CENTERS FOR DISEASE CONTROL

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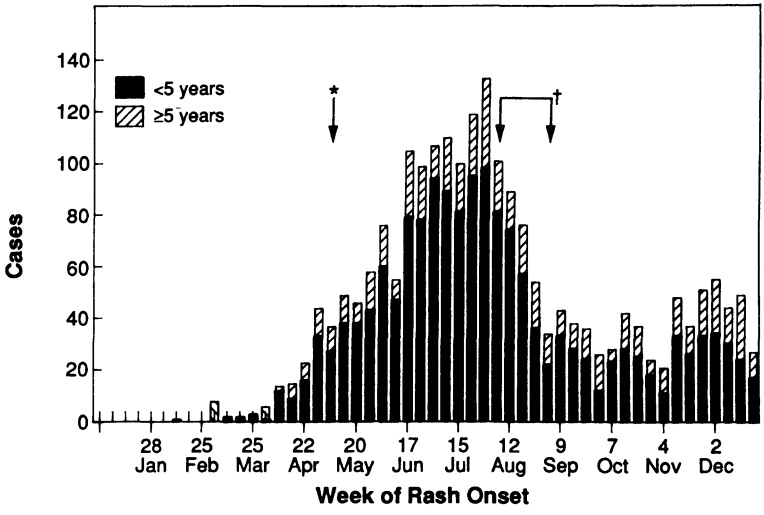
Epidemiologic Notes and Reports

Update: Measles Outbreak — Chicago, 1989

From February 14 through December 31, 1989, a provisional total of 2232 confirmed cases of measles (*1*) and eight measles-associated deaths were reported to the Chicago Department of Health (CDH) (Figure 1). The outbreak is continuing, with 389 cases reported from January 1 through May 11, 1990. The 1989 measles incidence rate in Chicago was 74 cases per 100,000 population—10.1 times higher than the overall U.S. incidence rate for 1989 (7.3 per 100,000) (CDC, unpublished data). Four hundred twenty-two (18.9%) cases were serologically confirmed; 1810 (81.1%) were epidemiologically linked to another clinical case of measles.

FIGURE 1. Patients with confirmed measles, by age and by week of rash onset — Chicago, February 14–December 31, 1989



*On May 5, the minimum age for vaccination was lowered citywide to 12 months.
†On July 31, the minimum age for vaccination was lowered to 6 months in communities with high attack rates. Additional outbreak-control activities during July 31–September 1 included intensified surveillance; publicity; audits of school vaccination records; vaccination clinics; and door-to-door vaccination in housing projects.

Measles — Continued

One thousand six hundred sixty-three (74.5%) patients were <5 years of age, including 422 (18.9%) who were <1 year of age (Table 1). The highest age-specific attack rates were for infants <1 year of age (783 per 100,000) and children 1–4 years of age (697 per 100,000) (Table 1). Blacks accounted for 1594 (71.4%) cases, Hispanics for 506 (22.7%), and whites and other races for 132 (5.9%). Attack rates were highest for blacks (127 cases per 100,000) and Hispanics (92 cases per 100,000) and lowest for whites and other races (11 cases per 100,000).

Five hundred sixty-five (25.3%) persons had been vaccinated on or after their first birthday; 1667 (74.7%) were unvaccinated (Table 2). Vaccine would have been routinely indicated for 929 (55.7% [41.6% of total]) of the unvaccinated patients, of whom 805 (86.7%) were preschool-aged children 1–4 years of age. Measles occurred among 738 (33.1% of total) persons for whom vaccine was not routinely indicated. Of these, 731 (99.1%) were <16 months of age, younger than the minimum age for vaccination; 422 (57.2%) were <1 year of age.

Seven hundred fifty-five (33.8%) patients required hospitalization. The age-specific hospitalization rate was highest for adults >20 years of age (56/78 [71.8%]) and lowest for persons 5–19 years of age (135/491 [27.5%]). Complications were reported for 579 (25.9%) of all measles patients: 340 (15.2%) had diarrhea; 186 (8.3%), pneumonia; 52 (2.3%), otitis media; and one (0.04%), encephalitis.

Eight measles-associated fatalities were reported, for a case-fatality rate of 3.6 per 1000 reported cases. One death occurred in an unvaccinated 30-year-old man with scleroderma. The remaining seven deaths occurred among unvaccinated children <5 years of age; five occurred among children <15 months of age.

On May 5, the minimum age for vaccination was lowered citywide to 12 months of age. On July 31, because of the continued high attack rate among infants <12 months of age, the minimum age for vaccination was lowered to 6 months in communities with high attack rates. Additional outbreak-control activities from July 31 to September 1 included intensified surveillance; publicity through newspapers, radio, and television; special audits of school vaccination records; establishment of vaccination clinics in two pediatric emergency rooms reporting approximately 45% of cases (*2*) and in communities reporting the highest attack rates; and door-to-door vaccination by teams sent to housing projects. During these vaccination activities, approximately 27,700 doses of vaccine were administered (40% to children <5 years of age)—1.5

TABLE 1. Age distribution and estimated incidence rates* of reported measles patients — Chicago, February 14–December 31, 1989

Age (yrs)	Cases		Rate
	No.	(%)	
<1	422	(18.9)	783
1–4	1241	(55.6)	697
5–9	302	(13.5)	131
10–14	121	(5.4)	52
15–19	68	(3.0)	21
≥20	78	(3.5)	4
Total	**2232**	**(100.0)**	**74**

*Per 100,000 population, based on 1988 projection of the 1980 census.

Measles — Continued

times more than the annual average of 18,000 doses of measles vaccine administered by the CDH during the last 5 years.

