CENTERS FOR DISEASE CONTROL



MORBIDITY AND MORTALITY WEEKLY REPORT

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Current Trends

Measles - United States, First 26 Weeks, 1986

During the first 26 weeks of 1986, a provisional total of 3,921 measles cases was reported in the United States, an increase of 117.6% over the 1,802 cases reported during the same period in 1985 (1). The overall incidence rate for the 26-week period in 1986 was 1.7/100,000 population, compared with 0.8/100,000 for 1985. Nine states accounted for 3,185 (81.2%) cases: New Jersey (876), Illinois (412), New York (369), California (299), Arkansas (278), South Carolina (274), Arizona (243), Texas (242), and Wisconsin (192). Eighteen states and New York City had incidence rates greater than 1/100,000 population. Seven states and New York City had incidence rates greater than 3/100,000 population: Arkansas, New Jersey, Arizona, South Carolina, Kansas, Wisconsin, and Illinois. During the first 26 weeks of 1986, 42 states and 9.0% of the nation's 3,139 counties reported measles cases (indigenous or imported), compared with 20 states and 2.5% of the counties in 1985.

Eighty outbreaks (i.e., five or more epidemiologically linked cases) have occurred: nine had more than 100 cases each (three of these had more than 200 cases); five had 51-100 cases each; 11 had 26-50 cases each; and 55 had up to 25 cases.

Detailed information was provided to CDC's Division of Immunization on all 3,921 cases. Of these, 3,824 (97.5%) met the standard case definition for measles*, and 1,174 (29.9%) were serologically confirmed. The number of cases reported weekly began to rise soon after the first of the year and reached a maximum at week 11. The decrease in the number of patients with rash onset after week 21 may be due to a delay in reporting rather than a true decrease (Figure 1).

The incidence rate of measles in all age groups increased substantially between 1985 and 1986. However, the age characteristics of cases differed between the two 26-week periods (Table 1). During the first 26 weeks of 1985, the highest incidence rate was reported for persons 15-19 years of age. By comparison, during the first 26 weeks of 1986, the highest incidence rate occurred among children 0-4 years of age (7.0/100,000), followed by children 10-14 years of age (5.7/100,000). The latter group had the greatest increase in incidence rate between years. Of the 1,249 reported cases among preschool-aged children, 355 (28.4%) were infants under 1 year of age; 212 (17.0%) were 12-14 months of age; 55 (4.4%) were 15 months of age; and 627 (50.2%) were 16 months-4 years of age.

^{*}Fever (38.3 C [101 F] or higher, if measured), generalized rash of 3 days or longer duration, and at least one of the following: cough, coryza, conjunctivitis.

Measles - Continued

Of the 2,466 (62.9%) patients for whom setting of transmission was reported, 1,371 (55.6%) acquired measles in primary or secondary schools; 203 (8.2%), in colleges or universities; 423 (17.2%), at home; 143 (5.8%), in medical settings; 72 (2.9%), in day care; and 254 (10.3%), in a variety of other settings, including churches, sporting events, and summer camps.

Seventy-three (1.9%) cases were international importations. An additional 41 cases were epidemiologically linked to an international importation within two generations of infection.

FIGURE 1. Reported measles cases, by week of rash onset and by week of report* — United States, first 26 weeks, 1986



*MMWR data; includes patients with rash onset in 1985.

TABLE 1. Age	distribution and	l estimated	incidence ra	ates of	measles	 United	States,
first 26 weeks	s, 1985 [*] and 198	6*					

		1985			1986		
Age group (yrs.)	No.	(%)	Rate [†]	No.	(%)	Rate [†]	Percent change
0-4	466	(25.9)	2.5	1,249	(31.9)	7.0	+180.0
5-9	152	(8.4)	0.9	430	(11.0)	2.6	+188.9
10-14	319	(17.7)	1.8	1,006	(25.7)	5.7	+216.7
15-19	603	(33.5)	3.1	749	(19.1)	3.9	+25.8
20-24	175	(9.7)	0.8	243	(6.2)	1.1	+37.5
≥ 25	86	(4.8)	0.1	224	(5.7)	0.2	+100.0
Unknown	0	(0.0)		20	(0.5)		
Total	1,801	(100.0)	0.8	3,921	(100.0)	1.7	+112.5

*Provisional data.

[†]Per 100,000 population.

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Measles - Continued

Therefore, a total of 114 (2.9%) of all cases were programmatically classified as international importations during this period (2). However, it is likely that additional cases—for which source information was not available—were related to international importations.

A total of 1,730 (44.1%) patients had been vaccinated on or after the first birthday, including 724 (18.5%) who were vaccinated at 12-14 months of age. There were 2,001 (51.0%) unvaccinated patients, and 190 (4.8%) with histories of inadequate vaccination (vaccinated before the first birthday).

Of the 3,921 cases, 1,403 (35.8%) were classified as preventable (2) (Table 2). From 1985 to 1986, the absolute number and proportion of cases that were preventable increased in each age group. The highest proportion of preventable cases occurred among persons who were not of school age: 85.0% of cases among children 16 months-4 years of age were preventable (Table 2). Only 28.7% of cases among school-aged persons 5-19 years of age were preventable; however, 44.1% of all preventable cases occurred in this age group.

