CENTER FOR DISEASE CONTROL

November 3, 1978 / Vol. 27 / No. 44

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Recommendation of the Public Health Service

Advisory Committee on Immunization Practices

Measles Prevention

These revised ACIP Measles Prevention recommendations represent an effort to address more directly some of the key issues in measles prevention and control.

The issues discussed in previous statements on Measles Vaccine (MMWR 25:359-360, 365, 376, 1976) and Measles Outbreak Control (MMWR 26:294, 299, 1977) have been combined in this statement. The relative increase in reported measles cases in adolescents prompted an extension and clarification of recommendations for immunization of adolescents, both males and females. The usefulness of school immunization requirements has been emphasized. The definition of measles susceptibles and revaccination recommendations for them have been more clearly established.

INTRODUCTION

Measles (rubeola) is often a severe disease, frequently complicated by middle ear infection or bronchopneumonia. Encephalitis occurs in approximately 1 of every 1,000 cases; survivors often have permanent brain damage and mental retardation. Death, predominantly from respiratory and neurologic causes, occurs in 1 of every 1,000 reported measles cases. The risks of encephalitis and death are known to be greater in infants, and suspected to be greater in adults, than in children and adolescents.

Measles illness during pregnancy increases fetal risk. Most commonly, this involves premature labor and moderately increased rates of spontaneous abortion and of low birth weight (*1*). One retrospective study in an isolated population suggests that measles infection in the first trimester of pregnancy was associated with an increased rate of congenital malformations (*2*).

Before measles vaccine was available, more than 400,000 measles cases were reported annually in the United States. Since the introduction of vaccine in 1963, the collaborative efforts of professional and voluntary medical and public health organizations in vaccination programs have resulted in a 90% reduction in the reported incidence of measles. In 1977, 57,345 cases were reported. In the pre-vaccine era, the majority of measles cases occurred in preschool and young, school-age children. In 1977, more than 60% of cases in which the age was known occurred in persons 10 or more years old. More than 20% were reported in the 15- to 19-year-old age group.

With the highly effective, safe measles vaccines now available, the degree of measles control in the United States depends largely on the effectiveness of the continuing effort to vaccinate all susceptible persons who can safely be vaccinated.

Measles Prevention — Continued

MEASLES VIRUS VACCINE

Live measles virus vaccine* available in the United States is prepared in chick embryo cell culture. The vaccine virus strain primarily used at present has been attenuated beyond the level of the original Edmonston B strain and is therefore known as a further attenuated strain. Vaccine prepared with the further attenuated measles virus is generally preferred, in part because it causes fewer reactions than its predecessor. It is available in monovalent (measles only) form and in combinations: measles-rubella (MR) and measles-mumps-rubella (MMR) vaccines. All vaccines containing measles antigen are recommended for use at about 15 months of age. MMR is encouraged for use in routine infant vaccination programs. In all situations where measles vaccine is to be used, consideration should be given to using a combination vaccine when recipients are likely to be susceptible to rubella and/or mumps as well as to measles. Edmonston B measles vaccine is not available in combined form and is now rarely used.

Measles vaccine produces a mild or inapparent, non-communicable infection. Measles antibodies develop in at least 95% of susceptible children vaccinated at about 15 months of age or older with the current further attenuated vaccine. Evidence now extending to 15-year follow-up indicates that, although titers of vaccine-induced antibodies are lower than those following natural disease, the protection conferred appears to be durable.

Vaccine Shipment and Storage

Failure of protection against measles may result from the administration of improperly stored vaccine. During shipment and storage prior to reconstitution, measles vaccine must be kept at a temperature between 2-8 C (35.6-46.4 F). It must also be protected from light, which may inactivate the virus.

VACCINE USAGE

General Recommendations

Persons can be considered immune to measles only if they have documentation of:
(1) Physician-diagnosed measles or laboratory evidence of measles immunity, or
(2) Adequate immunization with live measles vaccine when 12 or more months of age.

Most persons born before 1957 are likely to have been infected naturally and generally need not be considered susceptible. All other children, adolescents, and adults are considered susceptible and should be vaccinated, if not otherwise contraindicated.

Dosage

A single dose of live measles vaccine (as a monovalent or combination product) should be given subcutaneously in the volume specified by the manufacturer. Immune serum globulin (ISG) should **NOT** be given with further attenuated measles virus vaccine. It is indicated only if Edmonston B vaccine is used.

Age at Vaccination

Measles vaccine is indicated for persons susceptible to measles, regardless of age, unless otherwise contraindicated. Current evidence indicates that for a maximum rate of seroconversion, measles vaccine should preferably be given when children are about 15 months of age. Whenever there is likely exposure to natural measles, infants as young as 6 months should be vaccinated. However, to ensure protection of infants vaccinated before 12 months of age, they should be revaccinated when they are about 15 months old. It is particularly important to vaccinate infants before they might encounter measles in day-care centers or other such environments.

Because of the *upward* shift in age distribution of reported cases, the immune status of all adolescents should be evaluated. Complete measles control will require protection

*Official name: Measles Virus Vaccine, Live, Attenuated

Measles Prevention — Continued

of all susceptibles; therefore, increased emphasis must be placed on vaccinating susceptible adolescents and young adults. Susceptible persons include those who received inactivated vaccine or who were given live measles virus vaccine before they were 12 months of age, as well as those who were never vaccinated or never had measles.

Revaccination of Persons Vaccinated According to Earlier Recommendations

Persons vaccinated with live measles vaccine before 12 months of age and those vaccinated at any age with inactivated vaccine (available from 1963 to 1967) should be identified and revaccinated. Persons who are unaware of their age at vaccination or who were vaccinated prior to 1968 with a vaccine of unknown type should also be revaccinated. In addition, persons who received live measles vaccine in a series within 3 months of inactivated measles vaccine should be revaccinated.

There has been some confusion concerning the immunity of children vaccinated against measles at 12 months of age. This is because some recent data have indicated a slightly lower rate of seroconversion among children vaccinated at 12 months of age than among those vaccinated at 13 months or later. This difference is not sufficient to warrant routinely revaccinating persons in the former group; the vast majority are fully protected. If, however, the parents of a child vaccinated when 12 to 15 months old request revaccination for the child, there is no immunologic or safety reason to deny the request.

