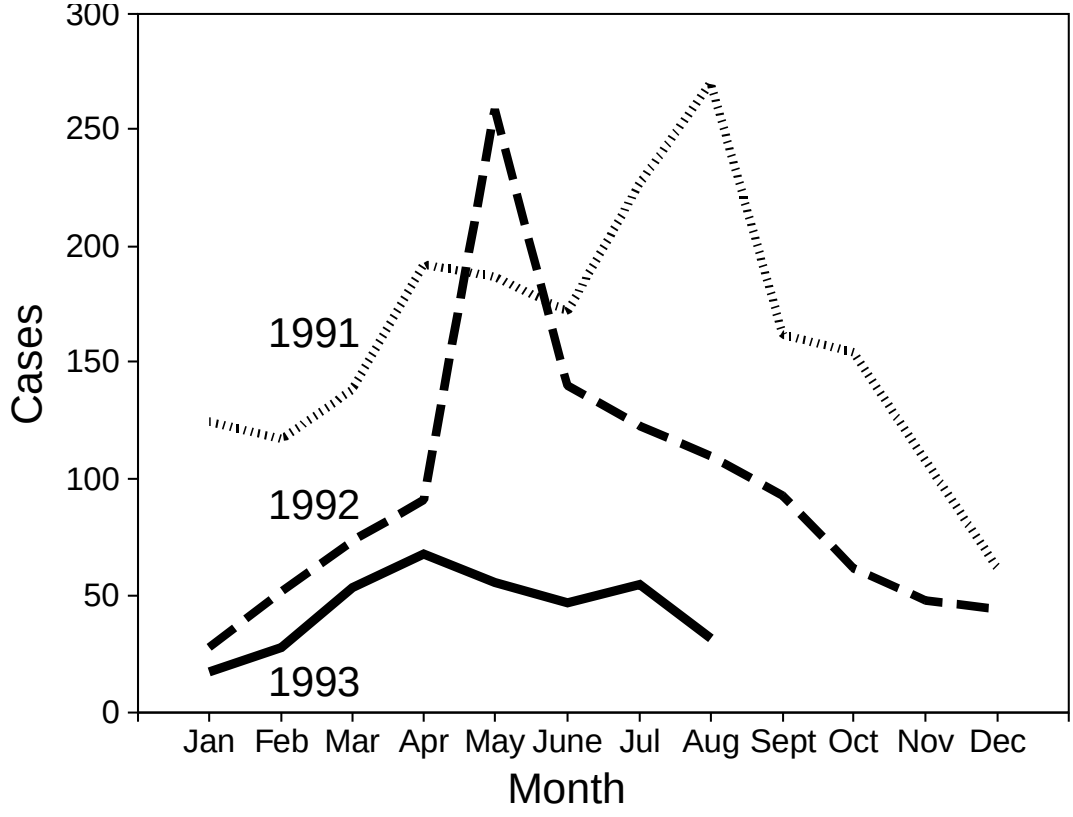
committed to eradicate poliomyelitis by 1995. Only five of the 29 countries in the region (Cambodia, China, the Lao People's Democratic Republic, Philippines, and Vietnam) continue to report endemic poliomyelitis—of the 1908 cases that occurred in this region during 1992, 1191 (62%) were reported from China.

The apparent elimination of wild poliovirus infections in the Americas and the substantial progress already achieved in the WPR underscore the feasibility of achieving this goal in WPR and other regions of the world (*2–4*). The successful implementation of National Immunization Days will assist WHO and member countries in global application of the strategies for eradication as recommended by WHO. Additional National Immunization Days in China are planned for 1994–95 and 1995–96. The success of such public health efforts is dependent on the support and collaboration of organizations from the public and private sectors including, for example, the Ministry of Public Health, health departments in each of the Chinese provinces, Rotary International, the Japanese International Cooperation Agency, WHO, and the United Nations Children's Fund (UNICEF).

References

1. World Health Assembly. Global eradication of poliomyelitis by the year 2000. Geneva: World Health Organization, 1988. (Resolution WHA41.28).
2. CDC. Update: eradication of paralytic poliomyelitis in the Americas. MMWR 1992;41:681–3.
3. CDC. Update: polio eradication—the Americas, 1993. MMWR 1993;42:685–6.
4. Foege WH. A world without polio. JAMA 1993;270:1859–60.

FIGURE 2. Reported poliomyelitis cases from routine notifiable diseases reporting system, by month — People's Republic of China, January 1991–August 1993



International Notes

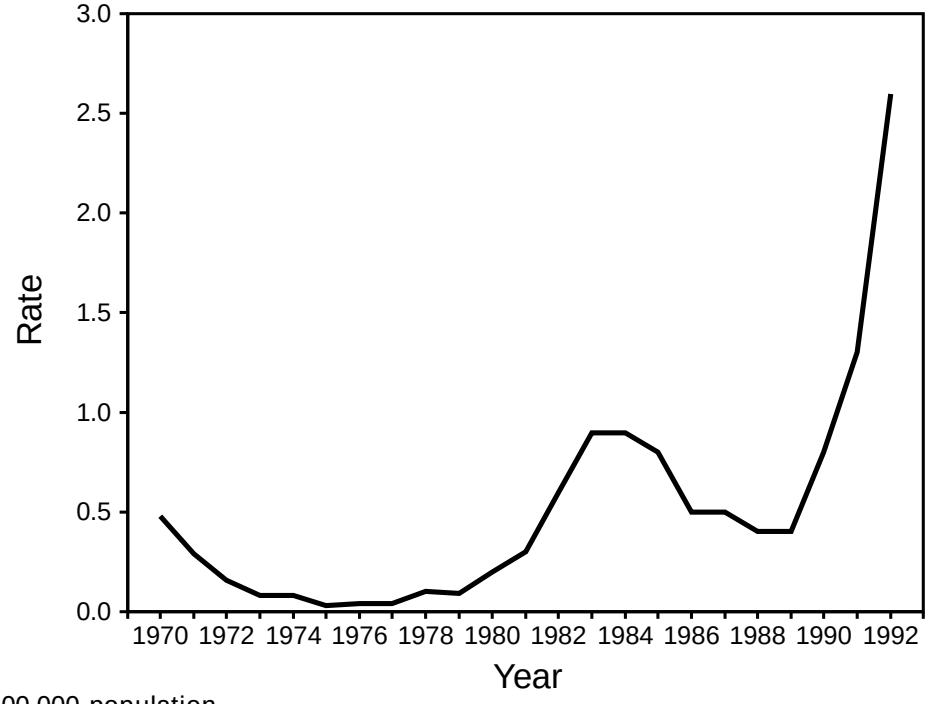
Diphtheria Outbreak — Russian Federation, 1990–1993

Despite high levels of vaccination coverage against diphtheria, an ongoing outbreak of diphtheria has affected parts of the Russian Federation since 1990 (*1*); as of August 31, 1993, 12,865 cases had been reported. This report summarizes epidemiologic information about this outbreak for January 1990–August 1993, and is based on reports from public health officials in the Russian Federation.

