CENTERS FOR DISEASE CONTROL

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Recommendations of the Immunization Practices Advisory Committee (ACIP)

Update: Pneumococcal Polysaccharide Vaccine Usage — United States

*These revised recommendations of the Immunization Practices Advisory Committee (ACIP) on pneumococcal polysaccharide vaccine update the previous recommendations (*MMWR *1981;30:410-2, 417-9) to include current information and practices.*

INTRODUCTION

A 23-valent polysaccharide vaccine against disease caused by *Streptococcus pneumoniae* (pneumococcus) was licensed in the United States in 1983. It replaces the 14-valent polysaccharide vaccine licensed in 1977. This statement includes new data that have become available about pneumococcal vaccine and its effectiveness and new recommendations regarding its use for selected persons and groups.

PNEUMOCOCCAL DISEASE

Pneumococcal disease is important, because it is responsible for a substantial number of cases and deaths in the United States each year. Although pneumococcal pneumonia accounts for less than 25% of all pneumonia, it is, nevertheless, a common disease. Pneumococcal pneumonia occurs in all age groups. In adults, its incidence increases gradually among those over 40 years old, with a twofold increase in incidence among those over 60 years old. Estimates on the occurrence of serious pneumococcal diseases in the United States are based on surveys, research reports, and several community-based studies (Table 1).

Mortality from pneumococcal disease is highest among patients with bacteremia or meningitis, patients with underlying medical conditions, and older persons. In some high-risk patients, mortality has been reported as high as 40% for bacteremic disease and 55% for meningitis. These rates occur despite therapy with antibiotics, such as penicillin, to which most (97%) clinically significant pneumococci isolated in the United States are exquisitely sensitive.

Patients with certain chronic conditions are clearly at increased risk of developing pneumococcal infection, as well as experiencing more severe pneumococcal illness. These conditions include: sickle cell anemia, Hodgkin's disease, multiple myeloma, cirrhosis, alcoholism, nephrotic syndrome, renal failure, chronic pulmonary disease, splenic dysfunction, and history of splenectomy or organ transplant. Other patients may be at greater risk of developing pneu-

TABLE 1. Current estimated occurrence of serious pneumococcal disease — United States

Pneumococcal disease	Estimated cases (1,000s/yr)	Estimated incidence (per 100,000 pop/yr)	Estimated case-fatality ratio (%)
Pneumonia	150-570	68-260	5
Bacteremia	16-55	7-25	20
Meningitis	2.6-6.2	1.2-2.8	30

ACIP: Pneumococcal Vaccine – Continued

mococcal infection or having more severe illness because of diabetes mellitus, congestive heart failure, or conditions associated with immunosuppression. Patients with cerebrospinal fluid (CSF) leakage complicating skull fractures or neurosurgical procedures can have recurrent pneumococcal meningitis.

PNEUMOCOCCAL POLYSACCHARIDE VACCINES

The new pneumococcal vaccine is composed of purified, capsular polysaccharide antigens of 23 types of *S. pneumoniae* (Danish types 1,2,3,4,5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B,17F,18C,19A,19F,20,22F,23F, and 33F). Each polysaccharide is extracted separately and combined into the final product. Each dose of the new vaccine contains 25 μg of each polysaccharide antigen.

The 23 bacterial types represented in the current vaccine are responsible for 87% of bacteremic pneumococcal disease in the United States reported to CDC in 1983, compared with 71% for the previous 14-valent formulation (*1*). Studies of the cross-reactivity of human antibodies against related types suggest that cross-protection may occur among some of these types (e.g., 6A and 6B) (*2*).

Although the new polysaccharide vaccine contains only 25 μg of each antigen, compared with 50 μg of antigen in the old 14-valent vaccine, a study of 53 adults reveals comparable levels of immunogenicity of the two vaccines (*3*). Most healthy adults show a twofold or greater rise in type-specific antibody, as measured by radioimmunoassay, within 2-3 weeks after vaccination. In contrast, the vaccine is generally less antigenic for children under 2 years old than for other vaccinees. However, because the precise protective titers of antibody for any of these serotypes have not been established, measuring antibody levels in vaccinated persons is not indicated.

EFFECTIVENESS OF PNEUMOCOCCAL POLYSACCHARIDE VACCINES

In the 1970s, two randomized, controlled trials were conducted in populations with a high incidence of disease in South Africa and New Guinea using newly formulated pneumococcal vaccine (*4,5*). Both studies demonstrated significant reductions in the occurrence of pneumonia in these young, healthy populations.

It should be noted, however, that two randomized, controlled trials of pneumococcal vaccine in older-aged U.S. adults showed less satisfactory results (*6*). One was of outpatients over 45 years old; the other, of inpatients of a chronic-care psychiatric facility. In neither study was there any difference in the occurrence of respiratory morbidity and mortality between those vaccinated with a polyvalent pneumococcal vaccine and those given a placebo. In the first study, data suggested some vaccine protection against bacteremic pneumococcal disease, but the incidence of pneumococcal disease was low and may not have enabled a valid assessment of vaccine efficacy. In the other study, there were no fewer cases of radiologically diagnosed pneumonia among vaccinees than among controls.

Another method for estimating the efficacy of pneumococcal vaccine compares the distribution of serotypes of pneumococci isolated from the blood of vaccinated and unvaccinated persons (*9*). Recent data obtained by this method are based on comparing 210 *S. pneumoniae* isolates from the blood of persons who received the 14-valent vaccine with 1,475 blood isolates from unvaccinated persons. These data show that among persons over 60 years old with no underlying illness or no chronic pulmonary disease, chronic heart disease, or diabetes mellitus, the estimated efficacy ranges between 60% and 80%. However, among persons with cirrhosis or renal failure, the estimated efficacy appears to be lower.