Because nearly 75% of reported patients were unvaccinated, the CDH reviewed records to estimate the percentage of children entering kindergarten who had been immunized for measles by 2 years of age. The survey included 32 public and 14 parochial schools in 10 communities with high measles incidence rates and eight public or parochial schools in four areas with low incidence rates. In 32 public schools for which student racial characteristics were available, enrollment was classified as predominantly white, black, or Hispanic. An average of 80% of students in schools with predominantly white enrollment had received measles vaccine by 2 years of age, compared with an average of 50% and 52% of students in schools with predominantly Hispanic and black enrollment, respectively. An average of 27% and 29% of students in schools with predominantly black and Hispanic enrollment, respectively, first received measles vaccine the year of school entry (at 4–5 years of age), compared with 7% of students in schools with predominantly white enrollment (Figure 2, page 325).

Measles vaccination levels among 2-year-old children in areas with high measles attack rates averaged 49% (range: 45%–55%), compared with average levels of 79% (range: 75%–85%) in areas with low attack rates. The proportion of children who were appropriately vaccinated by 2 years of age (i.e., four doses of diphtheria and tetanus toxoids and pertussis vaccine, three doses of oral poliovirus vaccine, and one dose of measles-mumps-rubella vaccine) in areas with high measles incidence was 26%, compared with 50% in areas with low incidence. In contrast, the average measles vaccination level for children enrolled in kindergarten and first grade in the 1988–89 school year was 95%.

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(Continued on page 325)

TABLE 2. Age distribution and vaccination status of reported measles patients — Chicago, February 14–December 31, 1989

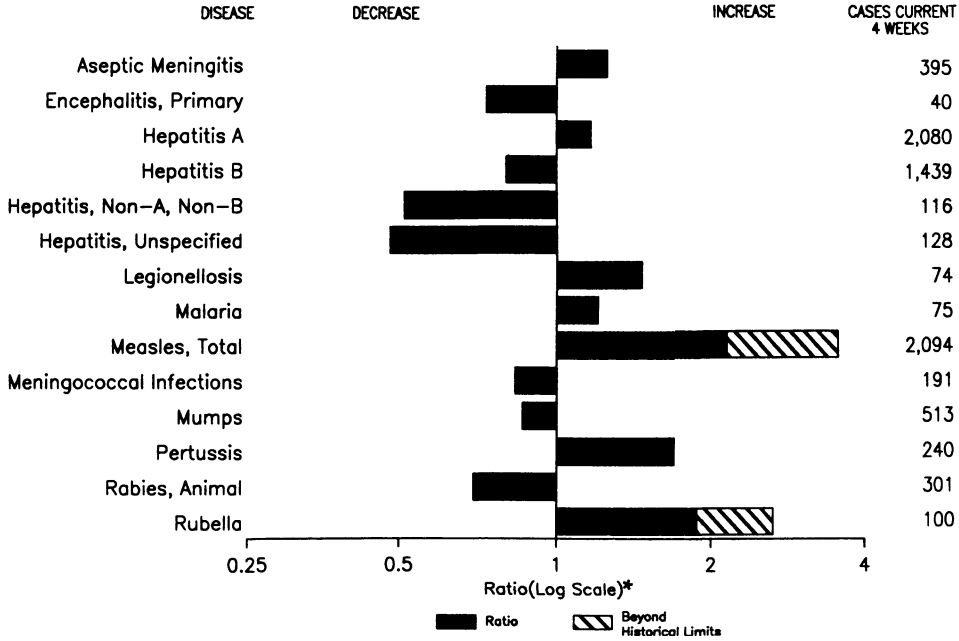
	Adequately vaccinated*		Unvaccinated, vaccine routinely indicated†		Unvaccinated, vaccine not routinely indicated§		
Age (yrs)	No.	(%)	No.	(%)	No.	(%)	Total
<1	—	—	—	—	422	(100.0)	422
1–4	127	(10.2)	805	(64.9)	309	(24.9)	1241
5–9	247	(81.8)	52	(17.2)	3	(1.0)	302
10–14	121	(100.0)	0	(0.0)	0	(0.0)	121
15–19	57	(83.8)	11	(16.2)	0	(0.0)	68
≥20	13	(16.7)	61	(78.2)	4	(5.1)	78
Total	**565**	**(25.3)**	**929**	**(41.6)**	**738**	**(33.1)**	**2232**

*Vaccinated on or after first birthday.

†≥16 months of age, born in or after 1957, no adequate evidence of immunity, and no medical contraindications.

§<16 months of age, born before 1957, medical contraindications, religious/philosophic exemptions, or non-U.S. citizens.

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending May 5, 1990, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from comparable, previous, and subsequent 4-week periods for past 5 years).

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending May 12, 1990 (19th Week)

	Cum. 1990		Cum. 1990
AIDS	16,056	Plague	-
Anthrax	-	Poliomyelitis, Paralytic*	-
Botulism: Foodborne	1	Psittacosis	53
Infant	17	Rabies, human	-
Other	2	Syphilis: civilian	17,539
Brucellosis	12	military	102
Cholera	1	Syphilis, congenital, age < 1 year	-
Congenital rubella syndrome	1	Tetanus	20
Diphtheria	2	Toxic shock syndrome	132
Encephalitis, post-infectious	35	Trichinosis	13
Gonorrhea: civilian	239,884	Tuberculosis	7,141
military	3,394	Tularemia	14
Leprosy	59	Typhoid fever	128
Leptospirosis	14	Typhus fever, tickborne (RMSF)	47
Measles: imported	538		
indigenous	6,678		

*Two cases of suspected poliomyelitis have been reported in 1990; none of 13 suspected cases in 1989 have been confirmed to date. Nine of 14 suspected cases in 1988 were confirmed and all were vaccine-associated.