In the Russian Federation, diphtheria surveillance data are reported by physicians to the local reporting center of the Sanitary Epidemiologic Service (SES). Tabulated cases are reported to regional SESs, then forwarded to the Russian Republican Information and Analytic Center for compilation of national morbidity statistics, which are published monthly in *The Health of the Population and the Environment*. Diphtheria cases are investigated by local epidemiologists; case investigation forms are forwarded to the Gabrichevsky Research Institute of Epidemiology and Microbiology in Moscow for further analysis.

Reported cases of diphtheria in the Russian Federation increased from 1211 (0.8 cases per 100,000 population) in 1990 to 3897 (2.6) in 1992 (Figure 1). In 1992, reported cases increased twofold over those reported in 1991; in comparison, during January–August 1993, reported cases (5888) increased threefold over those reported during the same period in 1992.

FIGURE 1. Rate* of reported diphtheria cases, by year — Russian Federation, 1970–1992



*Per 100,000 population.

Diphtheria Outbreak — Continued

In 1992, 2798 (72%) of the 3897 reported cases were among persons aged >14 years; the case-fatality ratio was <5%. Approximately 98% of reported cases were bacteriologically confirmed.

An estimated 80% of children in the Russian Federation had started their primary diphtheria-tetanus-pertussis (DTP) vaccination series* before their first birthday. However, a substantial proportion of these children received fewer than three doses by that age: during 1991, 69% of children in Moscow received one or more doses of diphtheria toxoid-containing vaccine by their first birthday; 43%, two or more doses; and 23%, three doses. However, an estimated 90% of children were fully vaccinated with four or more doses of diphtheria toxoid by the time they entered school.

In 1983, the State Committee on Sanitary Epidemiologic Surveillance (SCSES) initiated a policy requiring vaccination of adults with one dose of diphtheria toxoid; however, coverage with booster doses remains low. Current efforts to control the outbreak have focused on increasing vaccination coverage among all age groups; preliminary assessment suggests that vaccine efficacy is high (Moscow SES; SCSES; CDC, unpublished data, 1993).

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Editorial Note: The outbreak of diphtheria in the Russian Federation is the largest diphtheria outbreak in the developed world since the 1960s; similar levels have not been reported in the United States since the early 1950s. In addition, an outbreak of diphtheria has been reported from Ukraine, and increased diphtheria activity has been reported from many of the other New Independent States that had been members of the Soviet Union (*2*).

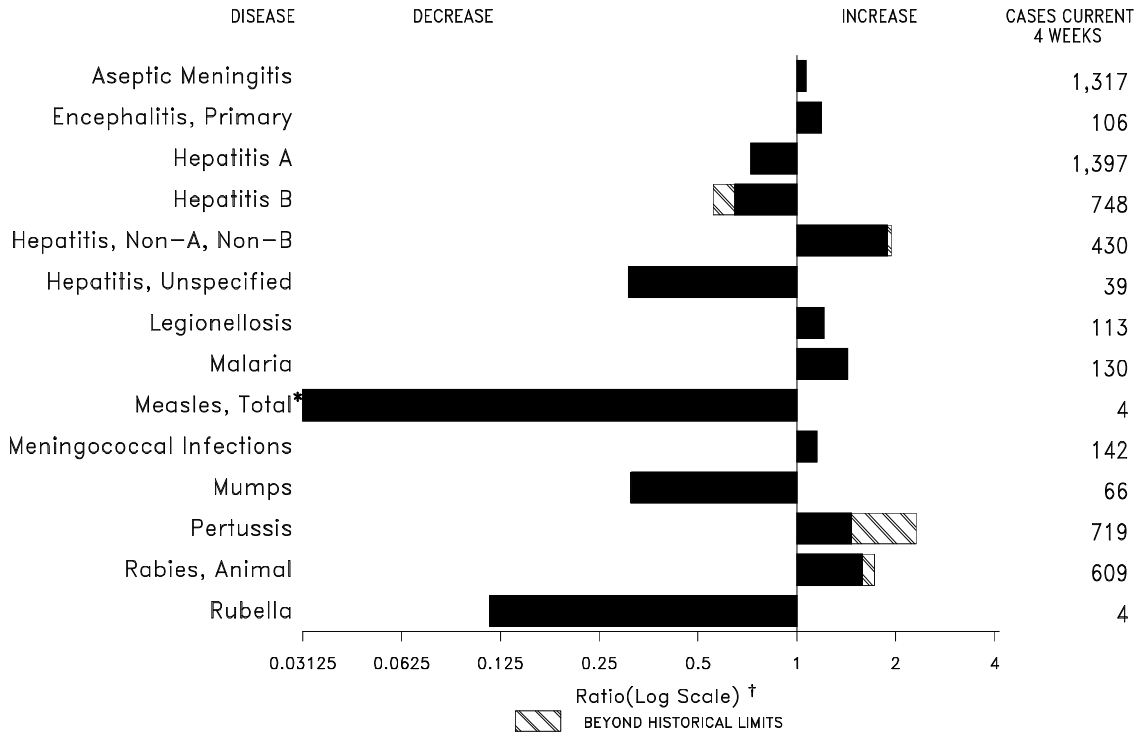
The outbreak described in this report illustrates that, despite a high vaccination coverage rate among school-aged children, diphtheria can cause epidemic disease in developed countries. Strategies to control outbreaks and prevent further transmission of diphtheria include maintenance of high levels (>80%) of diphtheria vaccination coverage, ongoing surveillance, and intensive follow-up case investigation.