In another recent study, controls were matched to 90 patients with systemic evidence of pneumococcal infection (isolates from blood, CSF, or other normally sterile body fluids) (*10*). Although vaccine efficacy was 0% for patients with severe immunocompromising conditions, it was 70% for all patients over 55 years of age and 77% for patients at moderately increased risk of pneumococcal infection.

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Only a few studies of pneumococcal vaccine efficacy in children have been conducted. In a small, nonrandomized study of children and young adults 2-25 years old who had sickle cell anemia or had had splenectomy, the occurrence of bacteremic pneumococcal disease was significantly reduced by immunization with an 8-valent vaccine (*7*). Pneumococcal vaccine has shown no significant benefit in preventing otitis media in children (*8*).

The duration of protection induced by vaccination is unknown. While elevation of antibody titers has been shown 5 years after immunization, studies of persistence of elevated titers are ongoing.

RECOMMENDATIONS FOR VACCINE USE

Newly available data regarding vaccine efficacy support the broader use of pneumococcal vaccine in the United States. Vaccination is particularly recommended for the following:

Adults

1. Adults with chronic illnesses, especially cardiovascular disease and chronic pulmonary disease, who sustain increased morbidity with respiratory infections.
2. Adults with chronic illnesses specifically associated with an increased risk for pneumococcal disease or its complications. These include splenic dysfunction or anatomic asplenia, Hodgkin's disease, multiple myeloma, cirrhosis, alcoholism, renal failure, CSF leaks, and conditions associated with immunosuppression.
3. Older adults, especially those aged 65 and over, who are otherwise healthy.

Children

1. Children aged 2 years and older with chronic illnesses specifically associated with increased risk for pneumococcal disease or its complications. These include anatomic or functional asplenia, such as sickle cell disease or splenectomy, nephrotic syndrome, CSF leaks, and conditions associated with immunosuppression.
2. Recurrent upper respiratory diseases, including otitis media and sinusitis, are *not* considered indications for vaccine use in children.

General Considerations

When elective splenectomy is being considered, pneumococcal vaccine should be given at least 2 weeks before the operation, if possible. Similarly, when immunosuppressive therapy is being planned, as in patients who are candidates for organ transplants, the interval between vaccination and initiation of immunosuppressive therapy should be as long as possible.

Although vaccine failures have been reported in some of these groups, especially those who are immunocompromised, vaccination is still recommended for such persons because they are at high risk of developing severe disease.

STRATEGIES FOR VACCINE DELIVERY

Programs for vaccine delivery to these high-risk groups need to be developed further to achieve maximum immunization rates in such groups. More effective programs are needed for giving vaccine in nursing homes and other chronic-care facilities, in physicians' offices, and in hospitals, as only a small proportion of severe pneumococcal disease occurs in previously healthy individuals.

Two-thirds of persons with serious pneumococcal disease have been hospitalized within 5 years before the pneumococcal illness (*11*). Vaccine can be given to hospitalized patients—including at time of discharge—to prevent future admissions for pneumococcal disease. In addition, persons who visit physicians frequently and have chronic conditions are likely to be at higher risk of pneumococcal infection than those who require infrequent visits. Office-based programs to identify and immunize the frequent user of medical care should help prevent pneumococcal illness. Furthermore, pneumococcal vaccine and influenza vaccine can be given at different sites at the same time without an increase in side effects (*12*).

Medicare has partially reimbursed the cost of pneumococcal vaccination since 1981. It has been determined that hospitals may be reimbursed for pneumococcal immunization of

ACIP: Pneumococcal Vaccine – Continued

Medicare recipients independent of reimbursement based on systems of prospective payments.

ADVERSE REACTIONS

About half of those given pneumococcal vaccine develop mild side effects, such as erythema and pain at the injection site. In less than 1% of those given pneumococcal vaccine, fever, myalgias, and severe local reactions have been reported (*6,13,14*). Severe adverse effects, such as anaphylactoid reactions, have rarely been reported—about 5 per million doses administered. For additional information, the package insert should be reviewed.

REVACCINATION

It should be emphasized that pneumococcal vaccine should be given *only once* to adults. Arthus reactions and systemic reactions have been common among adults given second doses (*15*) and are thought to result from localized antigen-antibody reactions involving antibody induced by previous vaccination. Therefore, second or "booster" doses are *not* recommended, at least at this time. Data on revaccination of children are not yet sufficient to provide a basis for comment.

Persons who have received the 14-valent pneumococcal vaccine should *not* be revaccinated with the 23-valent vaccine, as the modest increase in coverage does not warrant the possible increased risk of adverse reactions. However, when there is doubt or no information

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

Disease	20th Week Ending			Cumulative, 20th Week Ending		
	May 19,1984 1984	May 21,1983 1983	Median 1979-1983	May 19,1984 1984	May 21,1983 1983	Median 1979-1983
Acquired Immunodeficiency Syndrome (AIDS)	105	N	N	1,448	N	N
Aseptic meningitis	38	69	66	1,438	1,579	1,367
Encephalitis: Primary (arthropod-borne & unspec.)	12	12	12	315	346	297
Post-infectious	2	2	4	24	38	38
Gonorrhea: Civilian	14,134	17,081	17,717	301,023	341,940	362,024
Military	248	587	568	7,596	9,408	10,640
Hepatitis: Type A	382	382	505	8,344	8,869	9,725
Type B	442	447	390	9,037	8,573	7,442
Non A, Non B	93	66	N	1,368	1,290	N
Unspecified	129	146	213	2,300	2,803	3,867
Legionellosis	13	20	N	198	260	N
Leprosy	5	4	5	82	106	79
Malaria	20	13	17	259	259	325
Measles: Total*	86	20	140	1,285	747	1,509
Indigenous	85	12	N	1,144	612	N
Imported	1	8	N	141	135	N
Meningococcal infections: Total	57	58	57	1,303	1,330	1,330
Civilian	57	57	57	1,299	1,317	1,317
Military	-	1	-	4	13	10
Mumps	87	107	150	1,481	1,718	3,045
Pertussis	68	28	20	797	690	413
Rubella (German measles)	27	27	126	315	473	1,288
Syphilis (Primary & Secondary): Civilian	470	665	591	10,590	12,572	11,555
Military	7	6	6	134	182	137
Toxic Shock syndrome	14	12	N	154	167	N
Tuberculosis	468	465	549	8,002	8,423	9,853
Tularemia	-	2	6	30	65	52
Typhoid fever	6	1	8	121	131	146
Typhus fever, tick-borne (RMSF)	15	25	30	54	88	91
Rabies, animal	92	131	137	1,815	2,558	2,485