Individuals Exposed to Disease

Use of vaccine: Exposure to measles is not a contraindication to vaccination. Available data suggest that live measles vaccine, if given within 72 hours of measles exposure, may provide protection. If the exposure does not result in infection, the vaccine should induce protection against subsequent measles infection.

Use of ISG: To prevent or modify measles in a susceptible person exposed less than 6 days before, ISG, 0.25 ml/kg (0.11 ml/lb) of body weight, should be given (maximum dose—15 ml). ISG may be especially indicated for susceptible household contacts of measles patients, particularly contacts under 1 year of age, for whom the risk of complications is highest. Live measles vaccine should be given about 3 months later, when the passive measles antibodies should have disappeared, if the child is then at least 15 months old. *ISG should not be used in an attempt to control measles outbreaks.*

SIDE EFFECTS AND ADVERSE REACTIONS

Experience with more than 100 million doses of measles vaccine distributed in the United States through early 1978 indicates an excellent record of safety. About 5%-15% of vaccinees may develop fever ≥103 F (≥39.4 C) beginning about the sixth day after vaccination and lasting up to 5 days. Most reports indicate that persons with fever are asymptomatic. Transient rashes have been reported rarely. Central nervous system conditions including encephalitis and encephalopathy have been reported approximately once for every million doses administered. Limited data indicate that reactions to vaccine are not age-related.

Subacute sclerosing panencephalitis (SSPE) is a "slow virus" infection of the central nervous system associated with a measles-like virus. Results from a recent study indicate that measles vaccine, by protecting against measles, significantly reduces the chance of developing SSPE (*3,4*). However, there have been reports of SSPE in children who did not have a history of natural measles but did receive measles vaccine. Some of these cases may have resulted from unrecognized measles illness in the first year of life or possibly from the measles vaccine. The recent decline in numbers of SSPE cases in the presence of careful surveillance is additional strong presumptive evidence of a protective effect of measles vaccination.

Measles Prevention — Continued

Revaccination Risks

There is no evidence of enhanced risk from receiving live measles vaccine for one who has previously received live measles vaccine or had measles. Specifically, there does not appear to be any enhanced risk of SSPE. The previously cited study showed no association between SSPE and either receiving live measles vaccine more than once or receiving it after having had measles.

On exposure to natural measles, some children previously inoculated with inactivated measles virus vaccine have developed atypical measles, sometimes with severe symptoms. Reactions, such as local edema and induration, lympadenopathy, and fever, have at times been observed when live measles virus vaccine was administered to recipients of inactivated vaccine. However, despite the risk of local reaction, children who have previously been given inactivated vaccine (whether administered alone or followed by a dose of live vaccine within 3 months) should be revaccinated with live vaccine to avoid the severe atypical form of natural measles and to provide full and lasting protection.

PRECAUTIONS AND CONTRAINDICATIONS

Pregnancy: Live measles vaccine should not be given to females known to be pregnant. This precaution is based on the theoretical risk of fetal infection, which applies to administration of any live virus vaccine to females who might be pregnant or who might become pregnant shortly after vaccination. Although no evidence exists to substantiate this

(Continued on page 435)

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

[Cumulative totals include revised and delayed reports through previous weeks.]

DISEASE	43rd WEEK ENDING		MEDIAN 1973-1977**	CUMULATIVE, FIRST 43 WEEKS		MEDIAN 1973-1977**
	October 28, 1978	October 29, 1977*		October 28, 1978	October 29, 1977*	
Aseptic meningitis	189	132	93	4,963	3,928	3,323
Brucellosis	2	–	2	125	185	185
Chickenpox	902	1,123	1,104	127,169	164,850	147,754
Diphtheria	–	1	1	64	74	157
Encephalitis: Primary (arthropod-borne & unspec.)	23	41	34	817	955	1,224
Post-infectious	–	3	3	171	176	230
Hepatitis, Viral: Type B	263	268	263	12,264	13,606	9,572
Type A	593	567	732	24,077	25,346	28,840
Type unspecified	207	174		7,383	7,267	
Malaria	16	7	5	601	457	353
Measles (rubeola)	125	155	155	24,577	53,547	24,748
Meningococcal infections: Total	30	25	18	1,962	1,444	1,193
Civilian	30	25	25	1,937	1,434	1,167
Military	–	–	–	25	10	25
Mumps	133	371	544	14,159	17,475	46,960
Pertussis	25	61	---	1,684	1,464	---
Rubella (German measles)	88	80	98	16,871	19,075	15,321
Tetanus	1	3	3	69	63	77
Tuberculosis	551	655	626	24,490	25,005	25,906
Tularemia	2	4	2	108	141	126
Typhoid fever	18	9	10	427	330	350
Typhus fever, tick-borne (Rky. Mt. spotted)	10	15	12	969	1,075	776
Venereal diseases:						
Gonorrhea: Civilian	22,585	21,871	21,387	836,961	826,846	826,846
Military	482	511	511	21,012	22,403	24,360
Syphilis, primary & secondary: Civilian	523	452	475	17,787	17,013	20,060
Military	5	8	8	251	254	284
Rabies in animals	74	68	43	2,599	2,600	2,508

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1978		CUM. 1978
Anthrax	5	Poliomyelitis: Total	3
Botulism	62	Paralytic	1
Cholera	11	Psittacosis (Ups NY 1, Ore. 1)	89
Congenital rubella syndrome	25	Rabies in man	–
Leprosy (Calif. 2)	128	Trichinosis (Miss. 1, Ariz. 1)	47
Leptospirosis (N.C. 1, Ala. 1, Ark. 1)	55	Typhus fever, flea-borne (endemic, murine) (Tex. 1)	35
Plague	7		

*Delayed reports received for calendar year 1977 are used to update last year's weekly and cumulative totals.