 TABLE 2. Age distribution and preventability of measles cases — United States, first 26

 weeks, 1985* and 1986*

	1	985			1986		
		Prev	entable	· · · · · · · · · · · · · · · · · · ·	Prev	entable	
		c	ases		C	ases	
Age group	Total cases	No.	(%)	Total cases	No.	(%)	Percent change [†]
≤ 15 mos.	242	0	(0.0)	622	0	(0.0)	0.0
16 mos4yrs.	224	155	(69.2)	627	533	(85.0)	+22.8
5-9 yrs.	152	32	(21.1)	430	144	(33.5)	+58.8
10-14 yrs.	319	52	(16.3)	1,006	242	(24.1)	+47.9
15-19 yrs.	603	135	(22.4)	749	238	(31.8)	+42.0
20-24 yrs.	175	60	(34.3)	243	174	(71.6)	+108.7
25-29 yrs.	53	32	(60.4)	88	72	(81.8)	+35.4
≥ 30 yrs.	33	0	(0.0)	136	0	(0.0)	0.0
Total	1,801	466	(25.9)	3,901 [§]	1,403	(35.8)	+38.2

*Provisional data.

[†]In percentage of preventable cases.

[§]Excludes 20 for whom preventability status is not known.

TABLE 3. Reasons measles cases were classified as nonpreventable — United States, first 26 weeks, 1986*

Causes of nonpreventability		No. cases (%)	Percentage of total cases
Persons < 16 mos. of age	622	(24.7)	15.9
Persons born before 1957	136	(5.4)	3.5
Persons 16 mos28 yrs. of age Adequately vaccinated Prior physician diagnosis Non-U.S. citizens Exemptions ^T Laboratory evidence of immunity	1,760	(69.9) 1,658 (94.2) 1 (0.1) 28 (1.6) 73 (4.1) 0 (0.0)	44.9
Total	2,518	(100.0)	64.2

*Provisional data.

[†]Medical—nine; religious—41; philosophic—23.

Measles - Continued

Of the 2,518 nonpreventable cases, 622 (24.7%) were among persons too young for routine vaccination (under 16 months of age), and 136 (5.4%) were too old (born before 1957). Of the 1,760 who were between 16 months and 29 years of age, 1,658 (94.2%) had been vaccinated on or after the first birthday; one (0.06%) had a prior physician diagnosis of measles; 28 (1.6%) were non-U.S. citizens; and 73 (4.1%) had medical contraindications or exemptions under state law (Table 3).

Reported by Div of Immunization, Center for Prevention Svcs, CDC.

Editorial Note: The 3,921 measles cases reported through week 26 of 1986 exceed the total number of reported cases in any year since 1980, when 11,564 cases were reported during the comparable period. The 1986 figure is almost four times higher than the all-time low of 1,037 cases reported during the same period of 1983. Although the number of reported cases still represents less than 1% of that in the prevaccine era (*3*), when an average over 500,000 cases was reported annually, there is concern about the recent increase.

Incidence rates have increased in all age groups in 1986. The greatest increase (216.7%) occurred among persons 10-14 years of age. The highest incidence rate was in preschoolers who have accounted for almost one-third of all cases in 1986. The large number of cases among children 10-14 years of age was due to several large outbreaks in middle schools this (Continued on page 533)

			33rd Week En	ding	Cumula	tive, 33rd Wee	k Ending
	Disease	Aug. 16, 1986	Aug. 17, 1985	Median 1981-1985	Aug. 16, 1986	Aug. 17, 1985	Median 1981-1985
Acquired Im	nunodeficiency Syndrome (AIDS)	303	188	N	7.936	4,819	N
Aseptic men	inaitis	347	457	432	4 544	4 237	4 237
Encephalitis	Primary (arthropod-borne	• • •			.,•	.,	4,207
& unspec.)		33	39	47	578	656	705
Post-infectious		1 1	1	i	68	87	64
Gonorrhea:	onorrhea: Civilian		19.893	18.903	546.209	550.667	562 150
	Military		511	511	10.441	13,296	15 420
Hepatitis:	Туре А	362	416	434	13.615	13.643	13 643
	Type B	458	523	466	16 193	15 953	14 863
	Non A, Non B	62	83	N	2 233	2 594	14,000 N
	Unspecified	71	110	150	2 938	3 605	4 5 3 3
Legionellosis	,	18	10	Ň	397	451	4,000 N
Leprosy		1	.9	ï	169	250	161
Malaria		1 17	46	39	609	641	641
Measles: To	tal*	177	64	25	5114	2 300	2 1 9 7
ind	digenous	174	52	Ň	4 879	1 930	2,107
Im	ported	3	12	Ň	235	370	N
Meningococ	cal infections: Total	1 17	23	36	1 724	1 635	1 944
	Civilian	17	23	36	1 722	1 629	1 940
	Military				1,722	6	1,340
Mumps		55	28	28	3 210	2 1 1 7	2 260
Pertussis		68	86	54	1 823	1 412	1 208
Rubella (Ger	man measles)	11	10	10	379	476	745
Syphilis (Pri	mary & Secondary) Civilian	390	561	640	16 293	16 927	19.051
	Military	2	3	6	110	116	239
Toxic Shock	syndrome	12	7	Ň	226	252	2.30 N
Tuberculosis	5	357	481	478	13 597	13 300	14 621
Tularemia		2	-01	4/0	70	110	140
Typhoid fev	er	4	11	12	175	217	242
Typhus feve	r, tick-borne (RMSF)	36	35	36	486	433	720
Rabies, anin	nal	131	99	140	3,483	3,356	4,038