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1984		Cum. 1984
Anthrax	-	Plague	5
Botulism: Foodborne	6	Poliomyelitis: Total	1
Infant	41	Paralytic	1
Other	2	Psittacosis	27
Brucellosis (W.V. 1)	42	Rabies, human	-
Cholera	-	Tetanus (Fla. 1)	11
Congenital rubella syndrome	3	Trichinosis (N.Y. City 2)	19
Diphtheria	-	Typhus fever, flea-borne (endemic, murine)	6
Leptospirosis	8		

*One of the 86 reported cases for this week was imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending May 19, 1984 and May 21, 1983 (20th Week)

Reporting Area	AIDS	Aseptic Menin-gitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel-losis	Leprosy
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1984	1984	Cum. 1984	Cum. 1984	Cum. 1984	Cum. 1983	1984	1984	1984	1984	1984	Cum. 1984
UNITED STATES	1,448	38	315	24	301,023	341,940	382	442	93	129	13	82
NEW ENGLAND	52	2	23	-	9,009	8,547	3	27	2	15	-	5
Maine	-	-	-	-	339	449	-	2	-	-	-	-
N.H.	1	-	4	-	229	225	2	8	1	1	-	-
Vt.	-	-	2	-	148	154	-	-	-	-	-	-
Mass.	31	1	12	-	3,551	3,820	-	10	1	14	-	4
R.I.	3	-	-	-	577	476	-	-	-	-	-	1
Conn.	17	1	5	-	4,165	3,423	1	7	-	-	-	-
MID ATLANTIC	671	4	43	2	41,106	43,565	90	96	10	13	-	9
Upstate N.Y.	54	4	16	2	6,419	6,521	8	18	1	3	-	2
N.Y. City	494	-	-	-	16,809	18,184	42	21	-	4	-	7
N.J.	96	-	15	-	6,948	8,242	17	32	4	2	-	-
Pa.	27	-	12	-	10,930	10,618	23	25	5	4	-	-
E.N. CENTRAL	65	7	66	7	37,995	49,271	31	49	7	7	4	5
Ohio	8	3	24	3	10,741	13,077	8	20	2	2	2	2
Ind.	8	1	12	-	4,661	5,821	2	6	1	1	-	-
Ill.	37	1	10	3	5,987	13,407	5	1	1	-	-	1
Mich.	9	2	17	-	11,907	12,826	16	21	3	4	2	2
Wis.	3	-	3	1	4,699	4,140	-	1	-	-	-	-
W.N. CENTRAL	11	1	9	-	14,645	16,146	20	12	1	1	1	-
Minn.	3	-	2	-	2,111	2,308	1	1	-	1	-	-
Iowa	-	-	4	-	1,715	1,801	1	1	1	-	-	-
Mo.	6	1	1	-	6,893	7,872	5	3	-	-	-	-
N. Dak.	-	-	-	-	155	156	-	-	-	-	-	-
S. Dak.	-	-	-	-	385	453	13	-	-	-	-	-
Nebr.	1	-	1	-	1,047	956	-	4	-	-	-	-
Kans.	1	-	1	-	2,339	2,600	-	3	-	-	1	-
S. ATLANTIC	168	12	66	8	75,527	86,678	36	91	13	15	1	5
Del.	3	-	1	-	1,354	1,617	3	2	-	-	-	-
Md.	16	3	15	-	8,957	10,882	1	19	3	3	-	-
D.C.	22	-	-	-	5,619	6,016	-	1	-	-	-	1
Va.	13	-	16	4	7,249	7,265	3	4	3	-	1	3
W. Va.	3	-	4	-	951	909	1	-	-	-	-	-
N.C.	3	1	13	3	12,535	12,711	1	11	4	1	-	-
S.C.	3	-	2	-	7,403	8,272	1	13	-	3	-	-
Ga.	20	1	2	-	13,255	18,913	2	14	-	1	-	-
Fla.	85	7	13	1	18,204	20,093	24	27	3	7	-	1
E.S. CENTRAL	11	1	14	-	26,264	28,998	14	21	2	2	-	-
Ky.	6	-	2	-	3,138	3,430	4	3	1	-	-	-
Tenn.	2	1	2	-	10,711	11,654	4	9	1	2	-	-
Ala.	2	-	9	-	8,502	9,096	5	5	-	-	-	-
Miss.	1	-	1	-	3,913	4,818	1	4	-	-	-	-
W.S. CENTRAL	61	7	20	2	42,843	47,997	59	28	8	34	5	3
Ark.	-	-	-	1	3,760	3,549	1	2	2	2	1	-
La.	8	-	2	-	9,514	8,197	4	2	1	-	-	-
Okla.	4	1	5	1	4,570	5,666	12	4	-	1	4	-
Tex.	49	6	13	-	24,999	30,585	42	20	5	31	-	3
MOUNTAIN	20	-	8	1	9,763	10,503	24	21	7	8	-	7
Mont.	-	-	-	-	447	461	-	-	-	-	-	-
Idaho	-	-	-	-	438	493	-	-	-	-	-	-
Wyo.	1	U	-	-	295	270	U	U	U	U	U	-
Colo.	11	-	5	-	2,770	3,001	11	7	2	1	-	-
N. Mex.	-	-	-	-	1,099	1,302	1	1	1	1	-	-
Ariz.	6	-	1	-	2,647	2,863	8	8	3	3	-	5
Utah	1	-	2	1	506	511	3	1	1	2	-	1
Nev.	1	-	-	-	1,561	1,602	1	4	-	1	-	1
PACIFIC	389	4	66	4	43,871	50,235	105	97	43	34	2	48
Wash.	17	-	2	-	2,960	3,764	3	8	5	1	-	2
Oreg.	1	-	-	-	2,672	2,550	16	6	5	-	-	1
Calif.	367	2	62	4	36,369	41,720	86	82	33	33	2	33
Alaska	-	-	-	-	1,127	1,193	-	-	-	-	-	-
Hawaii	4	2	2	-	743	1,008	-	1	-	-	-	12
Guam	-	U	-	-	97	74	U	U	U	U	U	-
P.R.	22	1	-	1	1,321	1,187	7	12	-	9	-	-
V.I.	-	-	-	-	163	106	-	1	-	-	-	-
Pac. Trust Terr.	-	U	-	-	-	-	U	U	U	U	U	-

