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Wound Botulism — California, 1995

During January–November 1995, a total of 19 laboratory-confirmed cases of wound botulism were reported to the California Department of Health Services (CDHS); of these, 13 had occurred since August. Since 1990, the number of wound botulism cases reported annually in California has increased steadily (one case in 1990, two in 1991, three in 1992, four in 1993, and 11 in 1994). All cases except one since 1991 have occurred in injecting-drug users, and many involved subcutaneous injection or "skin popping" of black tar heroin. This report summarizes the findings of the investigation of two cases.

Case 1

On September 23, a 44-year-old male user of black tar heroin developed an abscess on his right arm, which was treated unsuccessfully with cephelexin and ciprofloxacin; on September 29, the abscess was incised and drained. On October 1, he was examined at a local emergency department (ED) because of slurred speech and was released.

On October 3, he sought care in the ED of a community hospital in Yolo County because of difficulty swallowing, which progressed to slurred speech, blurred vision, neck and arm weakness, and shortness of breath. Findings on physical examination included ophthalmoplegia; ptosis; and weakness of his facial, sternocleidomastoid, and deltoid muscles. Examination of a sample of his cerebrospinal fluid detected a marginally elevated protein level (50 mg/dL). A "Tensilon®* test" (intravenous administration of edrophonium bromide to improve strength) was negative, and electromyography was not performed. Despite treatment with intravenous gamma globulin for suspected Guillain-Barré syndrome, weakness progressed, and on October 4, he required mechanical ventilation. On October 5, the diagnosis of wound botulism was considered, and CDHS was consulted. Two vials of botulinal antitoxin were released by CDHS and administered to the patient; in addition, treatment with 12 million units of penicillin daily was initiated.

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

Wound Botulism — Continued

A serum specimen obtained from the patient on October 4 was positive for type A botulinal toxin by mouse bioassay. No tissue from the abscess could be obtained for culture. The patient was discharged on November 21.

Case 2

On September 25, a 30-year-old pregnant woman who reported last skin popping black tar heroin on September 24 sought care at an ED in Ventura County because of a sore throat and the sensation of "heavy eyelids." An upper respiratory tract infection was diagnosed, and she was released. On September 27, she developed difficulty swallowing and speaking and was admitted to a community hospital for evaluation. During the 12 hours following admission, she developed ophthalmoplegia and profound, symmetric, proximal paralysis of arms and legs, affecting her arms more than her legs; she subsequently required mechanical ventilation. A Tensilon® test was negative. Electromyography with repetitive motor-nerve stimulation at 10 Hz increased the muscle action potential by 17%. Lumbar puncture could not be performed.

On September 29, she underwent wide excision of multiple abscesses on her left leg. Botulism was suspected; CDHS was consulted and released two vials of antitoxin for administration to the patient. Treatment with high-dose penicillin was initiated.

Tissue and serum specimens obtained from the patient were positive for type A botulinal toxin by mouse bioassay, and histochemical staining of an excised abscess indicated the presence of spores and vegetative cells consistent with *Clostridium botulinum*. Culture of tissue from the wound yielded *C. botulinum* type A. On November 21, the patient was discharged from the hospital; her baby, who was delivered by cesarean section at 34 weeks on November 11, remained in intensive care on December 7.

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Editorial Note: Wound botulism, first described in association with traumatic injury, is a rare illness that occurs after spores of *C. botulinum* have germinated in a wound and produced botulinal toxin, resulting in flaccid paralysis (*1*). Wound botulism attributable to drug injection was first reported in 1982 in New York City (*2*); since then, such cases have been reported only sporadically. However, wound botulism occurred in 11 (21%) of the 53 botulism cases among adults reported to CDC in the United States in 1994, and all occurred among injecting-drug users in California.