TABLE I. Summary-cases specified notifiable diseases, United States

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1986		Cum 1986
Anthrax Botulism: Foodborne Infant (Utah 1) Other Brucellosis (Va. 2, Mont. 1, Colo. 2, N.Mex. 1) Cholera Congenital rubella syndrome Congenital syphilis, ages < 1 year Dintheria	6 30 1 47 2 107	Leptospirosis Plague Poliomyelitis, Paralytic Psittacosis (N.C. 1, Colo. 2) Rabies, human Tetanus (La. 1, Idaho 1) Trichinosis Typhus fever, flea-borne (endemic, murine)	23 4 67 38 20 32

*Two of the 177 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

	4100	Aseptic	Encer	ohalitis	Gon	orrhea	н	epatitis (V	'iral), by ty	ре	Legionel-		
Reporting Area	AIUS	gitis	Primary	Post-in- fectious	(Cir	vilian)	A	В	NA,NB	Unspeci- fied	losis	Leprosy	
	Cum 1986	1986	Cum 1986	Cum 1986	Cum 1986	Cum. 1985	1986	1986	1986	1986	1986	Cum 1986	
UNITED STATES	7,936	347	578	68	546,209	550,667	362	458	62	71	18	169	
NEW ENGLAND	347	18	17	3	13,428	14,775	9	26	3	4	1	6	
NH	8	1	2	-	344	355	-	4	-	-	-	-	
Vt	3	÷	2	2	162	196	-	1	-	;	1	-	
RI	187	5	4	-	5,441	5,749	3	19	3	4	2	6	
Conn	118	3	9	1	5,819	6,646	5	2	-	-	-	-	
MID ATLANTIC	3,009	48	67	6	93,374	80,080	14	31	1	22	-	11	
Upstate N Y	295	15	26	4	10,957	10,601	8	9	1		-	1	
N Y City	2,023	15	14	-	54,689	40,326	2	3	-	19	-	9	
Pa	202	-	17	2	15,851	16,973	-		-	-	-	1	
EN CENTRAL	487	91	158	10	71.739	74.012	13	45	7	1	5	4	
Ohio	100	15	47	2	18,435	18,767	4	17	3	-	5	-	
Ind	46	21	38	3	7,670	7,546	2	9	3	1	-	-	
Mich	230	34	33	1	22 393	20,001	7	19	1	-	-	1	
Wis	25	-	7	-	2,768	6,927	-	-	-	-	-	-	
W N CENTRAL	153	8	25	8	23 558	25 504	9	16	٨	_	2	2	
Minn	60	ĭ	12	-	3,345	3,719	-	2	1	-	1	ĩ	
lowa	10	-	7	-	2,385	2,775	2	4		-	-	-	
N Dak	51	3	-	-	11,860	12,292	3	5	1	-	1	-	
S Dak	ĩ	-	5	:	480	471	3	-	-	-	-	-	
Nebr Kans	6	1	-	1	1,793	2,234	-	2	-	-	-	÷	
C ATLANITIC		3		,	3,403	3,042		3	2	-			
Del	1,109	4	/0 5	23	2 252	142,302	50	137	16		4	1	
Md	123	19	25	1	16,582	18,367	ż	20	-	-	-	-	
DC	132	1	-	1	10,412	9,616	-	2	-	-	-		
W Va	106	28	23	1	11,/18	11,927	5	36	6	2	2	1	
NC	43	6	iò	1	21,666	21,564	6	5	-	1	-	-	
SC	23	2	-		12,312	13,828	:	18	1	-	1	-	
Fla	490	24	2	18	24,057 41,264	28,639 34,259	4 32	24 29	3 5	8	ī	-	
ES CENTRAL	102	11	40	3	44.586	46.418	5	31	3	-	-	1	
Kγ	21	9	19	ĩ	4,923	5,250	3	4	ĩ	-	-	-	
Tenn	53	2	.3	!	17,193	17,856	!	.7	-	-	-		
Miss	10	-	1		9,688	9,179		9	-	-	-	-	
W S CENTRAL	482	32	73	6	65 456	69 643	30	20	1	13	-	12	
Ark	21	-	-	ž	6,204	6,676			-	-	•	-	
La	102	:	3	-	11,822	13,768	.1	2		-	-	1	
Tex	332	29	56	4	40.060	41,748	14	15	-	12	-	11	
MOUNTAIN	201	e	20	,	16.022	17 249	22	22	7	2	1	11	
Mont	4	-	- 20	1	458	474	3	2	í	-	i		
ldaho	2	-	-	-	531	518	9	4	-	-	-	-	
Wγo Colo	4	Ā	2	-	357	417	i	-	÷	2	-	- 3	
N Mex	90	4	3		1.620	1.959	9	3	i	-			
Ariz	50	U	8	-	5,082	5,113	Ũ	Ŭ	Ú	U	U	5	
Utah Nev	10	1	3	•	696 3 096	749 2 882	5	2	3	-	-	1	
	2040		102		76 250	80.684	100	120	20	10	E	121	
Wash	2,040	1	11	-	5,796	5,922	25	12	20	1	-	14	
Oreg	41	-	-	-	3,171	3,997	35	9	4	1	-	-	
Calif Alaska	1,873	32	89	8	64,770	67,744	139	106	13	16	5	84	
Hawaii	30	9	-	-	859	1,155	:	1	-	-	-	23	
C					110	120							
Guarn P R	- 76	-	4	-	1483	2,201	1	-	-	1	-	1	
V.I	3	υ	-	-	139	316	Ů	Ū	U	U	U	-	
Pac Trust Terr	-	-	-	-	276	574	3	-	-	-	-	31	
Amer Samoa	-	-	-	· •	30	-	-	-	-	-	-	2	