TABLE II. Cases of specified notifiable diseases, United States, weeks ending May 12, 1990, and May 13, 1989 (19th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	16,056	1,660	230	35	239,884	241,690	10,710	7,503	702	638	397	59
NEW ENGLAND	619	69	8	-	6,684	6,920	221	381	22	31	17	2
Maine	21	2	1	-	93	105	4	17	3	1	1	-
N.H.	36	6	-	-	80	67	5	20	2	2	2	-
Vt.	7	8	2	-	26	24	2	22	3	-	3	-
Mass.	376	22	1	-	2,621	2,755	161	247	9	27	8	1
R.I.	28	19	-	-	385	514	23	21	-	1	3	1
Conn.	151	12	4	-	3,479	3,455	26	54	5	-	-	-
MID. ATLANTIC	4,976	217	15	2	33,314	39,872	1,608	1,246	87	45	95	11
Upstate N.Y.	797	95	14	1	4,922	5,734	354	247	13	15	42	1
N.Y. City	2,790	42	1	-	14,174	17,279	197	425	14	17	9	7
N.J.	899	-	-	-	5,187	5,116	182	277	23	-	10	2
Pa.	490	80	-	1	9,031	11,743	875	297	37	13	34	1
E.N. CENTRAL	1,076	258	58	6	46,858	41,634	768	996	42	51	101	-
Ohio	240	70	15	2	14,378	11,310	91	192	12	7	34	-
Ind.	94	43	2	2	3,697	2,920	81	237	3	17	20	-
Ill.	485	46	19	2	14,690	12,238	315	148	12	12	5	-
Mich.	154	87	20	-	11,486	11,532	163	263	13	15	29	-
Wis.	103	12	2	-	2,607	3,634	118	156	2	-	13	-
W.N. CENTRAL	349	71	17	1	12,852	10,866	579	324	37	14	20	-
Minn.	56	8	9	1	1,638	1,103	93	40	12	-	-	-
Iowa	20	8	1	-	967	945	132	29	1	2	2	-
Mo.	195	29	1	-	7,552	6,380	214	193	12	10	14	-
N. Dak.	-	5	-	-	47	53	4	4	2	1	-	-
S. Dak.	1	3	2	-	73	99	20	4	1	-	-	-
Nebr.	23	9	3	-	617	638	41	16	2	-	2	-
Kans.	54	9	1	-	1,958	1,648	75	38	7	1	2	-
S. ATLANTIC	3,429	397	56	12	66,889	65,557	1,269	1,397	104	96	61	2
Del.	33	10	1	-	1,137	1,043	47	30	2	-	4	-
Md.	344	59	7	1	6,864	7,408	520	193	13	3	19	1
D.C.	254	1	-	-	3,148	4,054	10	23	4	-	-	-
Va.	335	67	21	2	6,348	5,439	103	90	13	75	6	-
W. Va.	23	4	5	-	495	496	9	34	2	-	1	-
N.C.	261	33	16	-	10,848	9,740	254	406	50	-	10	-
S.C.	141	6	-	-	5,595	5,788	17	237	8	6	7	-
Ga.	496	44	3	1	15,129	13,013	108	161	3	6	10	-
Fla.	1,542	173	3	8	17,325	18,576	201	223	9	6	4	1
E.S. CENTRAL	366	133	20	-	20,232	19,036	129	573	42	3	32	-
Ky.	68	38	5	-	2,144	1,839	36	187	15	2	14	-
Tenn.	123	29	11	-	6,835	6,002	57	311	16	-	9	-
Ala.	80	49	4	-	6,476	6,146	35	71	9	-	9	-
Miss.	95	17	-	-	4,777	5,049	1	4	2	1	-	-
W.S. CENTRAL	1,732	114	7	4	23,804	25,279	1,049	575	59	92	29	14
Ark.	144	5	-	-	3,226	2,584	195	30	3	8	7	-
La.	255	12	3	-	4,757	5,427	48	102	-	2	9	-
Okla.	97	11	1	4	2,207	2,166	236	50	13	9	10	-
Tex.	1,236	86	3	-	13,614	15,102	570	393	43	73	3	14
MOUNTAIN	391	73	6	-	4,602	4,940	1,751	553	53	55	23	-
Mont.	3	1	-	-	61	71	40	31	2	3	1	-
Idaho	14	-	-	-	39	79	34	32	8	-	3	-
Wyo.	1	1	1	-	69	47	21	7	1	-	-	-
Colo.	107	20	1	-	1,081	1,183	106	73	15	20	3	-
N. Mex.	32	3	-	-	445	508	258	59	2	-	2	-
Ariz.	140	25	3	-	2,002	1,757	1,029	169	15	25	8	-
Utah	42	14	-	-	159	161	118	32	8	2	1	-
Nev.	52	9	1	-	746	1,134	145	150	2	5	5	-
PACIFIC	3,118	328	43	10	24,649	27,586	3,336	1,458	256	251	19	30
Wash.	229	-	3	1	2,128	2,354	552	224	47	9	4	1
Oreg.	127	-	-	-	901	1,087	378	163	16	5	-	-
Calif.	2,698	299	36	8	21,090	23,670	2,301	1,022	189	234	14	25
Alaska	15	5	3	-	397	310	65	26	3	-	-	-
Hawaii	49	24	1	1	133	165	40	23	1	3	1	4
Guam	1	-	-	-	69	54	3	1	-	5	-	-
P.R.	664	30	4	-	347	401	58	84	-	19	-	-
V.I.	5	-	-	-	169	230	-	6	-	-	-	-
Amer. Samoa	-	1	-	-	26	11	12	-	-	-	-	5
C.N.M.I.	-	-	-	-	52	31	3	2	-	-	-	1