N: Not notifiable U: Unavailable

TABLE III. (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending May 19, 1984 and May 21, 1983 (20th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1984	1984	Cum. 1984	1984	Cum. 1984	Cum. 1983	Cum. 1984	1984	Cum. 1984	1984	Cum. 1984	Cum. 1983	1984	Cum. 1984	Cum. 1983
UNITED STATES	259	85	1,144	1	141	747	1,303	87	1,461	68	797	690	27	315	473
NEW ENGLAND	18	14	91	-	7	5	81	-	45	-	11	23	3	27	7
Maine	-	-	-	-	-	-	1	-	13	-	-	-	-	1	-
N.H.	-	13	26	-	3	1	4	-	5	-	2	4	-	-	2
Vt.	1	1	2	-	2	-	21	-	3	-	7	3	-	-	3
Mass.	10	-	56	-	-	2	27	-	13	-	1	13	3	26	2
R.I.	2	-	-	-	-	-	8	-	4	-	1	3	-	-	-
Conn.	5	-	7	-	2	2	20	-	7	-	-	-	-	-	-
MID ATLANTIC	38	3	56	-	13	23	204	3	190	1	55	204	16	86	33
Upstate N.Y.	12	3	13	-	3	2	71	1	37	1	36	59	8	68	17
N.Y. City	9	-	41	-	3	17	24	-	7	-	2	24	8	16	4
N.J.	12	-	2	-	3	1	46	-	118	-	3	11	-	2	3
Pa.	5	-	-	-	4	3	63	2	28	-	14	110	-	-	9
E.N. CENTRAL	22	26	362	1	62	408	200	43	547	1	221	172	4	46	80
Ohio	6	-	1	-	1	18	74	28	215	-	37	50	-	2	1
Ind.	-	-	2	-	1	271	28	2	29	1	152	13	-	1	13
Ill.	6	-	114	-	1	114	37	6	129	-	11	85	1	22	34
Mich.	4	26	244	1 †	54	5	37	7	134	-	11	10	3	14	12
Wis.	6	-	1	-	5	-	24	-	40	-	10	14	-	7	20
W.N. CENTRAL	6	1	1	-	1	1	86	4	72	5	72	43	1	19	29
Minn.	-	1	1	-	1	1	15	2	4	5	10	17	1	2	5
Iowa	1	-	-	-	-	-	16	-	14	-	3	4	-	-	-
Mo.	4	-	-	-	-	-	23	-	6	-	11	5	-	-	-
N. Dak.	-	-	-	-	-	-	1	-	1	-	-	1	-	3	-
S. Dak.	-	-	-	-	-	-	5	-	-	-	1	2	-	-	-
Nebr.	-	-	-	-	-	-	7	-	1	-	2	-	-	-	-
Kans.	1	-	-	-	-	-	19	2	46	-	45	14	-	14	24
S. ATLANTIC	46	-	8	-	12	149	298	7	112	-	52	96	-	17	63
Del.	3	-	-	-	-	-	3	-	2	-	-	-	-	-	-
Md.	12	-	3	-	5	2	22	3	22	-	3	29	-	1	2
D.C.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Va.	7	-	1	-	1	12	34	-	8	-	7	25	-	-	1
W. Va.	-	-	-	-	-	-	4	1	22	-	6	3	-	-	-
N.C.	4	-	-	-	-	-	40	1	13	-	17	5	-	-	6
S.C.	1	-	-	-	-	3	27	-	1	-	1	5	-	-	-
Ga.	4	-	-	-	-	6	65	-	16	-	2	21	-	2	8
Fla.	15	-	4	-	6	126	101	2	28	-	16	8	-	14	46
E.S. CENTRAL	1	-	1	-	2	5	52	-	30	-	4	5	-	5	6
Ky.	-	-	1	-	-	1	4	-	6	-	1	2	-	1	5
Tenn.	-	-	-	-	2	-	19	-	10	-	2	2	-	-	-
Ala.	1	-	-	-	-	4	20	-	4	-	-	-	-	1	1
Miss.	-	-	-	-	-	-	9	-	10	-	1	1	-	3	-
W.S. CENTRAL	21	31	266	-	14	56	147	6	81	56	195	57	-	12	73
Ark.	-	-	-	-	-	10	23	-	4	1	11	4	-	2	-
La.	4	-	-	-	-	12	29	-	-	-	3	2	-	-	9
Okla.	3	1	6	-	-	-	22	N	N	55	172	34	-	-	-
Tex.	14	30	260	-	14	34	73	6	77	-	9	17	-	10	64
MOUNTAIN	11	-	74	-	10	2	48	14	165	-	60	69	-	9	14
Mont.	-	-	-	-	-	-	1	-	3	-	19	1	-	-	1
Idaho	2	-	-	-	-	-	5	-	7	-	1	2	-	1	5
Wyo.	-	U	-	U	-	-	2	U	1	U	3	4	U	1	1
Colo.	1	-	-	-	-	2	18	-	11	-	20	42	-	2	-
N. Mex.	-	-	51	-	8	-	7	N	N	-	5	6	-	-	-
Ariz.	6	-	-	-	-	-	11	13	137	-	8	9	-	-	4
Utah	2	-	23	-	2	-	4	1	5	-	2	5	-	5	2
Nev.	-	-	-	-	-	-	-	-	1	-	2	-	-	-	1
PACIFIC	96	10	285	-	20	98	187	10	219	5	127	21	3	94	168
Wash.	3	-	80	-	-	4	23	1	21	1	15	1	-	1	6
Oreg.	2	-	-	-	-	5	29	N	N	-	9	5	-	-	9
Calif.	88	10	205	-	18	88	129	9	185	3	41	15	3	91	153
Alaska	-	-	-	-	-	-	5	-	4	-	-	-	-	-	-
Hawaii	3	-	-	-	2	1	1	-	9	1	62	-	-	2	-
Guam	-	U	109	U	3	2	1	U	3	U	-	-	U	1	-
P.R.	2	-	-	-	-	73	4	1	68	-	-	6	-	3	2
V.I.	-	-	-	-	-	5	-	-	3	-	-	-	-	-	1
Pac. Trust Terr.	-	U	-	U	-	-	-	U	-	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 III. (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending May 19, 1984 and May 21, 1983 (20th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1984	Cum. 1983	1984	Cum. 1984	Cum. 1983	Cum. 1984	Cum. 1984	Cum. 1984	Cum. 1984