The findings in this and previous reports underscore three important points about the epidemiology of diphtheria. First, seroprevalence studies in the United States, the Russian Federation, and other developed countries indicate that large numbers of adults remain susceptible to diphtheria (*3–8*). Although factors related to the occurrence of the outbreaks in the Russian Federation and Ukraine are under investigation, high levels of susceptibility to diphtheria—particularly among adults—have probably played an important role in sustaining transmission of infection. Second, because diphtheria remains endemic in many developing countries, these countries are a potential source for introduction of infection into developed countries. Third, the outbreak in the Russian Federation demonstrates that widespread transmission can occur in developed countries, particularly in urban areas. However, the importance of other factors (e.g., migration and crowding) also requires clarification.

*Official recommendations in the Russian Federation specify that children should receive a dose of DTP at age 3, 4.5, and 6 months, followed by a booster dose 1.5–2 years later; diphtheria-tetanus toxoid boosters should be given at ages 9 and 16 years.

(Continued on page 847)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending October 30, 1993, with historical data — United States



*The large apparent decrease in reported cases of measles(total) reflects dramatic fluctuations in the historical baseline. (Ratio (log scale) for week forty-three is 0.00993).

† Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where thehatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending October 30, 1993 (43rd Week)

	Cum. 1993		Cum. 1993
AIDS*	83,485	Measles: imported	56
Anthrax	-	indigenous	209
Botulism: Foodborne	14	Plague	8
Infant	55	Poliomyelitis, Paralytic§	-
Other	2	Psittacosis	45
Brucellosis	76	Rabies, human	1
Cholera	17	Syphilis, primary & secondary	20,999
Congenital rubella syndrome	6	Syphilis, congenital, age < 1 year¶	1,493
Diphtheria	-	Tetanus	36
Encephalitis, post-infectious	139	Toxic shock syndrome	196
Gonorrhea	312,146	Trichinosis	11
Haemophilus influenzae (invasive disease)†	962	Tuberculosis	17,591
Hansen Disease	153	Tularemia	111
Leptospirosis	33	Typhoid fever	289
Lyme Disease	5,659	Typhus fever, tickborne (RMSF)	412

*Updated monthly; last update October 2, 1993.
†Of 914 cases of known age, 295 (32%) were reported among children less than 5 years of age.
§Two (2) cases of suspected poliomyelitis have been reported in 1993; 4 of the 5 suspected cases with onset in 1992 were confirmed; the confirmed cases were vaccine associated.
¶Reports through second quarter of 1993.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending October 30, 1993, and October 24, 1992 (43rd Week)