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

TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending May 12, 1990, and May 13, 1989 (19th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	1990	Cum. 1990	Cum. 1989
UNITED STATES	344	647	6,678	10	538	5,073	1,110	165	2,228	44	1,020	787	32	322	130
NEW ENGLAND	37	4	107	-	13	220	71	-	18	6	134	100	1	4	2
Maine	-	-	27	-	-	-	8	-	-	-	4	4	-	-	-
N.H.	4	-	-	-	8	1	2	-	6	-	10	5	1	1	-
Vt.	4	-	-	-	1	1	5	-	1	-	5	5	-	-	1
Mass.	20	-	4	-	1	29	37	-	6	6	106	81	-	-	1
R.I.	3	4	27	-	3	31	4	-	3	-	-	2	-	1	-
Conn.	6	-	49	-	-	158	15	-	2	-	9	3	-	2	-
MID. ATLANTIC	77	5	493	-	128	509	166	8	145	7	277	49	-	2	8
Upstate N.Y.	15	-	155	-	101	92	65	2	61	2	224	25	-	1	2
N.Y. City	26	-	43	-	15	38	17	-	-	-	-	2	-	-	4
N.J.	21	-	22	-	5	303	33	-	30	-	11	18	-	-	2
Pa.	15	5	273	-	7	76	51	6	54	5	42	4	-	1	-
E.N. CENTRAL	16	87	1,972	-	134	1,023	157	12	238	1	201	100	-	14	18
Ohio	3	-	213	-	2	435	54	-	47	-	54	1	-	-	3
Ind.	-	67	220	-	-	17	17	4	9	-	31	8	-	-	-
Ill.	5	-	798	-	5	554	36	-	72	-	57	37	-	14	14
Mich.	5	20	232	-	125	2	34	8	81	1	33	19	-	-	-
Wis.	3	-	509	-	2	15	16	-	29	-	26	35	-	-	1
W.N. CENTRAL	4	2	260	1	12	420	36	3	70	3	27	19	-	-	4
Minn.	1	-	120	-	3	2	8	-	-	-	-	-	-	-	-
Iowa	-	-	21	-	-	1	1	2	11	1	4	6	-	-	-
Mo.	3	-	41	-	-	285	12	-	36	2	17	11	-	-	3
N. Dak.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
S. Dak.	-	2	7	1§	8	-	2	-	-	-	1	1	-	-	-
Nebr.	-	-	26	-	1	67	5	1	2	-	1	-	-	-	-
Kans.	-	-	45	-	-	65	8	-	21	-	3	1	-	-	1
S. ATLANTIC	77	37	428	1	74	262	212	74	815	12	100	67	-	12	4
Del.	2	-	6	-	2	30	1	-	-	-	1	-	-	-	-
Md.	21	10	55	-	11	12	21	50	480	3	26	6	-	1	2
D.C.	6	-	2	-	6	9	11	2	16	-	13	-	-	1	-
Va.	17	8	47	-	2	2	24	9	45	-	9	4	-	-	-
W. Va.	1	-	6	-	-	-	7	-	37	1	9	9	-	-	-
N.C.	6	-	3	1†	1	159	33	-	53	5	18	15	-	-	1
S.C.	-	2	3	-	-	-	15	2	17	-	4	-	-	-	-
Ga.	6	-	6	-	12	-	43	9	56	3	14	8	-	-	-
Fla.	18	17	300	-	40	50	57	2	111	-	6	25	-	10	1
E.S. CENTRAL	9	8	53	-	2	22	62	6	52	3	42	34	-	1	1
Ky.	2	-	3	-	-	2	18	-	-	-	-	1	-	-	-
Tenn.	6	8	29	-	-	1	22	5	24	3	16	14	-	1	1
Ala.	1	-	6	-	2	19	20	-	8	-	24	16	-	-	-
Miss.	-	-	15	-	-	-	2	N	N	-	2	3	-	-	-
W.S. CENTRAL	12	198	1,087	3	52	1,889	74	11	434	3	21	22	11	12	11
Ark.	-	-	-	1§	14	-	7	4	104	-	1	10	-	1	-
La.	-	-	-	-	-	6	19	2	69	-	2	4	11	11	5
Okla.	5	1	132	-	-	7	9	-	96	3	18	8	-	-	1
Tex.	7	197	955	2†	38	1,876	39	5	165	-	-	-	-	-	5
MOUNTAIN	8	29	355	2	57	79	30	41	183	4	90	289	1	24	2
Mont.	-	-	-	-	1	13	6	-	-	-	3	-	-	13	1
Idaho	2	1	15	-	5	1	2	38	102	1	12	33	1	7	-
Wyo.	-	-	-	-	2	-	-	-	2	-	-	-	-	-	-
Colo.	1	2	36	2†	27	29	10	1	14	-	47	18	-	3	-
N. Mex.	1	3	63	-	8	25	2	N	N	-	6	4	-	-	-
Ariz.	4	11	123	-	11	11	2	1	50	3	13	228	-	-	-
Utah	-	-	2	-	-	-	4	-	4	-	5	5	-	-	-
Nev.	-	12	116	-	3	-	4	1	11	-	4	1	-	1	1
PACIFIC	104	277	1,923	3	66	649	302	10	273	5	128	107	19	253	80
Wash.	6	-	7	-	38	33	34	1	21	1	32	23	-	-	-
Oreg.	4	-	-	-	-	4	34	N	N	-	3	4	-	-	1
Calif.	93	277	1,841	3†	25	601	227	9	248	4	77	78	18	247	62
Alaska	-	-	73	-	2	-	6	-	-	-	-	-	-	-	-
Hawaii	1	-	2	-	1	11	1	-	4	-	16	2	1	6	17
Guam	1	U	-	U	-	1	-	U	-	U	-	1	U	-	-
P.R.	-	110	808	-	-	326	6	-	3	-	4	2	-	-	4
V.I.	-	U	-	U	-	4	-	U	5	U	-	-	U	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	5	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending May 12, 1990, and May 13, 1989 (19th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	17,539	14,969	132	7,141	7,051	14	128	47	1,317
NEW ENGLAND	711	608	10	184	165	-	10	-	1
Maine	5	5	2	-	3	-	-	-	-
N.H.	32	2	1	3	10	-	-	-	1
Vt.	1	-	-	2	2	-	-	-	-
Mass.	259	179	6	101	89	-	9	-	-
R.I.	2	14	-	29	22	-	-	-	-
Conn.	412	408	1	49	39	-	1	-	-
MID. ATLANTIC	3,848	3,097	12	1,770	1,405	1	35	3	293
Upstate N.Y.	274	297	4	24	124	-	8	-	10
N.Y. City	1,824	1,250	4	1,134	818	-	18	-	-
N.J.	568	491	-	327	211	1	8	3	88
Pa.	1,182	1,059	4	285	252	-	1	-	195
E.N. CENTRAL	1,181	555	37	739	771	-	19	3	30
Ohio	184	38	19	95	145	-	5	1	3
Ind.	11	23	2	39	69	-	-	-	-
Ill.	462	249	3	375	337	-	10	-	10
Mich.	395	217	13	198	180	-	3	2	3