UNITED STATES	10,590	12,572	14	8,002	8,423	30	121	54	1,815
NEW ENGLAND	226	284	3	226	223	1	3	-	10
Maine	1	7	-	12	14	-	-	-	6
N.H.	3	10	1	15	18	-	-	-	-
Vt.	1	1	-	2	1	-	-	-	-
Mass.	137	180	2	120	119	1	2	-	3
R.I.	8	8	-	18	17	-	-	-	-
Conn.	76	78	-	59	54	-	1	-	1
MID ATLANTIC	1,471	1,610	1	1,502	1,571	-	17	1	113
Upstate N.Y.	104	130	-	252	262	-	7	1	4
N.Y. City	905	931	-	602	647	-	3	-	-
N.J.	273	323	-	321	323	-	3	-	1
Pa.	189	226	1	327	339	-	4	-	108
E.N. CENTRAL	419	703	1	1,071	1,070	-	18	2	72
Ohio	99	189	1	214	170	-	3	2	6
Ind.	61	66	-	107	90	-	2	-	6
Ill.	60	322	-	444	468	-	8	-	39
Mich.	166	95	-	242	287	-	2	-	3
Wis.	33	31	-	64	55	-	3	-	18
W.N. CENTRAL	174	148	1	215	288	8	5	3	288
Minn.	49	62	1	34	48	-	2	-	28
Iowa	10	4	-	30	31	-	-	-	61
Mo.	87	57	-	100	158	8	2	2	27
N. Dak.	1	1	-	5	2	-	-	-	51
S. Dak.	2	3	-	6	19	-	-	-	72
Nebr.	9	7	-	13	8	-	-	-	18
Kans.	16	14	-	27	22	-	1	1	31
S. ATLANTIC	3,193	3,243	1	1,689	1,622	3	14	18	530
Del.	10	15	-	21	12	-	-	-	-
Md.	211	205	-	219	105	-	-	-	288
D.C.	127	138	-	50	67	-	5	-	-
Va.	167	232	-	157	153	-	4	3	110
W. Va.	8	13	-	59	66	-	-	1	14
N.C.	324	293	-	256	202	1	1	5	6
S.C.	314	204	-	188	146	-	1	7	18
Ga.	486	586	-	230	321	2	-	1	55
Fla.	1,546	1,557	1	509	550	-	3	1	39
E.S. CENTRAL	657	854	-	718	808	-	3	6	101
Ky.	37	48	-	155	206	-	1	1	24
Tenn.	173	249	-	234	252	-	2	3	47
Ala.	234	346	-	232	198	-	-	2	30
Miss.	213	211	-	97	152	-	-	-	-
W.S. CENTRAL	2,543	3,284	-	852	964	9	6	21	415
Ark.	79	85	-	96	101	6	-	4	49
La.	470	683	-	106	165	2	1	1	19
Okla.	71	100	-	90	120	1	1	8	52
Tex.	1,923	2,416	-	560	578	-	4	8	295
MOUNTAIN	254	281	1	192	239	6	5	2	63
Mont.	-	4	-	10	22	-	1	2	38
Idaho	10	3	-	9	14	2	-	-	-
Wyo.	2	6	U	-	4	-	-	-	-
Colo.	57	65	1	20	21	1	1	-	-
N. Mex.	30	91	-	42	45	-	2	-	9
Ariz.	107	66	-	82	103	1	-	-	16
Utah	8	9	-	15	18	2	-	-	-
Nev.	40	37	-	14	12	-	1	-	-
PACIFIC	1,653	2,165	6	1,537	1,638	3	50	1	223
Wash.	48	69	1	77	88	-	1	-	1
Oreg.	46	36	-	63	73	1	1	1	-
Calif.	1,527	2,024	5	1,298	1,353	2	44	-	216
Alaska	3	7	-	22	15	-	1	-	6
Hawaii	29	29	-	77	109	-	3	-	-
Guam	-	-	U	6	3	-	-	-	-
P.R.	333	351	-	154	205	-	3	-	25
V.I.	6	8	-	2	1	-	-	-	-
Pac. Trust Terr.	-	-	U	-	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending May 19, 1984 (20th Week Ending)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	650	430	144	43	18	15	41
Boston, Mass.	172	96	47	18	3	8	5
Bridgeport, Conn.	38	29	6	1	1	1	1
Cambridge, Mass.	25	19	4	2	-	-	4
Fall River, Mass.	25	22	3	-	-	-	1
Hartford, Conn.	68	45	18	2	2	1	1
Lowell, Mass.	40	26	9	2	2	1	4
Lynn, Mass.	16	13	2	1	-	-	-
New Bedford, Mass.	23	17	3	2	1	-	-
New Haven, Conn.	44	31	9	3	1	-	2
Providence, R.I.	70	44	15	6	1	4	11
Somerville, Mass.	8	4	2	1	1	-	-
Springfield, Mass.	47	30	12	3	2	-	8
Waterbury, Conn.	23	16	5	-	2	-	1
Worcester, Mass.	51	38	9	2	2	-	3
MID. ATLANTIC	2,548	1,691	524	197	67	67	121
Albany, N.Y.	64	41	13	6	1	3	2
Allentown, Pa.	14	11	3	-	-	-	-
Buffalo, N.Y.	132	96	24	4	1	7	15
Camden, N.J.	34	19	6	4	2	3	2
Elizabeth, N.J.	24	22	-	1	-	1	1
Erie, Pa.†	30	22	4	2	2	-	1
Jersey City, N.J.	45	34	7	2	2	-	1
N.Y. City, N.Y.	1,349	885	284	115	39	26	53
Newark, N.J.	80	35	20	16	3	4	5
Paterson, N.J.	23	14	2	3	3	1	3
Philadelphia, Pa.†	300	193	69	18	7	13	15
Pittsburgh, Pa.†	62	38	19	2	1	2	3
Reading, Pa.	29	18	9	2	-	-	1
Rochester, N.Y.	132	88	28	7	4	5	10
Schenectady, N.Y.	46	33	7	5	1	-	2
Scranton, Pa.†	25	21	4	-	-	-	1
Syracuse, N.Y.	88	64	14	8	-	2	2