Black tar heroin is dark and gummy. The drug available in California is believed to be processed in facilities close to the source of opium poppies grown in several states in Mexico. The final product often contains adulterants as well as diluents (e.g., sugar) to increase bulk. The use of black tar heroin is believed to be increasing and, since 1993, has supplanted traditional forms of heroin in California and other western states. However, it is unknown whether the increase in cases of wound botulism reflects increased supply of the drug, a change in its manufacture and distribution, or a change in drug-using behavior.

Skin popping of heroin is common among chronic users who are either unable or reluctant to inject the drug intravenously. Unlike botulinal toxin, which is inactivated by heat, spores of *C. botulinum*—which could be in the heroin or in the liquid (usually

Wound Botulism — Continued

water) with which the heroin is dissolved—are not destroyed by heating the heroin/liquid mixture. Spores inoculated into subcutaneous tissue—either from the drug or from the skin after inadequate skin disinfection—can germinate and produce toxin.

Botulism should be suspected in patients with acute onset of flaccid paralysis with ophthalmoplegia, ptosis, or other cranial nerve dysfunction, particularly when the paralysis is descending, symmetric, and associated with a normal cerebrospinal fluid protein level. A history of drug injection or a food history that does not identify a probable source for foodborne botulism should prompt consideration of wound botulism and elicitation of a thorough history and physical examination for evidence of cellulitis or abscess. A meticulous physical examination is necessary because wounds containing *C. botulinum* may be small and initially unnoticed. Inspection of the intranasal septum and paranasal sinuses also may disclose a focus of *C. botulinum* infection in persons who snort cocaine (*3*). The diagnosis is supported by either conventional electromyography showing potentiation after supramaximal stimulation at 20–50 Hz, or single-fiber electromyography showing increased jitter and blocking (*4*). A diagnosis of myasthenia gravis would be supported by improvement in muscle function after the administration of edrophonium bromide (Tensilon®). Initial treatment decisions should not necessarily await neurologic test results.

Both risk for death and duration of hospitalization can be reduced by prompt administration of botulinal antitoxin (*5*). The administration of antitoxin is not contraindicated by pregnancy. Wounds suspected of being contaminated with *C. botulinum* should be widely debrided and irrigated, ideally after the administration of botulinal antitoxin. Penicillin, 10–20 million units per day, is considered the antibiotic of choice, although its efficacy has not been determined (*6*). Mechanical ventilation is the main supportive therapy for treatment of severe botulism.

Because of the increase in wound botulism cases, CDHS has publicized this problem through press releases and provided informational materials for county health officials, ED physicians, and community-based organizations offering outreach to drug users. Clinically suspected cases of botulism should be reported *immediately* to local or state public health agencies to facilitate 1) laboratory confirmation of the diagnosis (using serum and tissue specimens for suspected wound botulism; stool and possibly serum specimens for suspected infant botulism; and food, serum, stool, and gastric aspirate specimens for suspected foodborne botulism); 2) release of antitoxin, if clinically indicated; and 3) prompt investigation of all likely foodborne sources to identify and eliminate a suspected food source to protect other persons. In addition, injecting-drug users should be reminded of the health risks associated with illicit drug use, including the possibility of botulism.

If local and state officials are not available, CDC can be contacted directly (telephone [404] 639-2206, Monday through Friday, 8 a.m.–4:30 p.m. Eastern Time or [404] 639-2888 at other times). In California, health-care workers should contact CDHS (telephone [510] 540-2308), where consultation is available at all times for suspected botulism cases.

References

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Wound Botulism — Continued

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Unexplained Severe Illness Possibly Associated with Consumption of Kombucha Tea — Iowa, 1995

Kombucha tea is a popular health beverage made by incubating the Kombucha mushroom in sweet black tea. Although advocates of Kombucha tea have attributed many therapeutic effects to the drink (*1–3*), its beneficial and/or adverse effects have not been determined scientifically. During April 1995, cases of unexplained severe illness (including one death) occurred in two persons in a rural town in northwestern Iowa who had been drinking Kombucha tea daily for approximately 2 months. Based on the findings of a preliminary investigation by the Iowa Department of Public Health (IDPH), on April 10 IDPH issued a news release recommending that persons refrain from drinking Kombucha tea until the role of the tea in the two cases of illness had been evaluated fully. This report summarizes the investigation of these cases by the IDPH, CDC, and the Food and Drug Administration (FDA).