Wis.	129	28	-	32	40	-	1	-	14
W.N. CENTRAL	151	116	16	178	204	5	-	6	210
Minn.	38	8	-	31	44	-	-	-	83
Iowa	18	15	2	21	26	-	-	-	10
Mo.	73	62	11	83	80	4	-	5	7
N. Dak.	1	1	-	10	9	-	-	-	31
S. Dak.	1	-	-	4	12	-	-	-	55
Nebr.	4	16	2	10	9	1	-	-	1
Kans.	16	14	1	19	24	-	-	1	23
S. ATLANTIC	5,376	5,421	6	1,388	1,482	3	9	12	377
Del.	72	66	1	13	19	-	-	-	4
Md.	428	283	-	123	137	-	4	-	141
D.C.	274	318	-	37	67	-	-	-	-
Va.	282	201	-	123	134	1	-	-	67
W. Va.	6	7	-	25	30	-	-	-	10
N.C.	644	338	3	176	146	1	-	9	2
S.C.	310	265	1	163	157	1	-	2	49
Ga.	1,264	1,137	-	198	197	-	1	1	78
Fla.	2,096	2,806	1	530	595	-	4	-	26
E.S. CENTRAL	1,565	951	5	597	599	1	-	6	59
Ky.	25	23	-	149	141	-	-	-	23
Tenn.	675	390	3	178	148	1	-	5	6
Ala.	463	328	2	182	181	-	-	1	30
Miss.	402	210	-	88	129	-	-	-	-
W.S. CENTRAL	2,807	1,926	7	871	787	3	3	15	176
Ark.	149	118	-	91	89	1	-	1	8
La.	876	439	1	78	95	-	-	1	-
Okla.	85	30	6	75	61	2	1	12	50
Tex.	1,697	1,339	-	627	542	-	2	1	118
MOUNTAIN	335	265	16	150	185	1	7	1	56
Mont.	-	-	-	10	5	-	-	-	17
Idaho	5	-	1	3	7	-	-	-	-
Wyo.	-	-	1	-	-	-	-	-	26
Colo.	20	47	5	6	16	-	-	-	-
N. Mex.	18	11	4	34	32	1	-	1	3
Ariz.	225	70	5	67	85	-	5	-	8
Utah	3	9	-	10	19	-	-	-	-
Nev.	64	128	-	20	21	-	2	-	2
PACIFIC	1,565	2,030	23	1,264	1,453	-	45	1	115
Wash.	146	151	3	107	72	-	1	-	-
Oreg.	49	113	-	49	49	-	-	-	-
Calif.	1,360	1,759	19	1,034	1,247	-	42	1	99
Alaska	4	2	-	17	24	-	-	-	16
Hawaii	6	5	1	57	61	-	2	-	-
Guam	1	3	-	14	30	-	-	-	-
P.R.	263	189	-	29	91	-	-	-	19
V.I.	1	1	-	3	3	-	-	-	-
Amer. Samoa	-	-	-	6	2	-	-	-	-
C.N.M.I.	-	1	-	11	7	-	4	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending May 12, 1990 (19th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	635	443	114	44	19	15	51
Boston, Mass.	190	127	41	13	4	5	20
Bridgeport, Conn.	35	26	6	1	-	2	2
Cambridge, Mass.	19	14	4	1	-	-	4
Fall River, Mass.	23	19	3	1	-	-	-
Hartford, Conn.	66	41	12	5	4	4	1
Lowell, Mass.	33	24	5	4	-	-	2
Lynn, Mass.	11	7	2	2	-	-	-
New Bedford, Mass.	22	20	1	1	-	-	-
New Haven, Conn.	48	33	5	7	3	-	5
Providence, R.I.	46	29	9	5	3	-	2
Somerville, Mass.	5	4	1	-	-	-	-
Springfield, Mass.	62	41	13	3	2	3	6
Waterbury, Conn.	25	21	4	-	-	-	3
Worcester, Mass.	50	37	8	1	3	1	6
MID. ATLANTIC	2,744	1,774	517	304	67	78	179
Albany, N.Y.	45	36	4	3	1	1	4
Allentown, Pa.	20	17	3	-	-	-	1
Buffalo, N.Y.	149	110	27	8	2	2	11
Camden, N.J.	47	27	13	3	3	1	-
Elizabeth, N.J.	33	20	8	4	1	-	3
Erie, Pa.†	49	40	8	1	-	-	5
Jersey City, N.J.	64	33	17	7	1	6	2
N.Y. City, N.Y.	1,318	804	238	205	34	37	72
Newark, N.J.	83	44	17	9	5	5	9
Paterson, N.J.	20	8	8	2	-	2	1
Philadelphia, Pa.	501	320	108	42	12	18	35
Pittsburgh, Pa.†	60	43	8	8	1	-	2
Reading, Pa.	35	31	2	1	1	-	6
Rochester, N.Y.	112	85	18	4	3	2	12
Schenectady, N.Y.	20	18	1	-	-	1	-
Scranton, Pa.†	30	26	4	-	-	-	2
Syracuse, N.Y.	81	58	17	3	1	2	4
Trenton, N.J.	25	14	10	-	1	-	5
Utica, N.Y.	19	14	2	1	1	1	1
Yonkers, N.Y.	33	26	4	3	-	-	4
E.N. CENTRAL	2,232	1,442	447	203	59	81	112
Akron, Ohio	48	37	5	5	1	-	-
Canton, Ohio	32	19	8	3	2	-	4
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	150	88	43	10	3	6	27
Cleveland, Ohio	155	92	32	22	6	3	6
Columbus, Ohio	137	83	29	15	3	7	1
Dayton, Ohio	121	81	25	7	3	5	7
Detroit, Mich.	209	106	40	40	8	15	3
Evansville, Ind.	55	45	8	-	-	2	6
Fort Wayne, Ind.	51	35	10	2	2	2	7
Gary, Ind.	17	8	2	4	3	-	1
Grand Rapids, Mich.	66	50	9	3	2	2	6
Indianapolis, Ind.	177	116	36	13	8	4	2
Madison, Wis.	44	32	7	3	1	1	4
Milwaukee, Wis.	129	85	27	8	1	8	2
Peoria, Ill.	40	24	10	6	-	-	3
Rockford, Ill.	40	31	2	4	2	1	2
South Bend, Ind.	42	31	6	4	-	1	6
Toledo, Ohio	96	73	15	4	3	1	6
Youngstown, Ohio	59	44	8	5	1	1	3
W.N. CENTRAL	763	511	145	60	25	22	27
Des Moines, Iowa	79	61	15	2	1	-	7
Duluth, Minn.	32	27	3	1	1	-	2
Kansas City, Kans.	28	12	11	3	2	-	-
Kansas City, Mo.	99	67	18	7	4	3	5
Lincoln, Nebr.	41	33	6	-	-	2	3
Minneapolis, Minn.	158	108	25	14	5	6	9
Omaha, Nebr.	64	41	15	5	2	1	-
St. Louis, Mo.	138	85	28	14	6	5	-
St. Paul, Minn.	64	39	13	7	3	2	1
Wichita, Kans.	60	38	11	7	1	3	-