Trenton, N.J.	29	22	6	1	-	-	2
Utica, N.Y.	20	17	2	1	-	-	-
Yonkers, N.Y.	22	18	3	-	1	-	2
E.N. CENTRAL	2,262	1,457	534	142	60	69	81
Akron, Ohio	60	41	15	2	-	2	-
Canton, Ohio	32	26	4	1	1	-	2
Chicago, Ill	425	245	113	45	13	9	12
Cincinnati, Ohio	160	114	38	1	3	4	16
Cleveland, Ohio	170	105	48	8	5	4	8
Columbus, Ohio	130	77	31	13	5	4	4
Dayton, Ohio	102	67	23	10	1	1	1
Detroit, Mich.	273	180	59	18	8	8	11
Evansville, Ind.	52	32	17	3	-	-	1
Fort Wayne, Ind.	55	38	10	3	3	1	6
Gary, Ind.	18	10	6	1	-	1	-
Grand Rapids, Mich.	54	40	6	3	-	5	3
Indianapolis, Ind.	191	107	54	12	7	11	2
Madison, Wis.	33	20	7	2	2	2	2
Milwaukee, Wis.	163	116	33	3	5	6	3
Peoria, Ill.	59	35	13	5	1	5	5
Rockford, Ill.	47	34	9	3	-	1	-
South Bend, Ind.	40	29	7	1	2	1	-
Toledo, Ohio	122	86	23	5	4	4	5
Youngstown, Ohio	76	55	18	3	-	-	-
W.N. CENTRAL	744	536	128	26	26	28	40
Des Moines, Iowa	82	51	20	4	5	2	6
Duluth, Minn.	39	27	7	1	1	3	5
Kansas City, Kans.	42	31	8	1	-	2	1
Kansas City, Mo.	105	71	24	3	4	3	5
Lincoln, Nebr.	28	23	5	-	-	-	2
Minneapolis, Minn.	75	54	13	3	1	4	5
Omaha, Nebr.	84	67	12	2	3	-	5
St. Louis, Mo.	157	106	24	7	9	11	5
St. Paul, Minn.	58	48	6	1	2	1	-
Wichita, Kans.	74	58	9	4	1	2	6
S. ATLANTIC	1,248	769	308	97	37	35	53
Atlanta, Ga.	172	85	49	23	9	6	6
Baltimore, Md.	210	137	54	13	3	3	5
Charlotte, N.C.	65	42	10	7	1	3	7
Jacksonville, Fla.	99	67	24	5	2	1	4
Miami, Fla.	105	67	28	6	1	3	1
Norfolk, Va.	64	28	24	6	5	1	4
Richmond, Va.	82	48	19	9	1	5	7
Savannah, Ga.	21	12	4	3	2	-	2
St. Petersburg, Fla.	98	83	10	2	-	3	6
Tampa, Fla.	91	66	15	5	3	2	3
Washington, D.C.	199	105	62	16	10	6	5
Wilmington, Del.	42	29	9	2	-	2	3
E.S. CENTRAL	715	465	165	39	24	22	36
Birmingham, Ala.	94	57	25	6	2	4	6
Chattanooga, Tenn.	59	34	18	3	4	-	3
Knoxville, Tenn.	69	49	13	3	2	2	3
Louisville, Ky.	126	87	29	2	3	5	6
Memphis, Tenn.	154	102	34	8	5	5	5
Mobile, Ala.	67	48	10	3	5	1	5
Montgomery, Ala.	33	21	7	4	1	-	2
Nashville, Tenn.	113	67	29	10	2	5	6
W.S. CENTRAL	1,311	792	306	117	47	48	46
Austin, Tex.	44	25	8	9	1	1	3
Baton Rouge, La.	37	21	8	4	3	1	2
Corpus Christi, Tex.	67	43	17	2	2	3	3
Dallas, Tex.	183	94	52	19	5	13	4
El Paso, Tex.	48	30	10	4	2	1	1
Fort Worth, Tex.	73	46	15	8	3	1	6
Houston, Tex.	361	204	81	35	21	20	8
Little Rock, Ark.	75	52	18	3	1	1	6
New Orleans, La.	118	73	28	14	2	1	2
San Antonio, Tex.	183	129	38	9	4	3	5
Shreveport, La.	35	23	8	2	-	2	-
Tulsa, Okla.	87	52	23	8	3	1	6
MOUNTAIN	703	456	141	53	29	24	34
Albuquerque, N.Mex.	74	45	20	3	4	2	3
Colo. Springs, Colo.	43	30	8	3	2	-	4
Denver, Colo.	132	91	26	10	3	2	3
Las Vegas, Nev.	75	46	20	6	2	1	5
Ogden, Utah	26	20	5	1	-	-	3
Phoenix, Ariz.	189	112	38	18	11	10	8
Pueblo, Colo.	20	14	3	1	2	-	1
Salt Lake City, Utah	50	34	10	3	-	3	2
Tucson, Ariz.	94	64	11	8	5	6	5
PACIFIC	2,043	1,550	270	97	51	60	92
Berkeley, Calif.	11	9	1	1	-	-	-
Fresno, Calif.	84	51	18	6	6	3	9
Glendale, Calif. §	28	28	-	-	-	-	-
Honolulu, Hawaii	78	51	18	4	2	3	6
Long Beach, Calif.	87	67	14	2	1	3	4
Los Angeles, Calif. §	604	545	3	10	19	13	-
Oakland, Calif.	70	41	18	5	1	5	7
Pasadena, Calif.	41	29	10	-	2	-	2
Portland, Oreg.	154	100	29	17	4	4	10
Sacramento, Calif.	127	83	29	10	1	3	13
San Diego, Calif.	141	96	25	11	3	6	11
San Francisco, Calif.	153	113	23	10	1	6	7
San Jose, Calif.	183	120	38	12	7	6	10
Seattle, Wash.	165	124	29	6	1	5	4
Spokane, Wash.	81	64	10	3	1	3	8
Tacoma, Wash.	36	29	5	-	2	-	1
TOTAL	12,224††	8,146	2,520	811	359	368	544