**Medians for gonorrhea and syphilis are based on data for 1975-1977.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending October 28, 1978, and October 29, 1977 (43rd week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-infectious	B	A	Unspecified		
	1978	1978	1978	1978	CUM. 1978	1978	1977*	1978	1978	1978	1978	1978	CUM. 1978
UNITED STATES	189	2	902	–	64	23	41	–	263	593	207	16	601
NEW ENGLAND	4	–	167	–	–	–	–	–	4	15	6	–	28
Maine†	–	–	38	–	–	–	–	–	–	–	1	–	1
N.H.†	–	–	–	–	–	–	–	–	1	–	–	–	4
Vt.	–	–	1	–	–	–	–	–	–	–	–	–	–
Mass.	1	–	41	–	–	–	–	–	1	7	5	–	7
R.I.	1	–	24	–	–	–	–	–	2	8	–	–	5
Conn.	2	–	63	–	–	–	–	–	–	–	–	–	11
MID. ATLANTIC	36	1	20	–	1	4	4	–	32	33	14	3	128
Upstate N.Y.	7	1	6	–	–	1	–	–	7	8	2	–	18
N.Y. City	4	–	13	–	1	1	–	–	9	11	2	3	58
N.J.	8	–	NN	–	–	–	–	–	16	14	10	–	24
Pa.	17	–	1	–	–	2	4	–	NA	NA	NA	–	28
E.N. CENTRAL	35	–	423	–	–	6	9	–	37	81	21	1	40
Ohio†	–	–	58	–	–	2	2	–	9	11	–	–	5
Ind.†	4	–	94	–	–	–	5	–	4	4	3	–	3
Ill.	–	–	47	–	–	–	–	–	8	34	9	–	14
Mich.	29	–	117	–	–	4	–	–	15	29	5	1	16
Wis.†	2	–	107	–	–	–	2	–	1	3	–	–	2
W.N. CENTRAL	27	–	39	–	2	1	2	–	15	67	7	–	22
Minn.	–	–	–	–	–	–	–	–	9	44	3	–	4
Iowa	1	–	15	–	–	1	–	–	2	7	–	–	–
Mo.	2	–	2	–	1	–	–	–	1	3	2	–	8
N. Dak.†	1	–	6	–	–	–	–	–	1	–	–	–	–
S. Dak.	–	–	3	–	–	–	–	–	–	–	–	–	1
Nebr.†	7	–	–	–	1	–	1	–	2	10	–	–	4
Kans.†	16	–	13	–	–	–	1	–	–	3	2	–	5
S. ATLANTIC	19	–	35	–	–	2	10	–	49	59	21	5	108
Del.	–	–	–	–	–	–	–	–	1	1	–	–	1
Md.	5	–	1	–	–	–	1	–	7	4	2	1	24
D.C.†	–	–	3	–	–	–	–	–	3	2	–	2	6
Va.†	3	–	3	–	–	1	–	–	5	5	2	–	20
W. Va.	1	–	18	–	–	–	–	–	2	1	–	–	1
N.C.	2	–	NN	–	–	1	–	–	5	7	3	–	10
S.C.	3	–	–	–	–	–	–	–	3	–	3	–	4
Ga.	–	–	–	–	–	–	–	–	11	11	–	1	10
Fla.	5	–	10	–	–	–	9	–	12	28	11	1	32
E.S. CENTRAL	17	–	19	–	–	5	6	–	13	22	2	–	6
Ky.	5	–	15	–	–	–	1	–	4	1	–	–	2
Tenn.	5	–	NN	–	–	1	–	–	7	13	2	–	1
Ala.†	7	–	4	–	–	4	–	–	–	–	–	–	1
Miss.†	–	–	–	–	–	–	5	–	2	8	–	–	2
W.S. CENTRAL	16	1	42	–	1	2	2	–	27	69	42	1	27
Ark.	1	–	–	–	1	–	–	–	3	–	8	–	1
La.	1	–	NN	–	–	–	–	–	5	4	5	–	3
Okla.	4	1	–	–	–	–	–	–	5	11	2	–	–
Tex.	10	–	42	–	–	2	2	–	14	54	27	1	23
MOUNTAIN	7	–	41	–	4	–	3	–	14	84	46	1	8
Mont.	1	–	1	–	–	–	1	–	–	–	–	–	–
Idaho†	–	–	–	–	–	–	–	–	–	4	–	–	–
Wyo.	2	–	–	–	–	–	–	–	–	–	–	–	–
Colo.	3	–	34	–	2	–	2	–	6	9	2	–	4
N. Mex.	–	–	–	–	–	–	–	–	–	2	4	–	1
Ariz.	–	–	NN	–	1	–	–	–	6	56	30	1	2
Utah	1	–	4	–	–	–	–	–	1	9	9	–	–
Nev.	–	–	2	–	1	–	–	–	1	4	1	–	1
PACIFIC	28	–	116	–	56	3	5	–	72	163	48	5	234
Wash.	1	–	85	–	52	–	2	–	1	6	7	–	8
Oreg.	2	–	1	–	–	–	–	–	11	22	1	–	9
Calif.†	23	–	–	–	1	3	3	–	55	127	39	5	193
Alaska	–	–	30	–	3	–	–	–	1	–	–	–	4
Hawaii	2	–	–	–	–	–	–	–	4	8	1	–	20
Guam†	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
Pac. Trust Terr.	–	–	5	–	–	–	NA	–	–	–	3	–	–
P.R.	1	–	4	–	–	–	–	–	–	1	–	–	4
V.I.	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	1

NN: Not notifiable. NA: Not available.

*Delayed reports received for 1977 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: Asep. meng.: Maine +4, Ohio +8, Kans. –3, Miss. +2, Bruc.: Nebr. +2; Chickenpox: Ind. +66, Nebr. +3, Ala. +1, Miss. +2, Calif. +10, Guam +1; Enceph., prim.: Wis. +10, Nebr. +1, Miss. +6; Enceph., post: Nebr. +1; Hep.B: N.H. +1, D.C. +1, Hep.A.: N.H. +1, N.Dak. –1, Kans, –1, Miss. +1, Idaho +2; Hep.unsp.: Kans. +3, Va. –1.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending October 28, 1978, and October 29, 1977 (43rd week)