Patient 1

On April 1, a 59-year-old woman was found unconscious in her home by a neighbor and was transported to a local hospital. On arrival in the emergency department, respiratory therapy was initiated with oxygen. Her family members reported that, 1 hour earlier, she appeared fatigued but had no specific medical complaints. Analysis of arterial blood samples indicated severe metabolic acidosis; her pH level was 6.9 (normal: 7.37–7.43); pO_2, 474.9 mm Hg (normal: 75–80 mm Hg); and pCO_2, 39.2 mm Hg (normal: 35–45 mm Hg). She also had elevated levels of lactic acid (9.85 mM [normal: 0.67 mM–2.47 mM]) and a base excess of –19.5 (normal: –2–+2). Her daughter and her primary physician reported that she took medications for hypertension, anemia, and mild renal insufficiency. Soon after admission, symptoms of disseminated intravascular coagulopathy began; she suffered cardiac arrest and was resuscitated, but her condition continued to deteriorate. She died on April 3.

The cause of the woman's acute metabolic disorder was not established. An autopsy detected evidence of peritonitis with fecal contamination of the peritoneal cavity, although the location of perforation could not be determined. Neither the woman's clinical history nor autopsy findings supported a cardiogenic cause. Toxicologic analyses for a series of prescription and nonprescription drugs and carbon monoxide and cyanide poisoning were negative. Her daughter reported that, during the previous 2 months, the patient had drank approximately 4 oz of Kombucha tea daily.

Kombucha Tea — Continued

Patient 2

On April 10, a previously healthy 48-year-old woman had onset of shortness of breath and was transported by ambulance to the same hospital as patient 1. On admission, she was in respiratory distress. Chest radiographs revealed extensive acute pulmonary edema. Analysis of arterial blood samples indicated severe metabolic acidosis with uncompensated respiratory acidosis; her pH level was 6.7; pO_2, 86 mm Hg; and pCO_2, 67 mm Hg. She had elevated levels of lactic acid (12.4 mM) and a base excess of –28. The woman suffered cardiac arrest but was resuscitated and stabilized. She improved and was discharged on April 13.

Toxicologic analyses for a series of prescription and nonprescription drugs were negative, and there was no evidence of a septic or cardiogenic cause. The patient reported drinking Kombucha tea during the previous 2 months and had obtained her original mushroom from the same person as patient 1. On April 10, immediately before the onset of illness, she had increased the amount of tea she consumed from 4 oz daily to 12 oz, and she had increased the period of incubation for that batch of tea from 7 days to 14 days.

Investigation

The mushrooms used by both women were derived from the same parent mushroom. At least 115 additional persons in the town had used or were using mushrooms from the same source as for the two ill women, but no other cases of unexplained acute illness were reported among these persons. A review of hospital emergency department records for March 1–April 10 did not detect other cases of unexplained lactic acidosis or other likely cases of tea-associated acute illness.

Samples of the mushrooms and samples of the tea consumed by both case-patients were sent to FDA for analysis. Microbiologic analysis of the tea and mushrooms identified several species of yeast and bacteria, including *Saccharomyces cerevisiae* and *Candida valida.* No known human pathogens or toxin-producing organisms were identified. The alcohol content of the tea ranged from 0.7% to 1.3%; no methanol was detected.