* 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 4 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 4 weeks.

ACIP: Pneumococcal Vaccine – Continued

on whether a person has ever received pneumococcal vaccine, the vaccine should be given. Complete records of vaccination can help to avoid repeat doses.

PRECAUTIONS

The safety of pneumococcal vaccine for pregnant women has not been evaluated. It should not be given to otherwise healthy pregnant women. Women at high risk of pneumococcal disease ideally should be vaccinated before pregnancy.

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Epidemiologic Notes and Reports

Coxsackievirus B5 Meningitis — Texas, 1983

In the fall of 1982, the Bureau of Epidemiology, Texas Department of Health (TDH), began coordinating a virus isolation surveillance system. Eighteen participating viral laboratories, located in Austin (1 laboratory), Dallas (4), Galveston (2), Houston (5), Lubbock (1), San Antonio (4), and Temple (1), report the type of isolate, along with clinical and demographic data monthly.

In 1983, Coxsackievirus B5 (CB5) was the most common enterovirus isolate reported and represented 31.8% of all types isolated. Data from the two participating laboratories that submitted reports for all of 1982 indicate that CB5 isolations increased over 20-fold from 1982 to 1983. CB5 isolations peaked in May and June, when 66.7% of all 1983 CB5 isolations were made. Ninety-two (65.2%) of the 141 CB5 isolates were associated with cases of asep-

Coxsackievirus — Continued

tic meningitis, and CB5 isolates made up 40.7% of all 1983 viral isolates associated with aseptic meningitis. CB5 isolates also comprised 66.4% of aseptic meningitis isolates in May and June.

From 1982 to 1983, all reported aseptic meningitis cases in Texas increased 49.3% from 785 to 1,173. For June and July 1983, reported cases of aseptic meningitis increased 66% (79 to 131) and 193% (91 to 263), respectively, compared with June and July 1982. Physicians take a median of 6 weeks to send reports of aseptic meningitis to the TDH; therefore, the June-July 1983 increase in aseptic meningitis correlates with the peak in CB5 isolations.

Reported by JP Taylor, MPH, C Reed, MPH, CE Alexander, MD, State Epidemiologist, Texas Dept of Health; Respiratory and Enterovirus Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: As a group, enteroviruses are the most commonly identified cause of aseptic meningitis, and account for over 80% of the identified agents (agents are identified for only about 20% of patients) (*1*). Preliminary results from CDC's Enterovirus Surveillance System show that CB5 was the most commonly reported type—492 (20.2%) of 2,432 isolates—in 1983, with CB5 isolations peaking in August 1983 in all regions except the West South Central (which includes Texas), where CB5 peaked in June. This Texas outbreak occurred earlier than most enterovirus outbreaks and forecast increased CB5 isolations in the United States in 1983. Review of enterovirus surveillance data from 1970 to 1982 suggests that nonpolio enterovirus isolates from the West South Central, South Atlantic, Mountain, and Pacific regions are often harbingers of the types of enteroviruses that will be commonly isolated in the rest of the United States. Isolation data from these regions in March, April, and May may be useful in predicting the common enterovirus types likely to be isolated in the remaining regions for that year (*2*).

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Datura Poisoning from Hamburger — Canada

On October 18, 1983, after a husband and wife ate a meal of hamburger prepared at home, the husband collapsed, and the wife telephoned for an ambulance to take him to a local hospital. When the ambulance arrived, the wife also became unconscious. Examination of the home showed no carbon monoxide source. Within 24 hours, the couple regained consciousness and explained the circumstances of their illness.

In preparing the hamburger, the wife added what she thought was seasoning but later realized was seeds of Angels' Trumpets (*Datura suaveolens*) that had been drying above the stove for planting the next year. After removing most of the seeds from the cooked meat, the husband and wife ate one hamburger patty each. Less than 1 hour later, both began to hallucinate. Other symptoms were tachycardia and severe diarrhea. Both recovered and were discharged after 3 days of hospitalization.