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
S. ATLANTIC	1,261	768	277	120	51	45	67
Atlanta, Ga.	125	70	31	17	5	2	1
Baltimore, Md.	183	120	42	9	7	5	14
Charlotte, N.C.	86	61	18	4	2	1	5
Jacksonville, Fla.	116	67	25	15	5	4	11
Miami, Fla.	136	72	40	18	4	2	1
Norfolk, Va.	61	35	10	9	2	5	4
Richmond, Va.	92	53	22	7	6	4	11
Savannah, Ga.	71	48	13	6	2	2	5
St. Petersburg, Fla.	66	56	7	-	3	-	3
Tampa, Fla.	83	53	15	7	4	4	6
Washington, D.C.	217	112	50	28	11	16	6
Wilmington, Del.	25	21	4	-	-	-	-
E.S. CENTRAL	773	514	162	60	20	16	55
Birmingham, Ala.	133	81	26	18	4	4	1
Chattanooga, Tenn.	68	49	17	1	-	1	5
Knoxville, Tenn.	76	49	13	8	2	4	4
Louisville, Ky.	49	37	7	4	-	1	4
Memphis, Tenn.	233	156	49	15	9	3	23
Mobile, Ala.	35	26	6	1	1	1	2
Montgomery, Ala.§	47	33	9	4	-	1	4
Nashville, Tenn.	132	83	35	9	4	1	12
W.S. CENTRAL	1,874	1,176	379	208	60	51	89
Austin, Tex.	57	37	10	6	2	2	6
Baton Rouge, La.	37	29	4	4	-	-	3
Corpus Christi, Tex.	50	27	17	4	2	-	2
Dallas, Tex.	191	100	41	32	12	6	3
El Paso, Tex.	68	50	8	6	2	2	7
Fort Worth, Tex	81	59	12	8	2	-	3
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	70	48	11	5	2	4	4
New Orleans, La.	211	127	42	30	6	6	-
San Antonio, Tex.	199	129	42	13	5	10	25
Shreveport, La.	67	51	9	5	-	2	11
Tulsa, Okla.	109	83	14	6	3	3	7
MOUNTAIN	690	453	130	56	23	28	30
Albuquerque, N. Mex.	79	54	17	5	1	2	8
Colo. Springs, Colo.	45	30	10	3	1	1	3
Denver, Colo.	68	47	14	2	3	2	2
Las Vegas, Nev.	117	62	24	16	5	10	5
Ogden, Utah	22	17	5	-	-	-	4
Phoenix, Ariz.	170	106	27	20	8	9	2
Pueblo, Colo.	27	18	5	2	2	-	2
Salt Lake City, Utah	45	27	11	3	2	2	2
Tucson, Ariz.	117	92	17	5	1	2	2
PACIFIC	1,821	1,181	328	194	50	61	113
Berkeley, Calif.	9	4	4	1	-	-	-
Fresno, Calif.	71	53	12	1	1	4	13
Glendale, Calif.	24	21	3	-	-	-	3
Honolulu, Hawaii	78	51	15	9	1	2	7
Long Beach, Calif.§	88	58	16	8	3	3	11
Los Angeles Calif.	450	271	84	62	19	8	22
Oakland, Calif.	80	44	13	11	4	8	1
Pasadena, Calif.	24	18	4	1	-	1	-
Portland, Oreg.	129	88	23	10	3	5	5
Sacramento, Calif.	160	102	32	15	7	4	16
San Diego, Calif.	160	100	33	16	3	8	11
San Francisco, Calif.	152	91	31	21	2	6	6
San Jose, Calif.	185	132	25	21	4	3	10
Seattle, Wash.	116	78	16	16	3	3	2
Spokane, Wash.	49	36	9	1	-	3	5
Tacoma, Wash.	46	34	8	1	-	3	1
TOTAL	12,793††	8,262	2,499	1,249	374	397	723