To characterize the methods used for preparing the tea, IDPH and CDC surveyed a nonrandom sample of 24 persons in the town who regularly drank Kombucha tea. The average age of survey participants was 57.1 years. Of the 21 participants for whom information was available, 20 had obtained their mushrooms from friends or relatives, and 15 (71%) of these had given mushrooms to their friends. One person had purchased a mushroom from a commercial producer. Of the 20 participants who had prepared the tea themselves, most (12 [60%]) reported incubating the Kombucha mushroom at room temperature for 7–10 days in 3 quarts of sweetened tea and drinking 4 oz of it per day. Patient 1 followed this regimen; patient 2 had incubated the mushroom longer (14 days) and consumed more tea (12 oz per day). Five (25%) other persons who had prepared their own tea reported incubating the mushroom for 13–14 days, and two (8%) of the 24 total participants reported consuming up to 8 oz of tea per day. Of the 21 persons for whom information was available, five (23%) discarded batches of tea because of their concerns about the appearance or taste of the tea or because of visible mold growth.

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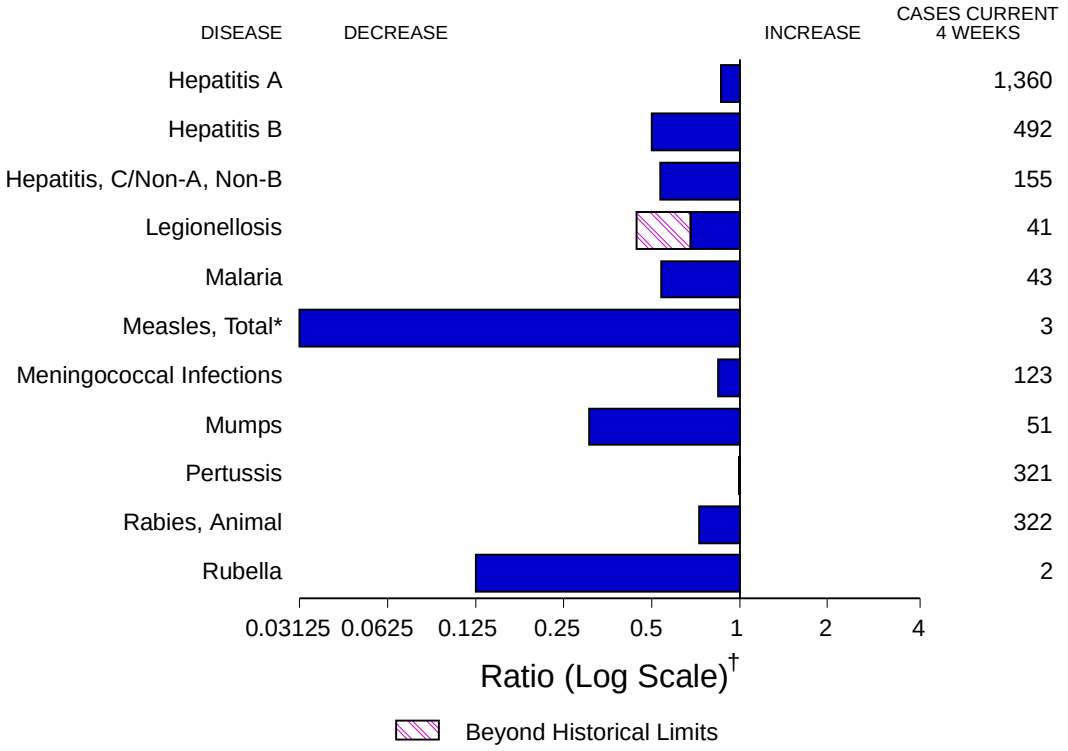
FIGURE I. Notifiable disease reports, comparison of 4-week totals ending December 2, 1995, with historical data — United States



*The large apparent decrease in the number of reported cases of measles (total) reflects dramatic fluctuations in the historical baseline.