Reporting Area	AIDS*	Aseptic Menin-gitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionel-losis	Lyme Disease
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1992	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993
UNITED STATES	83,485	10,305	734	139	312,146	406,669	17,615	9,911	4,093	514	1,027	5,659
NEW ENGLAND	4,183	344	15	8	6,836	8,542	408	397	466	13	74	1,580
Maine	118	39	2	-	74	84	15	10	4	-	5	11
N.H.	83	46	-	2	64	98	33	97	381	3	6	59
Vt.	58	39	4	-	22	23	5	8	3	-	2	5
Mass.	2,210	139	7	4	2,537	3,070	195	218	70	10	43	160
R.I.	274	81	2	2	349	559	68	20	8	-	18	251
Conn.	1,440	-	-	-	3,790	4,708	92	44	-	-	-	1,094
MID. ATLANTIC	20,227	737	52	8	37,282	46,307	874	1,105	319	5	196	2,845
Upstate N.Y.	3,118	413	37	5	7,275	9,193	336	344	208	1	65	1,524
N.Y. City	10,941	104	1	-	10,337	16,673	177	121	1	-	3	3
N.J.	3,909	-	-	-	4,370	6,298	239	343	80	-	29	640
Pa.	2,259	220	14	3	15,300	14,143	122	297	30	4	99	678
E.N. CENTRAL	6,686	1,798	163	26	58,917	76,248	1,914	1,164	502	13	267	85
Ohio	1,286	628	57	4	18,685	23,123	238	158	35	-	137	35
Ind.	718	206	20	11	6,720	7,415	535	206	14	1	51	22
Ill.	2,423	396	35	3	13,587	24,683	606	210	61	5	14	11
Mich.	1,606	530	42	8	14,995	17,411	173	328	356	7	54	17
Wis.	653	38	9	-	4,930	3,616	362	262	36	-	11	-
W.N. CENTRAL	2,694	660	33	10	17,029	21,959	1,945	551	151	14	83	176
Minn.	579	91	12	-	2,065	2,516	351	59	10	4	2	85
Iowa	159	136	5	2	1,259	1,420	49	32	8	2	14	8
Mo.	1,466	204	2	8	9,779	12,300	1,226	389	110	8	23	38
N. Dak.	2	12	3	-	38	64	63	-	-	-	1	2
S. Dak.	22	19	6	-	193	148	16	-	-	-	-	-
Nebr.	164	25	1	-	476	1,408	169	17	8	-	36	4
Kans.	302	173	4	-	3,219	4,103	71	54	15	-	7	39
S. ATLANTIC	17,732	2,134	197	56	83,910	121,387	1,000	1,838	586	73	178	769
Del.	308	68	3	-	1,262	1,467	10	140	126	-	11	373
Md.	2,039	211	22	-	13,851	13,318	135	230	22	5	43	131
D.C.	1,181	33	-	-	3,956	4,989	10	37	1	-	13	2
Va.	1,273	259	36	6	9,996	13,437	119	117	31	36	7	64
W. Va.	66	28	100	-	555	704	20	33	28	-	3	41
N.C.	960	216	29	-	20,765	20,835	68	258	60	-	24	76
S.C.	1,269	27	-	-	8,907	9,225	17	45	4	1	18	9
Ga.	2,328	144	1	-	4,660	34,434	75	181	111	1	32	38
Fla.	8,308	1,148	6	50	19,958	22,978	546	797	203	30	27	35
E.S. CENTRAL	2,179	663	35	7	36,195	40,842	255	1,127	841	4	39	25
Ky.	275	284	13	6	4,034	3,965	96	71	14	-	15	7
Tenn.	897	158	8	-	10,052	12,965	78	961	813	3	16	15
Ala.	611	153	1	-	13,458	14,256	50	89	4	1	2	3
Miss.	396	68	13	1	8,651	9,656	31	6	10	-	6	-
W.S. CENTRAL	8,451	1,183	63	2	37,667	44,169	1,988	1,412	285	147	28	58
Ark.	327	56	1	-	7,583	6,337	46	51	4	2	4	2
La.	1,028	77	6	-	10,011	12,204	70	182	121	4	3	1
Okla.	648	1	7	-	3,423	4,580	156	267	101	10	11	21
Tex.	6,448	1,049	49	2	16,650	21,048	1,716	912	59	131	10	34
MOUNTAIN	3,375	621	29	4	9,185	10,405	3,357	498	298	70	60	21
Mont.	29	-	-	1	67	102	66	7	3	-	5	-
Idaho	58	11	-	-	142	96	215	43	-	3	1	2
Wyo.	33	6	-	-	69	47	12	27	97	-	6	9
Colo.	1,106	198	15	-	2,914	3,778	759	63	49	38	7	-
N. Mex.	267	118	4	2	792	788	323	183	94	3	5	2
Ariz.	1,136	170	8	-	3,343	3,538	1,202	76	13	12	12	-
Utah	231	45	1	-	293	286	658	44	28	13	9	3
Nev.	515	73	1	1	1,565	1,770	122	55	14	1	15	5
PACIFIC	17,958	2,165	147	18	25,125	36,810	5,874	1,819	645	175	102	100
Wash.	1,337	-	1	-	3,157	3,313	672	196	155	9	10	4
Oreg.	680	-	-	-	987	1,384	82	28	13	1	-	2
Calif.	15,586	2,031	141	18	19,981	31,129	4,391	1,567	464	162	84	93
Alaska	58	18	4	-	510	562	669	9	10	-	-	-
Hawaii	297	116	1	-	490	422	60	19	3	3	8	1
Guam	-	2	-	-	39	50	2	2	-	1	-	-
P.R.	2,338	50	-	-	430	192	72	337	78	2	-	-
V.I.	40	-	-	-	79	86	-	4	-	-	-	-
Amer. Samoa	-	-	-	-	39	40	18	-	-	-	-	-
C.N.M.I.	-	3	1	-	65	67	-	1	-	1	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly; last update October 2, 1993.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending October 30, 1993, and October 24, 1992 (43rd Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1993	1993	Cum. 1993	1993	Cum. 1993	Cum. 1992	Cum. 1993	1993	Cum. 1993	1993	Cum. 1993	Cum. 1992	1993	Cum. 1993	Cum. 1992
UNITED STATES	985	1	209	-	56	2,176	1,952	15	1,332	123	4,719	2,500	1	169	144
NEW ENGLAND	74	1	58	-	5	65	107	1	9	13	658	200	-	1	6
Maine	3	-	2	-	-	4	8	-	-	-	19	11	-	1	1
N.H.	6	-	2	-	-	13	14	-	-	4	236	45	-	-	-
Vt.	1	-	30	-	1	-	6	-	-	5	79	9	-	-	-
Mass.	38	-	14	-	3	21	59	-	2	1	252	96	-	-	-
R.I.	2	1	1	-	1	21	1	-	2	-	6	2	-	-	4
Conn.	24	-	9	-	-	6	19	1	5	3	66	37	-	-	1
MID. ATLANTIC	195	-	11	-	6	205	234	-	99	12	610	149	-	54	10
Upstate N.Y.	108	-	-	-	2	111	106	-	34	12	276	94	-	10	7
N.Y. City	24	-	5	-	2	56	19	-	2	-	7	11	-	22	-
N.J.	41	-	6	-	2	38	37	-	12	-	51	44	-	16	3
Pa.	22	-	-	-	-	-	72	-	51	-	276	-	-	6	-
E.N. CENTRAL	62	-	19	-	8	60	308	2	205	22	1,075	552	1	7	9
Ohio	13	-	5	-	3	6	85	1	68	14	403	76	-	1	-
Ind.	3	-	1	-	-	20	53	-	5	3	117	39	1	2	-
Ill.	32	-	5	-	-	17	88	-	54	-	266	43	-	1	8
Mich.	14	-	5	-	1	13	52	1	63	5	93	12	-	2	1
Wis.	-	-	3	-	4	4	30	-	15	-	196	382	-	1	-
W.N. CENTRAL	29	-	1	-	2	11	134	-	47	1	471	196	-	1	8
Minn.	9	-	-	-	-	10	13	-	2	-	272	33	-	-	-
Iowa	3	-	-	-	-	1	24	-	9	-	35	7	-	-	3
Mo.	7	-	1	-	-	-	47	-	28	-	123	95	-	1	1
N. Dak.	2	-	-	-	-	-	3	-	5	-	3	13	-	-	-
S. Dak.	2	-	-	-	-	-	6	-	-	-	8	14	-	-	-
Nebr.	4	-	-	-	-	-	14	-	2	1	14	10	-	-	-
Kans.	2	-	-	-	2	-	27	-	1	-	16	24	-	-	4
S. ATLANTIC	255	-	17	-	13	125	358	4	385	37	521	146	-	9	19
Del.	2	-	1	-	-	1	13	-	5	-	14	7	-	2	-
Md.	36	-	-	-	4	16	45	3	70	4	125	29	-	2	5
D.C.	11	-	-	-	-	-	5	-	1	-	12	1	-	-	-
Va.	28	-	-	-	4	15	39	1	26	6	58	10	-	-	-
W. Va.	2	-	-	-	-	-	12	-	16	-	8	9	-	-	1
N.C.	95	-	-	-	-	24	59	-	199	24	125	35	-	-	-
S.C.	5	-	-	-	-	29	31	-	15	1	65	10	-	-	7
Ga.	18	-	-	-	-	3	80	-	14	-	32	14	-	-	-
Fla.	58	-	16	-	5	37	74	-	39	2	82	31	-	5	6
E.S. CENTRAL	25	-	1	-	-	461	126	1	48	3	264	28	-	-	1
Ky.	4	-	-	-	-	444	21	-	-	-	29	1	-	-	-
Tenn.	10	-	-	-	-	-	35	1	14	3	166	8	-	-	1
Ala.	6	-	1	-	-	-	40	-	22	-	58	16	-	-	-
Miss.	5	-	-	-	-	17	30	-	12	-	11	3	-	-	-
W.S. CENTRAL	25	-	8	-	3	1,102	195	2	199	1	152	203	-	17	7
Ark.	3	-	-	-	-	-	19	-	4	-	10	15	-	-	-
La.	4	-	1	-	-	-	35	-	17	1	12	9	-	1	-
Okla.	5	-	-	-	-	11	25	-	11	-	88	28	-	1	-
Tex.	13	-	7	-	3	1,091	116	2	167	-	42	151	-	15	7
MOUNTAIN	32	-	5	-	1	35	151	1	60	6	362	360	-	10	8
Mont.	2	-	-	-	-	-	13	-	-	1	8	7	-	-	-
Idaho	1	-	-	-	-	-	12	-	5	-	111	41	-	2	1
Wyo.	-	-	-	-	-	1	3	-	2	-	1	-	-	-	-
Colo.	19	-	2	-	1	29	31	-	16	5	124	68	-	1	2
N. Mex.	5	-	-	-	-	2	4	N	N	-	36	95	-	-	-
Ariz.	1	-	2	-	-	3	70	-	13	-	48	114	-	2	2
Utah	1	-	-	-	-	-	11	-	4	-	30	33	-	4	1
Nev.	3	-	1	-	-	-	7	1	20	-	4	2	-	1	2
PACIFIC	288	-	89	-	18	112	339	4	280	28	606	666	-	70	76
Wash.	28	-	-	-	-	11	65	-	10	1	61	192	-	-	8
Oreg.	4	-	-	-	-	3	23	N	N	1	22	40	-	3	1
Calif.	247	-	78	-	7	57	228	3	239	26	506	400	-	39	44
Alaska	3	-	-	-	2	9	13	-	9	-	5	14	-	1	-
Hawaii	6	-	11	-	9	32	10	1	22	-	12	20	-	27	23
Guam	1	U	2	U	-	10	1	U	6	U	-	-	U	-	3
P.R.	-	-	224	-	-	411	8	-	3	-	9	12	-	-	1
V.I.	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
Amer. Samoa	-	U	1	U	-	-	-	U	1	U	2	6	U	-	-
C.N.M.I.	-	-	-	-	1	2	-	1	13	-	1	1	-	-	-