REPORTING AREA	MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1978	CUM. 1978	CUM. 1977*	1978	CUM. 1978	CUM. 1977*	1978	CUM. 1978	1978	1978	CUM. 1978	CUM. 1978
UNITED STATES	125	24,577	53,547	30	1,962	1,444	133	14,159	25	88	16,871	69
NEW ENGLAND	3	1,991	2,500	5	109	58	2	755	1	3	753	3
Maine†	1	1,316	170	–	8	3	–	492	–	–	153	–
N.H.	1	52	511	1	8	3	–	15	–	–	102	–
Vt.	–	33	254	–	2	6	–	5	–	–	27	2
Mass.†	1	254	628	–	41	17	–	90	1	3	225	–
R.I. †	–	8	64	1	19	2	1	43	–	–	42	–
Conn.	–	328	833	3	31	27	1	110	–	–	204	1
MID. ATLANTIC	4	2,203	8,389	10	330	189	11	662	8	2	3,022	5
Upstate N.Y.	2	1,409	3,836	3	105	43	3	218	5	2	532	2
N.Y. City	2	362	740	2	75	51	4	157	3	–	139	–
N.J.	–	74	197	–	60	45	3	141	–	–	1,609	–
Pa.	–	358	3,616	5	90	90	1	146	–	–	742	3
E.N. CENTRAL	44	11,068	11,434	4	210	162	45	5,743	6	37	8,458	3
Ohio	1	492	1,858	–	70	58	10	997	–	–	1,375	1
Ind.†	–	199	4,341	–	37	10	4	325	2	4	597	1
Ill.	11	1,160	1,787	–	30	37	6	1,894	–	10	1,722	1
Mich.	28	7,736	1,005	4	62	43	14	1,431	2	20	3,215	–
Wis.†	4	1,481	2,443	–	11	14	11	1,096	2	3	1,549	–
W.N. CENTRAL	2	401	9,504	–	70	61	7	1,962	–	5	685	7
Minn.	–	38	2,624	–	19	19	1	22	–	–	128	1
Iowa	–	55	4,305	–	5	8	2	139	–	–	61	–
Mo.	–	15	1,045	–	29	22	1	1,172	–	1	105	1
N. Dak.	2	198	26	–	3	1	–	15	–	–	82	–
S. Dak.	–	–	75	–	3	4	–	7	–	–	111	1
Nebr.	–	5	214	–	–	2	–	25	–	–	34	–
Kans.	–	90	1,211	–	11	5	3	582	–	4	160	4
S. ATLANTIC	29	5,171	4,655	6	486	321	14	857	1	2	1,044	17
Del.	–	7	22	–	16	22	–	56	–	–	35	–
Md.	–	51	372	1	34	21	–	70	–	–	7	2
D.C.	1	1	14	–	2	–	–	2	–	–	1	–
Va.†	–	2,833	2,744	2	58	30	4	176	–	–	247	1
W. Va.	1	1,056	249	–	14	9	3	180	–	1	326	–
N.C.	–	121	65	–	95	67	–	71	–	1	190	3
S.C.	–	199	153	1	29	35	–	17	–	–	28	4
Ga.	1	34	768	1	53	47	–	69	1	–	27	–
Fla.†	26	869	268	1	185	90	7	216	–	–	183	7
E.S. CENTRAL	5	1,394	2,034	2	160	149	13	1,176	1	3	508	3
Ky.	–	119	1,191	–	30	31	8	211	–	–	131	2
Tenn.	3	958	727	–	41	37	1	453	1	2	204	–
Ala.†	–	89	78	–	46	53	3	428	–	–	22	–
Miss.†	2	228	38	2	43	28	1	84	–	1	151	1
W.S. CENTRAL	18	1,154	2,115	–	282	284	20	1,749	1	–	943	14
Ark.	–	16	29	–	22	15	–	602	–	–	58	1
La.	–	343	75	–	117	129	–	65	–	–	486	1
Okla.	–	14	63	–	16	14	–	4	–	–	13	3
Tex.	18	781	1,952	–	127	126	20	1,078	1	–	386	9
MOUNTAIN	–	252	2,534	–	44	36	6	426	–	9	217	3
Mont.	–	105	1,162	–	3	4	–	145	–	–	18	–
Idaho	–	1	161	–	4	6	–	20	–	–	2	1
Wyo.	–	–	19	–	–	2	–	1	–	–	–	–
Colo.†	–	31	504	–	3	1	5	100	–	–	48	1
N. Mex.	–	–	257	–	8	9	–	16	–	–	3	–
Ariz.	–	51	318	–	15	10	1	19	–	2	96	–
Utah	–	44	20	–	6	3	–	117	–	7	38	1
Nev.	–	20	93	–	5	1	–	8	–	–	12	–
PACIFIC	20	943	10,378	3	271	184	15	829	7	27	1,241	14
Wash.	9	219	542	–	44	26	1	191	–	2	115	1
Oreg.	–	149	366	–	29	18	2	111	2	4	124	–
Calif.	11	563	9,375	3	187	109	10	490	5	21	978	13
Alaska	–	1	60	–	8	29	1	10	–	–	8	–
Hawaii	–	12	35	–	3	2	1	27	–	–	12	–
Guam †	NA	24	5	–	–	1	NA	38	NA	NA	4	1
Pac. Trust Terr.	4	27	NA	–	1	NA	2	8	–	–	2	–
P.R.	–	267	595	–	7	1	18	1,350	–	–	16	9
V.I.	NA	6	14	–	1	–	NA	1	NA	NA	1	–

NA: Not available.

*Delayed reports received for 1977 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: Measles: Mass. –2, Ind. +1, Wis. –1, Va. –3, Fla. –1, Ala. +12, Miss. +18, Colo. +6; Men.inf.: Ala. +1, Miss. –5, Guam +1; Mumps: Ind. +3; Pertussis: Maine +6, R.I. +1, Ind. +3, Miss. +2; Rubella: Mass. –4, Ind. +5, Colo. +1.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending October 28, 1978, and October 29, 1977 (43rd week)