TABLE III. Cases of specified notifiable diseases, United States, weeks ending August 16, 1986 and August 17, 1985 (33rd Week)

N Not notifiable

	Malaria	India	Mea	sies (Rut	eola)	Total	Menin- gococcal	Mu	mps		Pertussis		Rubella		
Reporting Area	Cum. 1986	1986	Cum. 1986	1986	Cum. 1986	Cum. 1985	Cum 1986	1986	Cum.	1986	Cum.	Cum.	1986	Cum	Cum
UNITED STATES	S 609	174	4,879	3	235	2.300	1.724	55	3 2 10	68	1 823	1 412	11	270	1985
NEW ENGLAND	31	-	74	1	8	123	122	4	53	3	100	70		3/9	4/0
Maine	1	-	10	-	-	1	23	-	- 55	-	2	/8	-	9	12
N H Vt	2	-	38	-	-	-	6	-	13	-	46	29	-	1	2
Mass	16	-	23	-	6	115	15	1	3	-	3	3	-	1	-
RI	4	-	-ž	-,		-	16	-	9	i	28	12	-	4	6
Conn	7	-	1	17	2	7	35	-	19	1	17	'7	-	ī	4
MID ATLANTIC	75	68	1,559	-	21	196	273	4	133	6	129	95		21	204
Upstate N.Y.	29	19	62	-	19	82	93	-	52	2	82	58	-	23	17
N.J		49	905	-	2	60 27	57	-	5		3	9	-	5	163
Pa	17	-	22	-	-	27	29 94	1	40	3	33	25		3	11
EN CENTRAL	39	14	949	_	16	E10	224	22	2 4 0 5				-		13
Ohio	10		-	-	10	54	234		2,185	11	103	263	2	34	26
Ind	2		11	-	-	57	19	-	31		22	11	-	-	1
III Mich	14	11	631	-	3	286	66	30	1,617	•	28	30	2	24	10
Wis	1	-	254	-	3	54 59	52	3	248	1	24	29	-	7	14
									100		03	101	-	2	1
Minn	22	51	321	-	17	11	83	1	82	5	150	94		10	19
lowa	5	51	45	-	4	6	16	-	1	1	43	28	-		2
Mo	10	51	25	-	ļ	-	11	-	21	2	13	5	-	1	1
N Dak	-	-	25	-	ĭ	2	28	-	15	1	13	24	-	1	7
S Dak Nebr	•	-	-	-	-		4	-	1	-	14	9	-	1	2
Kans	4 2	-	94	-	-		9	-	-	1	1	4	-		-
S ATLANTIC	-	_		•	5	'	15	1	41	-	62	23	-	7	7
Del	/6	3	504	-	53	268	321	4	152	13	578	269	-	10	49
Md	12	2	22	-	- 0	-	2	-		-	222		-	-	1
D.C.	1	-		-	2	8	44	-	15	-	136	121	-	-	6
Va W Va	18	-	35	-	24	24	53	3	32	3	30	- 8	-	-	
NC	4	-	2	-	-	33	3	-	38	-	20	2		-	9
SC	5	-	274	-	1	9	55	-	14	3	41	15	-	-	-
Ga	ž	1	79	-	14	3	29	1	12	2	13	1	-	-	3
Fla	24	-	89	-	3	95	82	-	27	-	21	47	-	10	- 28
E.S. CENTRAL	16	-	56	-	8	4	96	1	24						
Ky.	4	-	-	-	ĕ	2	23	i	24	4	3/	17	2	4	2
Tenn	1	-	54	-	1	ī	35		15		12	5	2	4	2
Miss	4	-	-	-	1	-	27	-	2	1	20	ĕ	-	-	-
		-	2	•	-	1	11	-	1	-	-	3	-	-	-
W.S. CENTRAL	58	-	585	-	34	419	150	1	147	3	135	211		55	29
la	- 8	-	2/6	-	2	-	21	-	7	-	8	12	-	•	1
Okla.	8	-	37	-	2	42	22	- N	2	1		10	-	-	:
Tex	42	-	268	-	зō	376	87	1	138	2	30	70	-	55	27
MOUNTAIN	25		205		20			_							
Mont		- 1	295	i+	20	521	86	2	203	9	184	105	1	21	5
Idaho	1	-	1	-	-	135	3	2	с 6		22	5	-	2	-
Wyo. Colo	-	-	-	-	-	-	2	-		-	1		-	•	
N. Mex		-	2	-	5	10	13	-	11	3	51	32	-	1	_
Ariz	8	ū	252	ū	6	224	.7	N	N	1	17	11	-	-	2
Utah	2		7		-	234	19	U	167	U	46	24	U	2	1
Nev	3	-	1	-	-	-	25	-	4	-	25	20	-	13	1
PACIFIC	267	38	536	1	52	248	350	5	221	10	070				
Wash	21	33	158	-	25	42	53	-	231	3	270	280	6	205	130
Oreg. Calif	15	Ξ	3	- F	4	3	22	N	Ń		10	29	- -	1	''
Alaska	230	4	355	1 9	22	184	271	5	201	10	169	162	3	186	75
Hawaii	i	1	20	:	1	19	11	-	6	-	2	28	-	:	1
Guam					•		•	-	.,	-	8	11	-	4	42
P.R.	4	-	33		1	11	2	-	4	-		-	-	3	2
V.I.		Ū		Ū	-	10	-	ū	21	- 1	12	9		58	25
Pac Trust Terr.	-	-	-	-	-	-	1	-	.3	-	-	-	U		-
Amer. Samoa	-	-	2	-	•	-	-	1	4	-	-	-		1	-
				and the second sec											