*For measles only, imported cases include both out-of-state and international importations.
N: Not notifiable U: Unavailable † International § Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending October 30, 1993, and October 24, 1992 (43rd Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-Shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1993	Cum. 1992	Cum. 1993	Cum. 1993	Cum. 1992	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993
UNITED STATES	20,999	28,133	196	17,591	18,741	111	289	412	7,483
NEW ENGLAND	355	548	14	429	420	-	26	6	1,341
Maine	5	5	3	31	19	-	-	-	-
N.H.	28	35	4	9	15	-	2	-	115
Vt.	1	1	1	5	6	-	-	-	24
Mass.	114	275	5	234	231	-	18	6	563
R.I.	14	34	1	48	31	-	-	-	-
Conn.	193	198	-	102	118	-	6	-	639
MID. ATLANTIC	1,899	3,855	31	3,816	4,394	1	55	26	2,829
Upstate N.Y.	172	297	15	361	594	1	11	6	2,148
N.Y. City	905	2,180	1	2,235	2,540	-	26	-	-
N.J.	268	472	-	669	761	-	14	10	371
Pa.	554	906	15	551	499	-	4	10	310
E.N. CENTRAL	2,984	4,208	42	1,555	1,862	4	35	14	100
Ohio	962	669	12	265	275	-	7	9	5
Ind.	287	232	2	179	157	1	1	1	10
Ill.	844	1,900	7	651	955	2	19	2	20
Mich.	500	778	21	384	403	1	7	2	16
Wis.	391	629	-	76	72	-	1	-	49
W.N. CENTRAL	1,331	1,264	12	409	440	37	2	21	300
Minn.	62	84	2	51	122	-	-	1	40
Iowa	58	43	5	43	34	-	-	7	65
Mo.	1,097	951	2	216	200	15	2	10	20
N. Dak.	1	1	-	5	8	-	-	-	51
S. Dak.	1	-	-	12	18	17	-	2	38
Nebr.	10	24	-	18	20	2	-	-	9
Kans.	102	161	3	64	38	3	-	1	77
S. ATLANTIC	5,577	7,678	23	3,437	3,529	3	44	187	1,756
Del.	90	172	1	40	43	-	1	1	126
Md.	316	535	1	322	319	-	8	11	528
D.C.	273	311	-	141	89	-	-	-	15
Va.	540	606	7	356	298	-	4	9	328
W. Va.	13	17	-	62	75	-	-	6	77
N.C.	1,568	2,104	3	431	462	2	3	113	89
S.C.	823	1,048	-	336	331	-	-	10	139
Ga.	929	1,489	2	632	732	-	3	30	405
Fla.	1,025	1,396	9	1,117	1,180	1	25	7	49
E.S. CENTRAL	3,250	3,610	11	1,358	1,153	4	7	53	185
Ky.	295	141	3	315	317	1	2	8	18
Tenn.	807	996	4	424	283	2	2	32	72
Ala.	697	1,245	2	417	342	1	3	4	95
Miss.	1,451	1,228	2	202	211	-	-	9	-
W.S. CENTRAL	4,822	5,123	2	1,957	2,192	43	6	90	523
Ark.	635	731	-	148	171	26	-	7	36
La.	2,143	2,117	-	-	155	-	1	1	5
Okla.	334	341	2	131	129	13	1	78	63
Tex.	1,710	1,934	-	1,678	1,737	4	4	4	419
MOUNTAIN	201	297	12	421	482	13	10	15	157
Mont.	1	7	-	15	-	5	-	2	22
Idaho	-	1	1	12	20	-	-	-	6
Wyo.	7	3	-	4	-	3	-	10	19
Colo.	59	52	2	32	49	1	5	3	26
N. Mex.	24	36	1	59	64	1	2	-	9
Ariz.	89	149	1	192	212	-	2	-	56
Utah	9	8	5	23	65	2	1	-	4
Nev.	12	41	2	84	72	1	-	-	15
PACIFIC	580	1,550	49	4,209	4,269	6	104	-	292
Wash.	51	74	7	219	243	1	6	-	-
Oreg.	37	40	-	82	111	2	1	-	-
Calif.	478	1,424	42	3,652	3,646	3	94	-	274
Alaska	8	4	-	46	50	-	-	-	18
Hawaii	6	8	-	210	219	-	3	-	-
Guam	2	3	-	31	58	-	-	-	-
P.R.	435	290	-	185	200	-	-	-	39
V.I.	37	58	-	2	3	-	-	-	-
Amer. Samoa	-	-	-	2	-	-	1	-	-
C.N.M.I.	6	6	-	30	50	-	-	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending October 30, 1993 (43rd Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	566	405	100	35	10	16	53
Boston, Mass.	167	106	41	12	1	7	25
Bridgeport, Conn.	46	30	8	3	-	5	1
Cambridge, Mass.	13	13	-	-	-	-	1
Fall River, Mass.	21	19	2	-	-	-	1
Hartford, Conn.	22	14	4	3	1	-	1
Lowell, Mass.	32	23	7	2	-	-	3
Lynn, Mass.	15	14	1	-	-	-	1
New Bedford, Mass.	17	16	-	1	-	-	1
New Haven, Conn.	41	29	5	5	1	1	3
Providence, R.I.	60	42	10	4	4	-	3
Somerville, Mass.	6	4	2	-	-	-	1
Springfield, Mass.	45	32	9	1	1	2	4
Waterbury, Conn.	25	20	3	1	1	-	1
Worcester, Mass.	56	43	8	3	1	1	7
MID. ATLANTIC	2,395	1,548	447	268	64	68	133
Albany, N.Y.	57	36	11	5	-	5	7
Allentown, Pa.	36	25	8	2	1	-	2
Buffalo, N.Y.	100	72	18	5	2	3	2
Camden, N.J.	32	16	10	2	2	2	2
Elizabeth, N.J.	U	U	U	U	U	U	U
Erie, Pa.§	30	21	4	2	1	2	2
Jersey City, N.J.	53	28	15	8	1	1	1
New York City, N.Y.	1,330	845	260	169	26	30	64
Newark, N.J.	79	31	12	23	7	6	5
Paterson, N.J.	28	19	3	4	1	1	5
Philadelphia, Pa.	197	121	41	16	13	6	13
Pittsburgh, Pa.§	74	48	12	8	2	4	3
Reading, Pa.	13	10	2	1	-	-	2
Rochester, N.Y.	127	96	18	8	4	1	14
Schenectady, N.Y.	29	24	3	2	-	-	2
Scranton, Pa.§	31	25	5	1	-	-	1
Syracuse, N.Y.	91	63	15	6	2	5	5
Trenton, N.J.	35	24	5	5	-	1	2
Utica, N.Y.	23	20	2	1	-	-	1
Yonkers, N.Y.	30	24	3	-	2	1	-
E.N. CENTRAL	2,231	1,371	406	237	151	66	120
Akron, Ohio	75	53	13	2	3	4	-
Canton, Ohio	32	22	5	3	2	-	2
Chicago, Ill.	518	218	87	104	96	13	20
Cincinnati, Ohio	237	155	42	17	8	15	14
Cleveland, Ohio	143	93	34	8	2	6	4
Columbus, Ohio	147	104	26	13	2	2	11
Dayton, Ohio	97	69	20	5	3	-	4
Detroit, Mich.	232	121	48	30	23	10	8
Evansville, Ind.	44	31	9	4	-	-	2
Fort Wayne, Ind.	37	25	7	5	-	-	3
Gary, Ind.	25	13	8	2	-	2	-
Grand Rapids, Mich.	45	32	8	1	2	2	11
Indianapolis, Ind.	114	75	21	12	2	4	9
Madison, Wis.	42	26	11	2	-	3	1
Milwaukee, Wis.	126	96	20	9	1	-	13
Peoria, Ill.	60	46	8	4	1	1	4
Rockford, Ill.	47	34	7	5	1	-	5
South Bend, Ind.	45	36	8	1	-	-	3
Toledo, Ohio	107	76	19	5	4	3	5
Youngstown, Ohio	58	46	5	5	1	1	1
W.N. CENTRAL	821	572	129	66	24	29	39
Des Moines, Iowa	93	70	15	4	-	4	3
Duluth, Minn.	28	19	4	3	1	1	-
Kansas City, Kans.	29	21	4	1	1	1	1
Kansas City, Mo.	104	70	20	7	5	2	5
Lincoln, Nebr.	25	18	7	-	-	-	1
Minneapolis, Minn.	189	134	27	16	5	7	15
Omaha, Nebr.	99	67	18	10	3	1	4
St. Louis, Mo.	116	77	18	12	4	5	6
St. Paul, Minn.	69	52	7	5	4	1	3
Wichita, Kans.	69	44	9	8	1	7	1