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1978	CUM. 1978	CUM. 1978	1978	CUM. 1978	1978	CUM. 1978	1978	CUM. 1978	CUM. 1977*	1978	CUM. 1978	CUM. 1977*	CUM. 1978
UNITED STATES	551	24,490	108	18	427	10	969	22,585	836,961	826,846	523	17,787	17,013	2,599
NEW ENGLAND	31	804	2	1	77	–	13	441	21,323	22,267	12	487	672	94
Maine†	4	63	–	–	–	–	–	61	1,753	1,632	1	8	23	75
N.H.†	–	15	–	–	5	–	–	16	984	902	–	5	4	3
Vt.	1	32	–	–	1	–	–	6	518	553	–	3	7	2
Mass.	16	470	–	1	59	–	5	158	9,304	9,487	10	301	470	7
R.I.	1	54	–	–	4	–	1	47	1,537	1,787	–	20	8	–
Conn.	9	170	2	–	8	–	7	153	7,227	7,906	1	150	160	7
MID. ATLANTIC	68	4,067	5	7	56	–	55	2,584	90,338	86,391	79	2,335	2,410	93
Upstate N.Y.†	9	642	4	–	6	–	31	546	15,331	14,854	6	163	225	59
N.Y. City	35	1,492	1	5	37	–	4	950	34,191	33,531	58	1,620	1,519	–
N.J.	17	862	–	1	7	–	12	502	16,963	15,474	10	287	314	13
Pa.	7	1,071	–	1	6	–	8	586	23,853	22,532	5	265	352	21
E.N. CENTRAL	119	3,883	1	1	38	–	47	3,575	129,574	130,727	40	1,998	1,757	158
Ohio	37	716	1	–	6	–	21	759	33,350	34,576	15	368	412	18
Ind.	17	457	–	–	2	–	1	196	13,417	12,195	–	135	133	13
Ill.	34	1,454	–	1	17	–	25	1,477	41,285	42,174	20	1,260	914	52
Mich.†	28	1,072	–	–	13	–	–	862	30,062	30,226	4	181	205	7
Wis.†	3	184	–	–	–	–	–	281	11,460	11,556	1	54	93	68
W.N. CENTRAL	31	801	21	–	19	3	43	911	42,413	43,104	6	384	375	520
Minn.	1	138	–	–	7	–	–	151	7,209	7,784	–	135	117	154
Iowa	5	91	1	–	3	–	1	57	4,654	5,031	–	38	37	108
Mo.	19	353	17	–	4	–	20	431	18,736	17,779	4	125	146	70
N. Dak.	–	31	–	–	–	–	1	16	766	814	–	3	3	90
S. Dak.†	4	65	–	–	–	–	6	28	1,453	1,302	–	3	9	64
Nebr.	–	21	–	–	1	3	10	89	3,076	3,744	–	12	25	6
Kans.	2	102	3	–	4	–	5	139	6,519	6,650	2	68	38	28
S. ATLANTIC	109	5,251	9	1	58	7	526	5,962	204,085	203,580	160	4,728	4,675	382
Del.	–	46	–	–	3	–	5	53	2,861	2,807	–	10	19	3
Md.†	19	792	5	–	11	–	105	820	26,249	24,874	26	360	289	–
D.C.	8	259	–	–	1	–	1	490	13,633	13,380	12	366	473	–
Va.†	7	538	4	–	5	3	112	551	19,634	21,353	17	357	463	13
W. Va.	2	202	–	1	6	–	11	69	2,810	2,725	6	24	3	12
N.C.†	15	819	–	–	2	4	193	918	28,918	30,403	24	500	641	13
S.C.	6	453	–	–	8	–	54	499	20,085	19,043	4	240	209	89
Ga.	30	736	–	–	4	–	45	880	39,331	39,249	26	1,166	1,036	238
Fla.†	22	1,406	–	–	18	–	–	1,682	50,564	49,746	45	1,665	1,542	14
E.S. CENTRAL	39	2,329	6	–	8	–	178	1,961	71,049	73,781	24	938	657	128
Ky.	5	526	2	–	2	–	42	258	9,411	9,853	6	126	85	64
Tenn.	14	717	3	–	3	–	110	661	26,234	29,515	2	314	209	26
Ala.†	7	568	1	–	2	–	13	679	20,261	20,258	3	162	141	38
Miss.†	13	514	–	–	1	–	13	363	15,143	14,155	13	336	222	–
W.S. CENTRAL	65	2,866	51	1	37	–	93	2,755	112,788	103,453	67	2,854	2,451	780
Ark.	12	337	37	–	7	–	14	293	8,424	7,917	–	61	61	126
La.	12	498	6	–	3	–	1	327	18,327	15,389	21	617	586	20
Okla.	3	279	5	1	3	–	54	364	10,664	10,135	1	81	68	160
Tex.	38	1,752	3	–	24	–	24	1,771	75,373	70,012	45	2,095	1,736	474
MOUNTAIN	15	710	9	–	19	–	10	1,053	31,795	33,350	7	379	355	97
Mont.	–	51	–	–	3	–	2	34	1,796	1,757	–	8	4	19
Idaho	–	27	2	–	5	–	3	45	1,317	1,522	–	13	11	–
Wyo.	–	14	2	–	–	–	1	29	783	775	–	8	2	–
Colo.	6	80	1	–	4	–	2	274	8,808	8,734	4	120	107	35
N. Mex.†	1	118	–	–	2	–	–	76	4,518	4,870	–	74	74	15
Ariz.	5	325	1	–	3	–	1	352	8,199	9,259	–	81	133	21
Utah	–	32	3	–	1	–	–	58	1,735	1,989	–	12	10	7
Nev.	3	63	–	–	1	–	1	186	4,639	4,444	3	63	14	–
PACIFIC	74	3,783	4	7	115	–	4	3,343	133,596	130,193	128	3,684	3,661	347
Wash.	NA	244	–	–	7	–	1	418	11,104	9,993	NA	176	216	2
Oreg.	1	146	1	–	1	–	2	246	9,184	9,049	4	138	121	11
Calif.	66	2,890	3	4	96	–	1	2,530	106,786	104,213	122	3,322	3,267	326
Alaska	–	59	–	–	–	–	–	74	4,137	4,210	–	10	25	8
Hawaii	7	454	–	3	11	–	–	75	2,385	2,728	2	38	32	–
Guam†	NA	51	–	NA	–	NA	–	NA	179	192	NA	–	2	–
Pac. Trust Terr.	–	6	–	–	–	–	–	2	32	NA	–	–	NA	–
P.R.	26	328	–	–	3	–	–	44	1,850	2,661	6	411	442	30
V.I.	NA	4	–	NA	2	NA	–	NA	162	172	NA	15	8	–

NA: Not available.

*Delayed reports received for 1977 are not shown below but are used to update last year's weekly and cumulative totals.