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 16, 1986 and Au 17 100E (22-4) M . .

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

530

		August	16, 1986 a	and Augu	August 16, 1986 and August 17, 1985 (33rd Week)													
Reporting Area	Syphilis (Primary &	(Civilian) Secondary)	Toxic- shock Syndrome	Tuber	culosis	Tula- remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal									
_	Cum 1986	Cum 1985	1986	Cum 1986	Cum 1985	Cum 1986	Cum 1986	Cum 1986	Cum 1986									
UNITED STATES	16,293	16,827	12	13,597	13,300	79	175	486+	36 3,483									
NEW ENGLAND	303	348	1	418	450	1	10	8 🕇	3 ₃									
Maine N H	15	9	-	31	35	-	-		:									
Vt	7	5	-	13	4	-	-	-	-									
Mass	163	175	1	214	273	1	8	2										
Conn	92	140	-	123	35 88	-	2	3 2	2									
MID ATLANTIC	2,355	2,196	-	2,788	2,442	1	14	16+	410									
Upstate N Y	99	155	-	399	430	-	2	21	53									
N Y City	422	428	-	484	336	1	5	5	14									
Pa	483	247	-	452	483	-	ī	3	343									
EN CENTRAL	660	708	2	1,627	1,641	-	13	52 +	2 82									
Ohio	85	93	-	287	201	-	2	50 -	13									
III III	351	362	-	713	711	-	2	1	23									
Mich	113	148 42	2	375 78	325 103	-	5	1	16 21									
WIN CENTRAL Minn	143	144	-	391	353	22	7	28	566									
lowa	6	16		33	43	1		i	125									
Mo	78	73	-	191	167	17	5	12	62									
S Dak	23	2		6 16	6 18	2	-	1	124									
Nebr	11	ž	-		13	ĩ	-	4	22									
Kans	17	13	-	40	33	1	1	4	41									
S ATLANTIC	4,939	4,961	2	2,624	2,688	8	24	233 +	19 820									
Md	282	284	-	192	242	2	6	26 3	405									
DC	198	229	:	87	102	-	2	1	26									
va W Va	239	190	1	219	239	2	5	43 //	24									
NC	327	428	-	366	339	1	3	79 4	6									
SC	423	505	-	343	337	-	-	55	38									
Fla	2,468	2,429	-	918	900	-	4	1	81									
ES CENTRAL	1,065	1,253	-	1,156	1,175	8	2	58 †	3 227									
Ky Tana	51	39	-	277	267	3	-	11	60									
Ala	352	406	-	331	343	4		14 2	• 68									
Miss	282	420	-	183	208	•	1	8	2									
W S CENTRAL	3,297	3,870	4	1,736	1,627	34	13	83 +	.7 ₅₁₃									
Ark Ia	165	193	-	226	173	24		3	117									
Okla	85	113	1	166	174	6	1	70 7	7 44									
Tex	2,490	2,904	3	1,065	1,059	3	11	10	338									
	379	445	2	312	345	4	8	8 +	489									
Idaho	9	3	1	18	46	1	1	4 1	168									
Wyo		6	-		5	-	-	1	219									
	96	107	-	24	43		1	3	12									
Ariz	150	218	Ū	153	141	-	3	-	76									
Utah	12	5	-	21	8	1	2	-	3									
Nev	60	21	-	17	22	1	1	-	4									
PACIFIC	3,152	2,902	1	2,545	2,579	1	84	-	373									
Oreg	74	59		87	84	-	3	-	5									
Calif	2,952	2,716	1	2,176	2,163	-	77	-	360									
Alaska Hawaii	2	2	-	37	68	1	1	-	8									
		+0	-	124	120	-	ک	-	•									
Guam P.R	564	497	-	33 198	30 226	-	-	-	33									
<u>v</u> .		1	U	1	0	-	-	-	-									
Pac. Trust Terr	106	80	-	40	38	-	42	-	-									
uner Gamba		-	-	3	-	-	-	-	-									

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending August 16, 1986 and August 17, 1985 (33rd Week)