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,269	783	264	144	40	37	77
Atlanta, Ga.	163	99	34	19	4	7	4
Baltimore, Md.	179	101	37	31	7	3	23
Charlotte, N.C.	76	56	8	10	2	-	3
Jacksonville, Fla.	111	75	26	7	1	2	8
Miami, Fla.	140	83	32	19	4	2	1
Norfolk, Va.	56	34	12	3	-	7	3
Richmond, Va.	82	51	18	10	2	1	10
Savannah, Ga.	76	45	17	6	6	2	9
St. Petersburg, Fla.	61	40	11	3	3	4	5
Tampa, Fla.	156	107	33	13	2	1	11
Washington, D.C.	151	78	34	21	9	8	-
Wilmington, Del.	18	14	2	2	-	-	-
E.S. CENTRAL	718	490	124	70	16	18	53
Birmingham, Ala.	122	78	22	17	2	3	6
Chattanooga, Tenn.	48	37	7	3	1	-	3
Knoxville, Tenn.	79	52	11	13	2	1	2
Lexington, Ky.	65	42	15	5	2	1	8
Memphis, Tenn.	167	116	25	15	5	6	20
Mobile, Ala.	51	40	3	4	1	3	1
Montgomery, Ala.	47	29	11	6	-	1	-
Nashville, Tenn.	139	96	30	7	3	3	13
W.S. CENTRAL	1,373	817	281	171	58	40	64
Austin, Tex.	80	49	15	9	4	3	2
Baton Rouge, La.	67	50	8	6	1	2	1
Corpus Christi, Tex.	49	34	7	4	2	2	3
Dallas, Tex.	181	96	37	30	11	7	5
El Paso, Tex.	47	24	13	6	4	-	2
Ft. Worth, Tex.	99	57	19	16	2	5	4
Houston, Tex.	368	195	86	60	16	11	28
Little Rock, Ark.	61	40	12	6	1	2	1
New Orleans, La.	113	62	23	16	4	2	-
San Antonio, Tex.	156	97	36	12	7	4	12
Shreveport, La.	63	48	11	-	4	-	3
Tulsa, Okla.	89	65	14	6	2	2	3
MOUNTAIN	635	423	129	44	18	21	37
Albuquerque, N.M.	91	62	19	6	3	1	4
Colo. Springs, Colo.	46	32	11	2	-	1	6
Denver, Colo.	98	61	21	11	-	5	4
Las Vegas, Nev.	U	U	U	U	U	U	U
Ogden, Utah	23	16	5	1	1	-	4
Phoenix, Ariz.	133	74	33	12	6	8	9
Pueblo, Colo.	22	18	1	3	-	-	1
Salt Lake City, Utah	89	57	19	3	7	3	3
Tucson, Ariz.	133	103	20	6	1	3	6
PACIFIC	1,873	1,199	352	195	73	50	118
Berkeley, Calif.	9	7	1	1	-	-	1
Fresno, Calif.	61	38	14	4	2	3	4
Glendale, Calif.	26	19	4	1	2	-	1
Honolulu, Hawaii	62	48	9	3	-	2	4
Long Beach, Calif.	66	36	19	5	3	3	6
Los Angeles, Calif.	550	326	112	67	28	13	17
Pasadena, Calif.	24	18	3	1	-	2	-
Portland, Oreg.	135	94	22	6	9	4	5
Sacramento, Calif.	152	104	27	13	6	2	14
San Diego, Calif.	164	113	20	23	5	3	25
San Francisco, Calif.	148	88	21	34	2	3	1
San Jose, Calif.	154	92	43	10	3	6	19
Santa Cruz, Calif.	30	22	6	2	-	-	4
Seattle, Wash.	145	93	28	17	4	3	3
Spokane, Wash.	61	49	5	3	2	2	9
Tacoma, Wash.	86	52	18	5	7	4	5
TOTAL	11,881¶	7,608	2,232	1,230	454	345	694