*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.

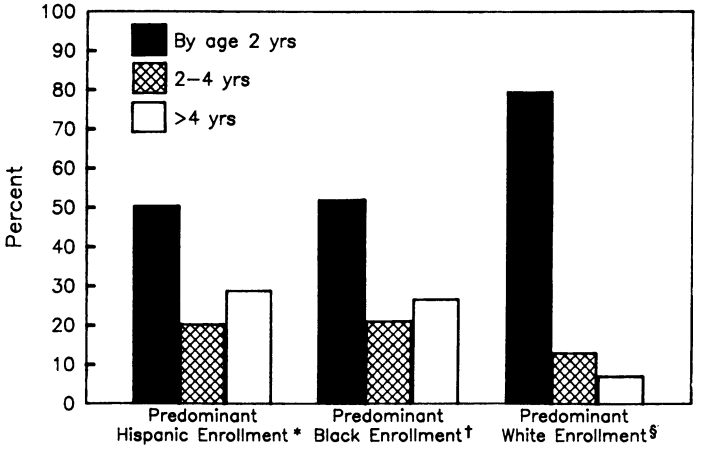
§Data not available. Figures are estimates based on average of past available 4 weeks.

Measles — Continued

Editorial Note: Measles outbreaks in inner cities continue to occur primarily among unvaccinated black and Hispanic preschool-aged children (*2–5*). In 1989, three large preschool outbreaks in Chicago, Houston, and Los Angeles accounted for 35% of all reported cases in the United States (CDC, unpublished data). These outbreaks reflect the failure of current strategies to achieve high vaccination coverage levels among preschool-aged children.

Although most children are well vaccinated by school entry, measles vaccination levels in Chicago were as low as 49% among 2-year-old children. In addition, age-appropriate vaccination levels for all antigens were as low as 25%. Although these data reflect vaccination levels 3 years ago, communities with the lowest coverage reported the highest measles attack rates in the outbreak. Conversely, districts with 75% or higher coverage reported low disease incidence. Other cities with measles outbreaks among preschool-aged children have also found measles vaccination levels as low as 49% in 2-year-old children and low age-appropriate coverage for all antigens (*4–6*). Outbreaks among urban preschool-aged children with poor age-appropriate coverage for all antigens reflect the difficulty in reaching this population, which often has limited contact with the health-care system. Efforts must be intensified to increase the availability of vaccination services and to ensure that all eligible children are vaccinated whenever they present for health care. Specific approaches could include extending the hours of public health clinics to accommodate working families; expanding services to include walk-in vaccination clinics at all facilities on a daily basis; integrating vaccination services into existing programs that serve inner-city preschool-aged children (e.g., Women, Infants and Children and Aid to Families with Dependent Children); targeting health education at low socioeconomic parents; and educating medical personnel to use all health-care contacts as opportunities to vaccinate susceptible children.

FIGURE 2. Patient age at measles vaccination, by race — Chicago, March 1990



*Average enrollment of Hispanic students: 94.2% (eight schools).
†Average enrollment of black non-Hispanic students: 95.6% (20 schools).
§Average enrollment of white non-Hispanic students: 51.0% (four schools).
Source: Chicago Department of Health.

Measles — Continued

In this outbreak, 565 (25.3%) measles patients with known vaccination status had been vaccinated on or after their first birthday. To reduce the number of measles cases attributed to primary measles vaccine failure, which accounted for almost 40% of cases in 1989 (CDC, unpublished data), the Immunization Practices Advisory Committee (ACIP) has recommended a two-dose schedule for measles vaccination (*7*). However, the highest priority remains that all susceptible persons receive at least one dose of vaccine at the recommended age. If coverage with at least one dose of vaccine is not increased among inner-city preschool-aged children, additional outbreaks of measles and other vaccine-preventable diseases can be expected.