U Unavailable

	<u> </u>	All Cau	ses, By A	ge (Yea	rs)		<u> </u>	[]		All Cause	es, By A	ge (Years	s)		
Reporting Area	All Ages	≥65	45-64	25-44	1-24	<1	P&I** Total	Reporting Area	All Ages	≥65	45-64	25-44	1-24	<1	P&J** Total
NEW ENGLAND	604	402	124	35	17	26	38	S ATLANTIC	1,251	746	293	122	49	41	45
Boston, Mass	189	113	41	12	9	14	15	Atlanta, Ga	164	92	35	26	5	6	3
Bridgeport, Conn.	29	23	3	1	1	1	-	Baltimore, Md	245	155	50	21	13	6	8
Fall River Mass	25	12	2	1	-	2	1	Charlotte, N.C.	78	43	24	6	4	1	5
Hartford Conn	54	35	15	1	3	-	3	Jacksonville, Fla. Miami, Fla	109	6/	2/	17	5	2	9
Lowell, Mass	27	19	5	2	1	-	1	Norfolk, Va.	58	27	18	14	3	9	3
Lynn, Mass	10	6	2	2	-	-		Richmond, Va.	67	38	22	š	1	3	4
New Bedford, Mas	s 20	19	•	-	1	-	- 1	Savannah, Ga.	49	31	11	3	2	2	2
New Haven, Conn.	54	32	15	4	1	2	3	St. Petersburg, Fla.	116	88	21	4	1	2	5
Somerville Mass	53	34	9	5	-	5	5	Tampa, Fla.	57	34	11	.7	2	3	3
Springfield Mass	45	30	11	2	1	1		Washington, D.C.	152	85	36	17	8	6	2
Waterbury, Conn.	28	20	5	â	1	1	0	Winnington, Dei	20	18		1	-	-	-
Worcester, Mass.	50	35	12	2	-	1	3	E.S. CENTRAL	768	475	179	53	23	37	37
				-			, in the second s	Birmingham, Ala.	100	50	36	7	5	2	-
MID ATLANTIC 2	2,514	1,566	544 2	251	65	84	103	Chattanooga, Tenn	57	40	13	4	-	-	3
Albany, N.Y.	52	26	16	3	2	5	1	Knoxville, Tenn	76	55	16	1	-	4	4
Buffalo NY	22	18	26	÷.	-	-		Louisville, Ky	111	62	33	9	4	3	6
Camden N.I	37	21	10	3	2		4	Mobile Ala	214	135	41	12	5	20	13
Elizabeth, N.J	17	13	4	7	2	-	-	Montgomery Ala	27	33	14	0	2	3	2
Erie, Pa.t	38	32	5	-	-	1	2	Nashville Tenn	115	73	21	12	Å	2	- 0
Jersey City, N.J.	49	29	8	6	-	ż				/5	21	15	U	~	5
N.Y. City, N.Y. 1	,339	838	272 1	58	33	38	50	W.S. CENTRAL	1,384	790	312	154	75	51	48
Newark, N.J	110	42	29	28	8	3	7	Austin, Tex.	68	34	11	14	4	5	1
Paterson, N.J.	27	15	5	5	1	1	1	Baton Rouge, La.	25	15	6	2	2	-	1
Philadelphia, Pa	294	186	63	21	10	14	14	Corpus Christi, Tex	45	23	5	10	5	2	-
Reading Pa	27	50	16	2	1	3	3	Dallas, lex	194	102	45	24	12	11	7
Rochester N Y	37	25	21	-	-	2	9	El Paso, lex	100	33	10	3	5	9	1
Schenectady NY	26	19	21	'	5	3	6	Houston Tex	326	165	23	8	22	8	10
Scranton, Pa t	15	12	3	-	-		-	Little Bock Ark	74	47	15		22	4	2
Syracuse, N Y	85	57	17	6	2	3	5	New Orleans La	139	89	30	15	2	2	2
Trenton, N.J.	48	26	16	4	-	2	ĭ	San Antonio, Tex	203	121	52	15	12	2	11
Utica, N.Y.	21	16	3	-	-	2	-	Shreveport, La.	50	32	17	-	1	-	6
Yonkers, N.Y	27	18	8	1	-	-	-	Tulsa, Okla	96	70	16	8	2	-	7
E.N. CENTRAL 2	2,215	1,403	481 1	80	70	81	99	MOUNTAIN	606	357	140	47	38	24	24
Akron, Ohio	52	36	6	8	-	2	-	Albuquerque, N.Me	x 130	76	21	10	19	4	4
Canton, Ohio	40	27	8	4		1	2	Colo Springs, Colo	. 37	20	. 9	3	4	1	3
Cincinnati Ohio	564	362	125	45	10	22	16	Denver, Colo	93	51	25	8	1	8	2
Cleveland Ohio	166	60	20	15		3		Las Vegas, Nev	89	4/	29	6	3	4	6
Columbus Ohio	128	75	45	10	4	11	2	Phoenix Ariz	100	56	20	1	-	3	-
Davton, Ohio	108	74	26	10	2	1	3	Pueblo Colo	18	16	23	•	4	3	4 2
Detroit, Mich	256	124	65	39	19	9	12	Salt Lake City Utah	45	30	5	3	7	-	1
Evansville, Ind.	48	32	15		-	ĭ	· • •	Tucson, Ariz	78	51	18	8		1	2
Fort Wayne, Ind	47	28	11	5	2	1	-								
Gary, Ind.	11	8	-	-	2	1	-	PACIFIC	1,841	1,138	402	174	66	55	109
Grand Rapids, Mich	n 66	49	10	3	3	1	5	Berkeley, Calif.	21	13	4	1	-	3	.4
Madison M/is	156	101	36	10	3	6	5	Fresho, Calif	15	15	14	0	o		1
Milwaukee Mis	42	22	6	4	9	1	6	Glendale, Calif	42	21		2	1	-	
Peoria III	120	21	18	4	5	3	8	Long Beach, Calif	74	47	18	à	2	3	7
Rockford, III.	50	36	7	5	3	3	3	Los Angeles Calif	547	324	124	63	25	5	15
South Bend, Ind	59	38	13	3	Ā	1	÷.	Oakland, Calif	53	29	14	3	-	7	2
Toledo, Ohio	119	84	24	4	4	3	14	Pasadena, Calif	28	18	5	3	1	1	1
Youngstown, Ohio	50	38	5	4	-	3		Portland, Oreg.	116	77	27	6	4	2	5
						-		Sacramento, Calif.	121	78	25	10	5	3	14
W N CENTRAL	/35	501	139	49	25	21	25	San Diego, Calif.	176	98	35	28	7	8	26
Des Moines, Iowa	46	37	5	1	3	-	1	San Francisco, Cali	1 149	90	34	19	2	4	3
Kansas City Kana	17	13	3	1	-	2	1	San Jose, Calif.	156	96	42	12	6	-	10
Kansas City, Kalls.	125	25	30	12	2	2	1	Spokano Mark	001	106	34	8	5		
Lincoln Nebr	20	19	30	12	4	5	5	Tacoma Wash	39	42		2	2	1	4
Minneapolis. Minn	129	71	36	12		-	4	racoma, wash.	37	++ 22	ť	, 5	-	4	+ 2
Omaha, Nebr	82	57	10	14	5	2		I TOTAL	11,918	''7,378	2.614	4 1.065	428	420) 528
St. Louis, Mo	139	106	22	6	1	4	2					.,			
St. Paul, Minn.	77	59	10	ž	Å	2	3								
Wichita, Kans	58	41	11	5	1	-	3	1							