†The following delayed reports will be reflected in next week's cumulative totals: TB: Maine −1, Mich. −2, N.C. −3, Fla. −1, Ala. −3, Guam +1; RMSF: S. Dak. +1, Va. −1; GC: N.H. −1 civ., Wis. −1 civ., Md. +38 civ +117., Miss. +18 civ., N.Mex. +95 civ. +1 mil., Guam +4 civ.; Syphilis: Md. +3; An. rabies: Ups NY +2, N. Mex +8.

TABLE IV. Deaths in 121 U.S. cities,* week ending October 28, 1978 (43rd week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	<1	
NEW ENGLAND	671	452	150	36	9	37
Boston, Mass.	211	135	51	13	3	10
Bridgeport, Conn.	48	35	6	4	1	3
Cambridge, Mass.	33	26	5	2	–	3
Fall River, Mass.	26	19	6	1	–	–
Hartford, Conn.	67	46	12	5	1	5
Lowell, Mass.	21	14	4	1	1	2
Lynn, Mass.	17	10	5	–	–	3
New Bedford, Mass.	18	14	3	1	–	1
New Haven, Conn.	39	26	7	3	1	–
Providence, R.I.	54	31	15	2	1	5
Somerville, Mass.	7	4	2	1	–	–
Springfield, Mass.	44	28	13	1	1	–
Waterbury, Conn.	26	18	6	1	–	2
Worcester, Mass.	60	46	11	1	–	3
MID. ATLANTIC	2,705	1,724	663	179	78	150
Albany, N.Y.	42	30	7	–	3	3
Allentown, Pa.	32	17	12	3	–	–
Buffalo, N.Y.	149	86	44	5	11	11
Camden, N.J.	31	20	9	2	–	2
Elizabeth, N.J.	27	18	5	–	1	–
Erie, Pa.	34	20	11	1	2	4
Jersey City, N.J.	47	21	20	5	1	–
Newark, N.J.	42	22	16	2	2	1
N.Y. City, N.Y.	1,259	851	291	95	30	66
Paterson, N.J.	27	16	5	4	2	1
Philadelphia, Pa.	456	256	138	33	15	29
Pittsburgh, Pa.	66	43	18	4	–	5
Reading, Pa.	46	36	8	–	1	4
Rochester, N.Y.	130	87	30	9	2	7
Schenectady, N.Y.	19	17	2	–	–	1
Scranton, Pa.	21	13	5	2	–	–
Syracuse, N.Y.	100	64	21	10	5	3
Trenton, N.J.	39	24	9	2	2	5
Utica, N.Y.	27	20	6	1	–	1
Yonkers, N.Y.	31	23	6	1	1	7
E.N. CENTRAL	2,343	1,398	602	160	102	47
Akron, Ohio	77	57	13	3	2	–
Canton, Ohio	40	27	9	3	–	2
Chicago, Ill.	609	315	191	56	25	11
Cincinnati, Ohio	125	64	24	9	4	2
Cleveland, Ohio	170	82	61	10	8	2
Columbus, Ohio	130	78	31	11	6	7
Dayton, Ohio	113	65	33	6	3	1
Detroit, Mich.	256	158	57	16	19	4
Evansville, Ind.	46	28	10	6	2	1
Fort Wayne, Ind.	58	35	14	5	3	3
Gary, Ind.	19	11	8	–	–	2
Grand Rapids, Mich.	59	46	8	1	3	1
Indianapolis, Ind.	167	93	45	11	11	3
Madison, Wis.	35	25	3	2	2	1
Milwaukee, Wis.	142	90	41	5	3	2
Peoria, Ill.	43	30	4	5	4	–
Rockford, Ill.	48	30	10	5	–	2
South Bend, Ind.	52	38	10	3	–	3
Toledo, Ohio	101	74	18	1	3	–
Youngstown, Ohio	53	32	12	2	4	–
W.N. CENTRAL	743	415	156	41	38	25
Des Moines, Iowa	70	51	14	2	3	–
Duluth, Minn.	22	12	7	–	3	3
Kansas City, Kans.	28	16	7	3	1	1
Kansas City, Mo.	129	79	24	8	10	2
Lincoln, Nebr.	23	14	6	1	2	1
Minneapolis, Minn.	99	62	18	6	7	5
Omaha, Nebr.	86	55	17	6	5	2
St. Louis, Mo.	149	95	36	7	5	7
St. Paul, Minn.	63	45	13	5	–	1
Wichita, Kans.	74	46	14	3	2	3