References

1. CDC. Classification of measles cases and categorization of measles elimination programs. MMWR 1983;31:707–11.
2. CDC. Measles outbreak—Chicago, 1989. MMWR 1989;38:591–2.
3. CDC. Measles—Los Angeles County, California, 1988. MMWR 1989;38:49–52,57.
4. CDC. Measles—Dade County, Florida. MMWR 1987;36:45–8.
5. CDC. Measles—New Jersey. MMWR 1986;35:213–5.
6. Hutchins SS, Escolan J, Markowitz LE, et al. Measles outbreak among unvaccinated preschool-aged children: opportunities missed by health care providers to administer measles vaccine. Pediatrics 1989;83:369–74.
7. CDC. Measles prevention: recommendations of the Immunization Practices Advisory Committee (ACIP). MMWR 1989;38(no. S-9).

International Notes

Eosinophilia-Myalgia Syndrome — Canada

As of May 14, 1990, 10 confirmed cases of eosinophilia-myalgia syndrome (EMS) in Canada have been reported to the Laboratory Centre for Disease Control (LCDC), and other possible cases are under investigation. All 10 cases have been linked to use of L-tryptophan (LT)-containing pills. Eight of the confirmed cases are in females. Eight patients used single-ingredient dietary supplements purchased in the United States; one of the remaining patients obtained LT compounded from an unspecified bulk material at a Canadian pharmacy, and the other had obtained nonprescription LT manufactured in the United States and distributed illegally in Canada.

In Canada, single-ingredient LT products have been required to be sold by prescription since 1985. The prescription drug Tryptan*, manufactured by ICN Canada Ltd., is the only single-ingredient LT product legally available in Canada. No EMS cases have been directly linked to Tryptan.

Laboratory and epidemiologic investigations of EMS are under way. Physicians in Canada should report any cases meeting the case definition (*1*) to the Acting Director, Bureau of Chronic Disease Epidemiology, LCDC, Health and Welfare Canada, Ottawa, K1A 0L2 (telephone [613] 957-0329; FAX [613] 952-7009).

Adapted from: Canada Diseases Weekly Report *1990;16:69–70, as reported by: K Wilkins, MSc, D Wigle, MD, Bur of Chronic Disease Epidemiology, Laboratory Centre for Disease Control, Health and Welfare Canada, Ottawa, Ontario.*

*Use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Eosinophilia-Myalgia Syndrome — Continued

Editorial Note: As of May 11, 1990, 1500 EMS cases have been reported to CDC from state and territorial health departments in the United States. A total of 23 persons who had been taking LT before their illness have died.

Reference

1. CDC. Eosinophilia-myalgia syndrome—New Mexico. MMWR 1989;38:765–7.

Notice to Readers

Availability of NIOSH Criteria Document on Hand-Arm Vibration Syndrome

In September 1989, CDC's National Institute for Occupational Safety and Health (NIOSH) published *Criteria for a Recommended Standard: Occupational Exposure to Hand-Arm Vibration** (*1*). This document examines the occupational health problems associated with use of vibrating tools (including both hand-held vibrating tools and stationary tools that transmit vibration through a workpiece) and provides criteria for reducing the risk for developing vibration-induced health problems.

The major health problems associated with the use of vibrating tools are peripheral vascular and peripheral neural disorders of the fingers and hands. The signs and symptoms of these disorders include numbness, pain, and blanching of the fingers. The constellation of vibration-induced signs and symptoms is referred to as hand-arm vibration syndrome (HAVS) (sometimes called Raynaud's phenomenon of occupational origin or vibration white finger disease).

In the United States, an estimated 1.5 million workers use vibrating tools. The prevalence of HAVS in worker populations that have used vibrating tools has ranged from 6% to 100% (*1*). Development of HAVS depends on many factors, including the level of acceleration (vibration energy) produced by the tool, the length of time the tool is used each day, the cumulative number of months or years the worker has used the tool, and the ergonomics of tool use. The tools most commonly associated with HAVS are powered hammers, chisels, chain saws, sanders, grinders, riveters, breakers, drills, compactors, sharpeners, and shapers.

HAVS is a chronic, progressive disorder with a latency period that can vary from a few months to several years. The early stages of HAVS are usually reversible if further exposure to vibration is reduced or eliminated. However, for advanced stages, treatment is usually ineffective, and the disorder can progress to loss of effective hand function and necrosis of the fingers. Therefore, prevention is critical. Adherence to the control measures and medical monitoring practices recommended in this document should prevent or greatly reduce the potential for vibration-exposed workers to develop HAVS.

Reported by: Div of Standards Development and Technology Transfer, National Institute for Occupational Safety and Health, CDC.

Reference

1. CDC. Criteria for a recommended standard: occupational exposure to hand-arm vibration. Cincinnati, Ohio: US Department of Health and Human Services, Public Health Service, 1989; DHHS publication no. (NIOSH)89-106.

*Single copies of this document can be obtained without charge from the Information Dissemination Section, Division of Standards Development and Technology Transfer, National Institute for Occupational Safety and Health, CDC, 4676 Columbia Parkway, Cincinnati, Ohio 45226; telephone: (513) 533-8287.

Erratum: Vol. 39, No. 17

In "Update: Influenza Activity—Worldwide and Recommendations for Influenza Vaccine Composition for the 1990–91 Influenza Season," the influenza B component of the 1990–91 vaccine was incorrectly stated on page 295 in the last sentence before the credits. The correct antigen should be B/Yamagata/16/88.

The *Morbidity and Mortality Weekly Report* is prepared by the Centers for Disease Control, Atlanta, Georgia, and available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238.

The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

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