Reported in Canada Diseases Weekly Report *1984;10:45.*

Editorial Note: There are several species of *Datura*, and all are poisonous, containing high levels (0.25%-0.7%) of anticholinergic alkaloids, such as atropine, hyoscyamine, and scopolamine. Three species are widely distributed in North America, but only one, *D. suaveolens*, is cultivated as an ornamental flower. Poisoning through the accidental mixing of seeds into food has been previously but not recently reported (*1*). "Locoweed" teas made from other *Datura* species have been used intentionally to produce hallucinatory effects (*2*).

Typical findings in *Datura* poisoning include pupillary dilation, flushing, fever, amnesia, urinary retention, decreased salivation, and, in contrast to the cases reported here, decreased intestinal motility. In more severe poisoning, active hallucinations, extreme agitation, cardiac

Datura Poisoning — Continued

arrhythmias, convulsions, delirium, stupor, or coma may occur. Physostigmine, a reversible antiacetylcholinesterase agent, may be useful in treating patients with central and peripheral manifestations of anticholinergic crisis.

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Current Trends

Measles — United States, First 17 Weeks, 1984

From January 1, 1984, to May 5, 1984 (the year's first 17 reporting weeks), a provisional total of 968 measles cases was reported in the United States. This is a 46.2% increase from the same period in 1983 (Figure 1).

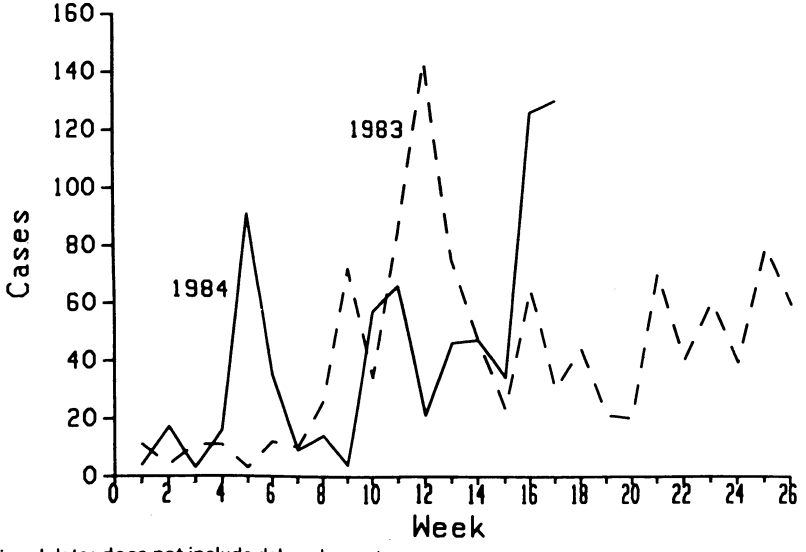
Seventy-nine (2.5%) of the nation's 3,138 counties reported measles in the 17-week period, compared with 56 (1.8%) in the same period of 1983. Of the 968 cases, 831 (85.8%) were part of 14 chains of transmission. The three largest chains—in California, Michigan, and Texas—accounted for 56.2% (544/968) of the total cases (Figure 2). The chains in California and Michigan primarily involved junior and senior high-school students. The Texas outbreak is still under investigation.

A provisional total of 42 international importations was reported during the first 17 weeks of 1984, an average of 2.5 cases per week, compared with 95 (5.6 cases per week) in the same period in 1983.

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

Editorial Note: Chains of measles transmission in 1984 have been concentrated primarily among school-aged children. This is a change from 1983, when most documented transmission occurred outside primary and secondary schools (*1*). While lack of enforcement of immunization laws factored in some of the outbreaks, some of the 1984 school-based chains of transmission occurred in schools with high immunization levels (in excess of 95%). The reasons for these outbreaks are not yet clear and are currently under investigation. Nevertheless,

FIGURE 1. Reported measles cases, by week of report* — United States, 1983 and 1984



*Provisional data; does not include delayed reports.

Measles — Continued

county-specific data indicate that most areas of the country are still free of measles.

The observation that measles outbreaks sometimes can occur among the small proportion of vaccine failures demonstrates the importance of strict adherence to immunization requirements to maximize the remaining number of susceptibles. Whenever students are admitted to school provisionally, their immunization records should be completed promptly. Noncompliant students should be excluded from school attendance. Experience has demonstrated that strict exclusion of such students results in high immunization levels, with minimal delay and minimal disruption of routine activities (2). School officials should maintain a permanent register of students who are not vaccinated because of medical, religious, or philosophic exemption, to allow rapid identification and exclusion of such students during an outbreak.

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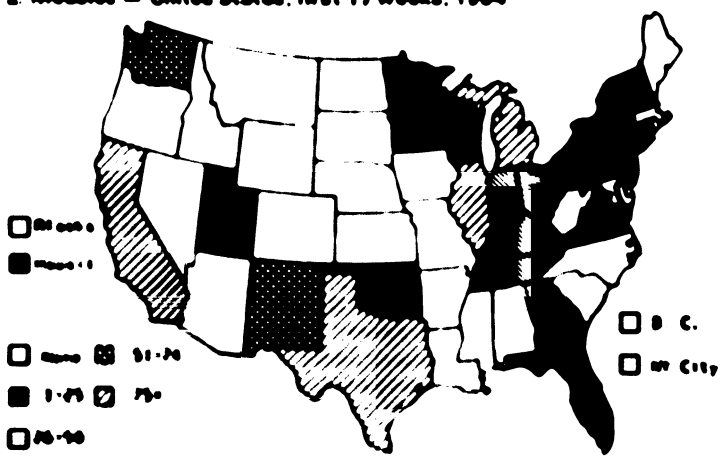
FIGURE 2. Measles — United States, first 17 weeks, 1984



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