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

U: Unavailable.

Diphtheria Outbreak — Continued

The risk for exposure to diphtheria cannot be readily quantified for persons who may travel to areas with endemic activity or outbreaks. Diphtheria has been reported in a visitor to the Russian Federation (*9*). To minimize the risk for diphtheria, the Advisory Committee on Immunization Practices recommends the following measures for all U.S. residents, especially those traveling to countries with endemic diphtheria: 1) completion of a primary series with diphtheria toxoid-containing vaccine (persons aged ≥7 years: three doses of adult formulation tetanus-diphtheria toxoid; children aged <7 years: four doses of DTP vaccine [for children aged <7 years with a contraindication to pertussis vaccine: infant formulation diphtheria-tetanus toxoid]) and 2) receipt of the most recent dose of this vaccine (either primary series or booster dose) within the previous 10 years (*10*).

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Epidemiologic Notes and Reports

Pregnancy Complications and Perinatal Outcomes Among Women With Diabetes — North Carolina, 1989–1990

Women with diabetes have a higher risk for complications of pregnancy than do women without diabetes; in addition, infants born to women with diabetes are at increased risk for adverse birth outcomes (*1,2*). Preconception counseling for women with established diabetes and early and continual prenatal care for women with established or gestational diabetes can reduce maternal and infant morbidity and mortality (*3*). Although the rate of pregnancy complicated by diabetes and the use of prenatal

Perinatal Outcomes — Continued

care varies by race of the mother (*4*), it is unknown whether the effect of diabetes on maternal and infant outcomes differs by race. Race reflects differing distributions of several risk factors for pregnancy outcomes (e.g., socioeconomic status and access to comprehensive health care) and is useful for identifying groups at greatest risk for adverse outcomes. To determine the prevalence of diabetes during pregnancy among women residing in North Carolina and to characterize differences in prenatal care and the risk for maternal complications and adverse pregnancy outcomes by race among mothers with diabetes, the North Carolina State Center for Health and Environmental Statistics examined birth certificates of infants of women who gave birth in the state during 1989–1990. This report summarizes the findings of the study.

For births occurring during 1989–1990, singleton live births to North Carolina residents were identified from computerized matched live birth and infant death records. Mothers with diabetes were identified by a check box for diabetes in the medical history section of the infant's birth certificate. The check box does not distinguish between established and gestational diabetes in pregnancy. For comparison, a computer-generated 7% random sample of live births with no mention of diabetes was selected. Birth certificates were reviewed to obtain information about maternal complications (i.e., polyhydramnios, pregnancy-induced hypertension, and pre-eclampsia/eclampsia) and perinatal outcomes (i.e., macrosomia, birth injury, and hyaline membrane disease/respiratory distress syndrome) and maternal age, maternal race, and prenatal-care initiation. For infants who died before age 1 year, age at death was ascertained from the infant's death certificate. Logistic regression was used to determine odds ratios (ORs) and 95% confidence intervals (CIs) for the association between maternal diabetes, age, race, and selected pregnancy outcomes. An interaction term between maternal diabetes and race was included in the models to determine whether the relation between maternal diabetes and adverse events differed by race. For this analysis, maternal race was presented for blacks and other minority races combined* and for whites.

From January 1, 1989, through December 31, 1990, there were 201,823 singleton live births to North Carolina residents. Of these, 6092 (3%) women had a history of maternal diabetes (4451 white mothers and 1641 minority mothers). The prevalence of diabetes during pregnancy was 326.8 per 10,000 live births for white women and 251.7 per 10,000 live births for minority women. The prevalence increased with age of the mother for both racial groups. For women aged <30 years, pregnancies complicated by diabetes occurred 1.5 (Woolf 95% CI=1.4–1.6) times more often among white women than among minority women; for women aged ≥30 years, pregnancies complicated by diabetes were 1.3 (Woolf 95% CI=1.1–1.4) times more likely in minority women.

Among women with pregnancies complicated by diabetes, 12.6% of white women and 24.7% of minority women initiated prenatal care during their second or third trimesters. Less than 1% of mothers reported with diabetes received no prenatal care. Among women with a pregnancy complicated by diabetes, those aged ≥30 years were more likely to initiate prenatal care during their first trimester than were those aged <30 years (Table 1).

*Black (92.0%), American Indian/Alaskan Native (4.5%), Asian/Pacific Islander (3.4%), and other (0.1%). Estimates are not presented separately for minority races because numbers were too small for meaningful analysis.

Perinatal Outcomes — Continued

Compared with white women without diabetes, the risk for maternal complications was approximately two times greater among white mothers with diabetes and two to four times greater among minority mothers with diabetes (Table 2); however, differences in risks between white and minority women with diabetes were not statistically significant ($0.40<p<0.75$). When compared with infants born to white women without diabetes, infants of all women with diabetes were nearly twice as likely to experience a birth injury. The risk for infant mortality was greater in babies born to women with diabetes, especially after controlling for differences in birthweight. The risk for neonatal mortality varied significantly ($p=0.04$) by racial group. Congenital malformations accounted for 31.3% of the deaths among infants of mothers with diabetes.