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	<1	
S. ATLANTIC	1,240	727	351	86	36	53
Atlanta, Ga.	118	61	26	17	1	5
Baltimore, Md.	293	166	88	19	9	13
Charlotte, N.C.	57	36	10	6	3	1
Jacksonville, Fla.	101	58	31	6	1	5
Miami, Fla.	90	43	31	8	5	3
Norfolk, Va.	51	30	15	2	3	–
Richmond, Va.	82	49	24	3	1	6
Savannah, Ga.	43	21	16	3	1	4
St. Petersburg, Fla.	87	66	11	5	3	3
Tampa, Fla.	55	44	7	1	1	6
Washington, D.C.	195	116	62	11	3	7
Wilmington, Del.	68	37	20	5	5	–
E.S. CENTRAL	653	370	164	60	36	46
Birmingham, Ala.	121	66	32	9	8	4
Chattanooga, Tenn.	59	41	14	2	1	6
Knoxville, Tenn.	56	33	14	6	1	–
Louisville, Ky.	105	61	22	12	8	18
Memphis, Tenn.	134	69	36	14	8	4
Mobile, Ala.	49	28	11	5	3	5
Montgomery, Ala.	51	26	16	7	2	5
Nashville, Tenn.	78	46	15	5	5	4
W.S. CENTRAL	1,126	619	284	95	67	41
Austin, Tex.	56	29	7	7	7	2
Baton Rouge, La.	14	6	5	–	1	–
Corpus Christi, Tex.	31	16	9	2	4	–
Dallas, Tex.	185	95	61	17	4	3
El Paso, Tex.	59	30	16	5	5	8
Fort Worth, Tex.	83	45	20	4	11	1
Houston, Tex.	158	98	51	22	11	3
Little Rock, Ark.	63	41	11	6	2	3
New Orleans, La.	133	79	34	7	5	–
San Antonio, Tex.	156	91	41	13	7	9
Shreveport, La.	63	39	10	4	6	4
Tulsa, Okla.	85	50	19	8	4	8
MOUNTAIN	552	313	150	42	20	10
Albuquerque, N. Mex.	58	26	21	5	–	3
Colo. Springs, Colo.	29	19	7	2	–	2
Denver, Colo.	123	67	34	12	5	3
Las Vegas, Nev.	57	26	28	2	–	–
Ogden, Utah	18	12	4	–	–	–
Phoenix, Ariz.	124	76	25	11	6	–
Pueblo, Colo.	22	18	3	–	1	2
Salt Lake City, Utah	51	28	13	2	4	–
Tucson, Ariz.	70	41	15	8	4	–
PACIFIC	1,561	994	362	102	52	41
Berkeley, Calif.	19	15	2	1	1	1
Fresno, Calif.	65	45	10	3	2	2
Glendale, Calif.	20	18	2	–	–	–
Honolulu, Hawaii	65	36	18	4	3	1
Long Beach, Calif.	85	60	19	3	1	2
Los Angeles, Calif.	468	307	100	27	19	15
Oakland, Calif.	69	48	12	3	2	1
Pasadena, Calif.	28	19	6	1	2	1
Portland, Oreg.	118	71	31	6	5	–
Sacramento, Calif.	50	30	14	2	3	2
San Diego, Calif.	128	76	29	15	3	–
San Francisco, Calif.	132	86	31	8	6	1
San Jose, Calif.	59	33	15	10	1	2
Seattle, Wash.	126	70	38	13	2	4
Spokane, Wash.	57	37	15	1	1	3
Tacoma, Wash.	72	43	20	5	1	6
TOTAL	11,594	7,072	2,882	801	438	450
Expected Number	10,925	6,667	2,801	675	419	377

*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

Measles Prevention — Continued

theoretical risk from measles vaccine, concern about it has constrained measles vaccination programs for adolescent girls. Considering the importance of protecting adolescents and young adults against measles with its known serious risks, asking females if they are pregnant, excluding those who are, and explaining the theoretical risks to the others are reasonable precautions in a measles immunization program.

Febrile illness: Vaccination of persons with febrile illness should be postponed until recovery. Minor illnesses such as upper respiratory infections, however, do not preclude vaccination.

Allergies: Live measles vaccine is produced in chick embryo cell culture. It has not been reported to be associated with allergic reactions and can be given to all who need it, including persons with allergies to eggs, chickens, and feathers. Some vaccines contain trace amounts of antibiotics to which patients may be allergic. Those administering vaccines should review the label information carefully before deciding whether patients with known allergies to such antibiotics can be vaccinated safely. Live measles virus vaccine does not contain penicillin.

Recent Administration of ISG: Vaccination should be deferred for about 3 months after a person has received ISG because passively-acquired antibodies might interfere with the response to the vaccine.

Tuberculosis: Tuberculosis may be exacerbated by natural measles infection. There is no evidence, however, that the live measles virus vaccine has such an effect. Therefore, tuberculin skin testing need not be a prerequisite for measles vaccination. The value of protection against natural measles far outweighs the theoretical hazard of possibly exacerbating unsuspected tuberculosis. If there is a need for tuberculin skin testing, it can be done on the day of vaccination and read 48 to 72 hours later. If a recent vaccinee proves to have a positive skin test, appropriate investigations and, if indicated, tuberculosis therapy should be initiated.

Altered immunity: Replication of the measles vaccine virus may be potentiated in patients with immune deficiency diseases and by the suppressed immune responses that occur with leukemia, lymphoma, or generalized malignancy or with therapy with corticosteroids, alkylating drugs, antimetabolites, or radiation. Patients with such conditions should not be given live measles virus vaccine. Their risks of being exposed to measles may be reduced by vaccinating their close susceptible contacts. Management of such persons, should they be exposed to measles, can be facilitated by prior knowledge of their immune status.

Management of Patients with Contraindications to Measles Vaccine

If immediate protection against measles is required for persons for whom live measles virus vaccine is contraindicated, passive immunization with ISG, 0.25 ml/kg (0.11 ml/lb) of body weight, should be given as soon as possible after known exposure (maximum dose—15 ml). It is important to note, however, that ISG, which will usually prevent measles in normal children, may not be effective in children with acute leukemia or other conditions associated with altered immunity.

Simultaneous Administration of Certain Live Virus Vaccines

See "General Recommendations on Immunization," MMWR 25:349-350, 355. 1976.

MEASLES CONTROL

Ongoing Programs

The best means of reducing the incidence of measles is by having an immune population. Universal immunization as part of good health care should be accomplished through

Measles Prevention — Continued

routine and intensive programs carried out in physicians' offices and public health clinics. Programs aimed at vaccinating children against measles at about 15 months of age should be established by all communities. In addition, all other persons, regardless of age, thought to be susceptible should be vaccinated when they are identified, unless vaccine is otherwise contraindicated.

Official health agencies should take whatever steps are necessary, including development and enforcement of school immunization requirements, to assure that all persons in schools and day-care settings are protected against measles. Enforcement of such requirements has been correlated with reduced measles incidence.

Measles outbreaks have been and continue to be reported from places where young adults are concentrated, such as colleges and military bases. Measles control in these places may require careful evaluation of susceptibility and vaccination of those who are susceptible.

Concern is often expressed because of observations during outbreaks that cases occur in persons with a history of proper vaccination. Even under optimal conditions of storage and use, measles vaccine may have a 5% failure rate. A 90% or greater reduction in attack rates has been demonstrated consistently in appropriately vaccinated persons when compared to others. As greater numbers of susceptibles become vaccinated and as measles incidence is further reduced, there will be a relative increase in the proportion of cases seen among appropriately vaccinated persons.

Outbreak Control

The danger of a measles outbreak exists whenever a measles case is reported in a community. Once an outbreak occurs, preventing dissemination of measles depends on promptly vaccinating susceptible persons. Ideally, they will have been identified before the outbreak (by school record reviews, for example); if not, they must be quickly identified.