TABLE IV. Deaths in 121 U.S. cities.* week ending August 16, 1986 (33rd Week)

'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

c) a 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. ttTotal includes unknown ages.

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

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Measles - Continued

year involving vaccinated students. The large number of cases in preschoolers was due to two large outbreaks in New York City and New Jersey this year in which predominately preschool-aged children were involved, most of whom were unvaccinated (4). The smallest increase in incidence rate was in persons 15-19 years. There were no large outbreaks on college campuses this year as in 1985 (5).

The reasons for the increase in measles cases and the more widespread occurrence this year are not clear. Investigations of various outbreaks this year indicate no single common problem. Rather, a variety of reasons, including vaccine failures and unvaccinated preschoolers, have contributed to the large number of outbreaks.

As the measles elimination strategy is successfully implemented, the proportion of preventable cases should decrease. Since the percentage of preventable cases increased to 36.6% this year from 25.2% in 1985, further improvement in implementing existing recommendations for measles elimination are necessary (6). As in 1984 and 1985, preschool-aged children over 15 months of age comprised the group with the largest proportion of preventable cases. Greater efforts need to be directed at this age group.

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- 4. CDC. Measles-New Jersey. MMWR 1986;35:213-5.
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- 6. ACIP. Measles prevention. MMWR 1982;31:217-24, 229-31.

Epidemiologic Notes and Reports

Occupational Fatality Following Exposure to Hydrogen Sulfide — Nebraska

Hydrogen sulfide (H_2S) is a potential hazard for workers in wastewater-treatment plants. Investigation of an occupational fatality resulting from exposure to H_2S in such a plant illustrates the hazards associated with this agent.

On September 3, 1983, a worker at a wastewater-treatment plant in Omaha, Nebraska, was found unconscious after he had gone to collect samples in the building where wastewater enters the plant. He died later that day from acute respiratory distress syndrome. A review of hospital records and the autopsy report showed the pattern of his fatal illness was compatible with exposure to H_2S .

On September 6, engineers of the City of Omaha requested that the National Institute for Occupational Safety and Health (NIOSH) evaluate working conditions and help develop a health and safety plan for the plant (1). NIOSH investigators collected 40 personal-breathing-zone* and 26 long-term area air samples for H_2S in all areas of the plant. Concentrations of H_2S in the personal air samples ranged from none detected to 2.2 parts per million (ppm); results from the long-term area air samples ranged from none detected to 56.0 ppm.

^{*}Personal air samples are collected in the worker's breathing zone. Long-term area air samples are collected in the work area over an entire work shift. Instantaneous air samples are measured by a direct reading instrument.

Hydrogen Sulfide - Continued

The highest concentrations were found in the area near where the worker was apparently fatally overcome. Instantaneous area air samples for H_2S were also collected in this area. These concentrations ranged from 50 ppm to 200 ppm (the maximum reading on the instrument used) when one of the supply fans in the building malfunctioned.

During the week of October 17, 54 (83%) of the 65 workers in the plant responded to a self-administered questionnaire. Forty-one (76%) respondents indicated that, during the previous 2 weeks, they had experienced at least three of the symptoms known to be associated with H_2S exposure, most commonly cough (61%), eye irritation (57%), and nose irritation (54%). However, no clear association between frequency of symptoms and estimated exposure was found.