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Editorial Note: Compared with corresponding race-specific groups in the United States, women in North Carolina have increased rates of pregnancy complicated by diabetes, regardless of age (*4*). Although North Carolina mothers with diabetes were more likely to initiate prenatal care during their first trimester than were all mothers in the United States in 1989 (*4*), approximately 12% of white mothers with diabetes and 25% of minority mothers with diabetes delayed initiation of prenatal care until their second or third trimesters, thereby increasing the risk for adverse pregnancy outcomes. The actual percentage of women with diabetes receiving late or no prenatal care is probably underestimated in this study because these women were less likely to have had their condition diagnosed during pregnancy.

Except for macrosomia, the magnitude of the effect of maternal diabetes on adverse maternal and infant outcomes in North Carolina was similar to that reported previously (*2,3*). The decreased risk for macrosomia in this report may reflect the exclusion of low-birthweight infants from the model.

In this study, the relation between socioeconomic status, adverse pregnancy outcomes, and race was not examined. Therefore, the extent to which the associations between race, maternal complications, and adverse infant outcomes reflect differences in distribution of socioeconomic status among the racial groups could not be

TABLE 1. Percentage distribution of the initiation of prenatal care among mothers with established or gestational diabetes, by age and race of mother — North Carolina, 1989–1990

Trimester of prenatal-care initiation	White*				Black/Other minorities†			
	<30 yrs		≥30 yrs		<30 yrs		≥30 yrs	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
First	2211	(84.8)	1669	(91.1)	686	(72.3)	541	(79.6)
Second	337	(12.9)	152	(8.3)	235	(24.8)	118	(17.3)
Third	59	(2.3)	12	(0.6)	28	(2.9)	21	(3.1)
Total	**2607**	**(100.0)**	**1833**	**(100.0)**	**949**	**(100.0)**	**680**	**(100.0)**

*Excludes six with missing data and five with no prenatal care.
†Black (92.0%), American Indian/Alaskan Native (4.5%), Asian/Pacific Islander (3.4%), and other (0.1%). Estimates are not presented separately for minority races because numbers were too small for meaningful analysis. Excludes five with missing data and seven with no prenatal care.

Perinatal Outcomes — Continued

determined. In addition, the findings in this report are subject to at least four limitations. First, pregnancies complicated by diabetes may have been underreported on birth certificates (*5*). However, the level of underreporting may be small because the overall prevalence of maternal diabetes was comparable to the prevalence of maternal diabetes obtained from all North Carolina hospital discharge summaries with Diagnosis Related Group (DRG) codes 370–375 (labor and delivery service charges) (*6*). Second, on North Carolina birth certificates, the types of diabetes (i.e., established or gestational) could not be differentiated. Therefore, calculated risks for adverse maternal or infant outcomes were probably underestimated among women with established diabetes and overestimated among women with gestational diabetes (particularly for perinatal mortality) (*7*). Third, differential recording of diabetes on the birth certificate by maternal and infant outcome status may have resulted in inflated risks for adverse outcomes among mothers with diabetes. Finally, because fetal deaths were not included in this analysis, the adverse impact of diabetes during pregnancy may have been underestimated (*1*).

Despite recent improvements in the diagnosis and management of diabetes, mothers with diabetes and their infants remain at increased risk for pregnancy complications and adverse outcomes. Many of these conditions may be prevented or successfully managed through preconception and risk-appropriate obstetric care (*8*). Women with diabetes should receive appropriate counseling from their physician regarding the risk for adverse pregnancy outcomes and the need to maintain strict metabolic control to increase the likelihood of a healthy pregnancy.

TABLE 2. Age-adjusted odds ratios (ORs)* and 95% confidence intervals (CIs) for maternal complications and adverse outcomes of newborns among mothers with established or gestational diabetes, by race — North Carolina, 1989–1990

	White		Black/ Other minorities†	
Characteristic	**OR**	**(95% CI)**	**OR**	**(95% CI)**
Maternal complications				
Polyhydramnios	1.7	(1.1–2.6)	2.5	(1.5–4.2)
Pregnancy induced hypertension	2.1	(1.8–2.4)	2.2	(1.7–2.7)
Preeclampsia/Eclampsia	2.0	(1.3–3.2)	3.8	(2.3–6.3)
Adverse outcomes of newborns				
Macrosomia§	1.2	(1.1–1.4)	1.1	(0.9–1.3)
Birth injury	1.9	(1.0–3.4)	1.7	(0.7–4.1)
Hyaline membrane disease/ Respiratory distress syndrome	1.4	(0.9–2.2)	1.2	(0.6–2.3)
Infant deaths	1.7	(1.1–2.6)	2.3	(1.4–3.9)
Neonatal¶	1.7	(1.0–2.8)	2.2	(1.1–4.2)
Postneonatal**	1.7	(0.9–3.3)	2.6	(1.5–4.3)

*Referent: white women without diabetes.
†Black (92.0%), American Indian/Alaskan Native (4.5%), Asian/Pacific Islander (3.4%), and other (0.1%). Estimates are not presented separately for minority races because numbers were too small for meaningful analysis.
§Birthweight ≥4000 g (≥8 lbs, 12 oz); p<0.05 for the interaction term between maternal diabetes and race.
¶Age at death <28 days; infants with birthweight <2500g (<5 lbs, 8 oz) were excluded from the model; p<0.05 for the interaction term between maternal diabetes and race.
**Age at death ≥28 days and <1 year.

Perinatal Outcomes — Continued

The findings in this report may assist the North Carolina Diabetes Control Program—which integrates diabetes education into local public health delivery systems—in targeting preconception and prenatal-care counseling toward those women with diabetes who are less likely to receive early prenatal care and who may be at higher risk for some adverse pregnancy outcomes (*9,10*). As part of a comprehensive program to reduce the burden of diabetes at both national and state levels, CDC recommends expanded state-specific surveillance for diabetes and its complications (including diabetes during pregnancy and adverse maternal and infant outcomes among mothers with diabetes) using data from the *U.S. Standard Certificate of Live Birth*. In addition, separate check boxes for established and gestational diabetes should be considered for incorporation into birth certificates.

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National Diabetes Month, 1993

November is National Diabetes Month. During this month, nationwide educational activities are planned to increase the public's awareness of diabetes. Additional information is available from the American Diabetes Association, National Center, 1660 Duke Street, Alexandria, VA 22314; telephone (800) 232-3472.

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