Speed in implementing control programs is essential in preventing the spread of measles. All persons who cannot readily provide a *documented* history of measles or of vaccination with live measles virus vaccine when more than 12 months of age should be vaccinated or excluded from school. If a person's measles immunity is in doubt, he/she should be vaccinated.

An effective means of terminating outbreaks and increasing rates of immunization quickly is to exclude from school all children or adolescents who cannot present valid evidence of immunity through vaccination or prior disease. Exclusion should include pupils who have been exempted from measles vaccination because of medical, religious, or other reasons. Exclusion should continue until at least 2 weeks after the onset of the last case of measles in the community. Less rigorous approaches such as voluntary appeals for vaccination have not been effective in terminating outbreaks.

ISG should not be used in an attempt to control measles outbreaks.

SURVEILLANCE

Known or suspected measles cases should be reported immediately to local health departments. Effective surveillance of measles and its complications can delineate inadequate levels of protection, further define groups needing special attention, and assess the effectiveness of control activities. Continuous and careful review of adverse reactions is also important. All serious reactions in vaccinated children should be evaluated and reported in detail to local and state health officials as well as to the manufacturer.

References

1. Siegel M, Fuerst HT: Low birth weight and maternal virus diseases: A prospective study of rubella, measles, mumps, chicken-pox, and hepatitis. JAMA 197:680-684, 1966

Measles Prevention — Continued

2. Jesperson CS, Lettauer J, Sagild U: Measles as a cause of fetal defects. Acta Paediatr Scand 66:367-372, 1977
3. Modlin JF, Jabbour JT, Witte JJ, et al: Epidemiologic studies of measles, measles vaccine, and subacute sclerosing panencephalitis. Pediatrics 59:505-512, 1977
4. Center for Disease Control: Subacute sclerosing panencephalitis and measles. MMWR 26:309, 1977

SELECTED BIBLIOGRAPHY

Albrecht P, Ennis FA, Saltzman EJ, et al: Persistence of maternal antibody in infants beyond 12 months: Mechanism of measles vaccine failure. J Pediatr 91:715-718, 1977

Barkin RM: Measles mortality. Analysis of the primary causes of death. Am J Dis Child 229:307-309, 1975

Berkovich S, Starr S: Use of live-measles-virus vaccine to abort an expected outbreak of measles within a closed population. N Engl J Med 269:75-77, 1963

Center for Disease Control: Atypical measles—California. MMWR 25:245-246, 1976

Horowitz O, Grunfeld K, Lysgaard-Hansen B, et al: The epidemiology and natural history of measles in Denmark. Am J Epidemiol 100:136-149, 1974

Kamin PB, Fein BT, Britton HA: Use of live, attenuated measles virus vaccine in children allergic to egg protein. JAMA 193:1125, 1965

Krugman RD, Rosenberg R, McIntosh K, et al: Further attenuated measles vaccines: The need for revised recommendations. J Pediatr 91:766-767, 1977

Landrigan PJ, Witte JJ: Neurologic disorders following live measles vaccination. JAMA 223:1459-1462, 1973

Langmuir AD: Medical importance of measles. Am J Dis Child 103:34-56, 1962

Linnemann CC: Measles vaccine. Immunity reinfection and revaccination. Am J Epidemiol 97:365-371, 1973

Marks JS, Halprin TJ, Orenstein WA: Measles vaccine efficacy in children previously vaccinated at 12 months of age. Pediatrics (in press)

Orenstein WA, Halsey NA, Hayden GF, et al: Current status of measles in the United States 1973-1977. J Infect Dis 137:847-853, 1978

Shasby DM, Shope TC, Downs H, et al: Epidemic measles in a highly vaccinated population. N Engl J Med 296:585-589, 1977

Shelton JD, Jacobson JE, Orenstein WA, et al: Measles vaccine efficacy: The influence of age at vaccination versus duration of time since vaccination. Pediatrics (in press)

Wilkins J, Wehrle PF: Evidence for reinstatement of infants 12 to 14 months of age into routine measles immunization programs. Am J Dis Child 132:164-166, 1978

Yeager AS, Davis JH, Ross LA, et al: Measles immunization successes and failures. JAMA 273:347-351, 1977

International Notes

Influenza — Worldwide

Minimal influenza activity has been reported worldwide since June. Strains resembling A/USSR/77(H1N1) caused a slight to moderate increase in respiratory illness in Hong Kong at the end of June and in July; similar strains were isolated from an outbreak in a military training camp in New Zealand in July and August. Sporadic cases of influ-

The Morbidity and Mortality Weekly Report, circulation 78,750, is published by the Center for Disease Control, Atlanta, Georgia. The data in this report are provisional, based on weekly telegraphs 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. Send reports to: Center for Disease Control, Attn: Editor, Morbidity and Mortality Weekly Report, Atlanta, Georgia 30333.

Send mailing list additions, deletions, and address changes to: Center for Disease Control, Attn: Distribution Services, GSO, 1 SB-36, Atlanta, Georgia 30333. When requesting changes be sure to give your former address, including zip code and mailing list code number, or send an old address label.

Influenza – Continued

enza caused by H1N1 strains have also been documented in the Philippines and Taiwan in June and July; H3N2 strains related to A/Victoria/3/75 and A/Texas/1/77 also were isolated. In Australia, sporadic illnesses or outbreaks have been caused by A/USSR/77-like strains as well as by influenza B virus.

The last known cases of influenza A(H1N1) in North America occurred during June among U.S. Navy personnel in San Diego. A localized outbreak of influenza B occurred in late August among Australian troops the day after their arrival in British Columbia, Canada.

Reported by Naval Medical Research Unit #2, Taipei, Taiwan; Naval Regional Medical Center, San Diego, California; Lettermen Army Medical Center, Ft. Baker, California; WHO National Influenza Centers, Hong Kong and Australia; Laboratory Centre for Disease Control, Canada; WHO Collaborating Center for Influenza, Bur of Laboratories, CDC.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE / CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333 OFFICIAL BUSINESS

Postage and Fees Paid
U.S. Department of HEW
HEW 396

Director, Center for Disease Control
William H. Foege, M.D.
Director, Bureau of Epidemiology
Philip S. Brachman, M.D.
Editor
Michael B. Gregg, M.D.
Managing Editor
Anne D. Mather, M.A.

HEW Publication No. (CDC) 79-8017