The exact circumstances resulting in the worker's death may never be known. NIOSH investigators concluded that the factors contributing to the death included: (1) the summer temperature and the long transit time of the sewage entering the plant (resulting in high concentrations of dissolved H_2S); (2) inappropriate design of the ventilation system; and (3) inadequate safety procedures for workers entering potentially dangerous areas. Based on these factors, NIOSH investigators provided recommendations to prevent any future fatal incidents.

Reported by NIOSH Region VII, Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.

Editorial Note: At room temperature, H_2S is a colorless gas and has a characteristic rottenegg odor. Although it has a rather low odor threshold (0.13 ppm), it can cause olfactory fatigue at 100 ppm in 2-15 minutes. It is a rapid-acting systemic poison that causes respiratory paralysis with consequent asphyxia at high concentrations (1,000-2,000 ppm). Inhalation of high concentrations may cause coma after a single breath and may be rapidly fatal. Prolonged exposure to 250 ppm H_2S may cause pulmonary edema. Exposure to concentrations above 50 ppm for 1 hour may produce acute conjunctivitis with pain, lacrimation, and photophobia; in severe form, this may progress to keratoconjunctivitis and vesiculation of the corneal epithelium. Prolonged exposure to concentrations as low as 50 ppm H_2S may cause rhinitis, pharyngitis, bronchitis, and pneumonitis. In low concentrations, H_2S may cause headache, fatigue, irritability, insomnia, eye and respiratory irritation, and gastrointestinal disturbances; in somewhat higher concentrations, it affects the central nervous system, causing excitement and dizziness (2,3).

The Occupational Safety and Health Administration (OSHA) has established a one-time, 10-minute exposure limit of 50 ppm during a work shift (4). NIOSH recommends that the concentration for a 10-minute sample not exceed 10 ppm and also that the area be evacuated if the concentration of H_2S exceeds 50 ppm (2).

The recommendations resulting from the Nebraska investigation provided a basis for preventing recurrence of the problem. The nature of the sewage (i.e., high concentration of H_2S) entering the plant probably contributed to the death of this worker. The NIOSH investigators recommended the plant retain a consulting firm to evaluate adding an aeration system or chemicals along the sewage-transit line to prevent the growth of bacteria that cause the production of H_2S . The average flow time through more than 25 miles of sewer pipe to the plant is approximately 8 hours. At all times, but especially during times of low flow and warmer water temperatures, the sewage becomes anaerobic, facilitating the production of H_2S by certain bacteria. The presence of H_2S had been a recurring problem at this plant. During the last stages of plant construction, a worker died in the main sewer that enters the plant; sewer gas was listed as the probable cause of death.

A second factor was the ventilation system in the mezzanine, bar screen, and wet-well areas. This system was designed to keep the entire area under positive pressure so the exhausted air could be filtered to avoid community odor problems. When the ventilation system failed during a power outage, an H₂S level of 200 ppm was measured at the doorway to the

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Hydrogen Sulfide — Continued

mezzanine area before the ventilation system was turned back on. Based on this figure, NIOSH investigators estimated the level of H_2S to be in the 1,000-2,000 ppm range in the area where the incident occurred. This is considerably above the value of 300 ppm that NIOSH considers immediately dangerous (5). As an experiment, NIOSH investigators and plant maintenance personnel reversed the fan in an effort to correct the airflow to the wet-well area; the H_2S concentration dropped from 125 ppm to 7 ppm in 2 hours. The NIOSH investigators recommended that all ventilation systems throughout the plant be evaluated and deficiencies be corrected.

A third probable contribution to the death was the lack of specific procedures to ensure safe entry into areas containing potentially hazardous gases. The implementation of carefully written and enforced procedures can help prevent the same potentially hazardous conditions that existed for this fatality.

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- 4. Occupational Safety and Health Administration. OSHA safety and health standards. 29 CFR 1910. 1000. Occupational Safety and Health Administration, U.S. Department of Labor, revised 1983.
- National Institute for Occupational Safety and Health. NIOSH/OSHA pocket guide to chemical hazards. Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1985. DHHS (NIOSH) publication no. 78-210.

International Notes

Quarantine Measures

Six countries have revised their vaccination requirements, effective August 1, 1986. The following changes should be made in the booklet "Health Information for International Travel, 1986."

ANGOLA

Delete information on cholera on page 15. Change yellow fever code to II > 1 yr. on page 15. Delete Angola from the yellow fever section under Requirements for Direct Travel from the United States on page 13.

BARBADOS

Delete yellow fever country list on pages 18 and 19. Code III > 1 yr. remains valid.

GABON

Change yellow fever code to I > 1 yr. on page 29. Add Gabon to the yellow fever section under Requirements for Direct Travel from the United States on page 13.

MALI

Delete information on cholera on page 40.

NIGERIA

Delete information on cholera on page 44. Change yellow fever code to II > 1 yr. on page 44. Delete Nigeria from the yellow fever section under Requirements for Direct Travel from the United States on page 13.

TANZANIA, UNITED REPUBLIC OF

Delete information on cholera pages 13 and 53.





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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: ATTN: Editor, *Morbidity and Mortality Week/y Report*, Centers for Disease Control, Atlanta, Georgia 30333.

Director, Centers for Disease Control James O. Mason, M.D., Dr.P.H. Director, Epidemiology Program Office Carl W. Tyler, Jr., M.D.

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