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

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending December 2, 1995 (48th Week)

	Cum. 1995		Cum. 1995
Anthrax	-	Psittacosis	64
Brucellosis	78	Rabies, human	2
Cholera	16	Rocky Mountain Spotted Fever	543
Congenital rubella syndrome	6	Syphilis, congenital, age < 1 year†	469
Diphtheria	-	Tetanus	30
*Haemophilus influenzae**	1,061	Toxic shock syndrome	165
Hansen Disease	125	Trichinosis	26
Plague	7	Typhoid fever	305
Poliomyelitis, Paralytic	-		

*Of 1,038 cases of known age, 250 (24%) were reported among children less than 5 years of age.
†Updated quarterly from reports to the Division of STD Prevention, National Center for Prevention Services. This total through third quarter 1995.
-: no reported cases

TABLE II. Cases of selected notifiable diseases, United States, weeks ending December 2, 1995, and December 3, 1994 (48th Week)

Reporting Area	AIDS*	Gonorrhea		Hepatitis (Viral), by type						Legionellosis	
				A		B		C/NA,NB			
	Cum. 1995	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994
UNITED STATES	65,705	321,463	373,705	26,529	23,067	8,956	10,602	3,379	3,756	1,068	1,454
NEW ENGLAND	3,119	5,783	7,608	297	272	190	316	12	138	35	74
Maine	81	80	87	30	24	12	11	-	-	6	5
N.H.	87	104	101	11	16	20	25	12	10	2	-
Vt.	30	60	34	5	12	1	11	-	15	-	1
Mass.	1,339	2,677	3,012	129	100	83	174	-	93	22	52
R.I.	214	501	443	34	25	8	8	-	20	5	16
Conn.	1,368	2,361	3,931	88	95	66	87	-	-	N	N
MID. ATLANTIC	17,668	32,842	42,243	1,599	1,553	1,181	1,436	427	429	178	243
Upstate N.Y.	2,127	3,853	10,599	432	506	357	349	232	204	50	57
N.Y. City	9,225	11,818	15,006	737	603	349	369	1	4	5	7
N.J.	4,158	5,391	4,799	231	268	302	356	154	186	27	43
Pa.	2,158	11,780	11,839	199	176	173	362	40	35	96	136
E.N. CENTRAL	4,940	67,066	75,689	2,836	2,426	968	1,103	241	302	291	411
Ohio	1,017	18,238	20,229	1,673	993	101	154	15	23	142	189
Ind.	499	7,612	8,484	170	344	234	198	2	9	71	45
Ill.	2,054	19,281	22,764	479	570	202	287	64	78	16	40
Mich.	1,039	16,796	16,943	343	296	373	374	160	192	32	76
Wis.	331	5,139	7,269	171	223	58	90	-	-	30	61
W.N. CENTRAL	1,555	17,620	20,722	1,719	1,122	552	620	140	89	108	98
Minn.	347	2,609	3,244	173	224	62	59	4	17	6	3
Iowa	94	1,429	1,423	65	58	45	25	12	13	21	30
Mo.	713	10,242	11,339	1,180	573	364	474	98	28	51	40
N. Dak.	5	26	37	24	5	4	1	8	1	4	4
S. Dak.	18	206	211	79	35	2	2	1	-	4	1
Nebr.	101	757	1,060	46	119	31	28	6	13	14	14
Kans.	277	2,351	3,408	152	108	44	31	11	17	8	6
S. ATLANTIC	16,629	96,395	99,851	1,236	1,230	1,357	1,917	317	418	166	347
Del.	279	2,079	1,872	8	22	8	14	-	2	2	31
Md.	2,409	8,852	17,162	210	177	240	322	4	20	30	78
D.C.	976	4,369	6,572	21	25	19	50	-	1	5	7
Va.	1,400	9,601	12,424	194	174	103	124	18	25	18	13
W. Va.	116	599	758	24	22	52	44	43	41	4	4
N.C.	951	21,574	26,330	104	139	286	259	58	54	31	27
S.C.	868	11,502	12,171	44	39	49	32	16	10	30	16
Ga.	2,144	18,799	U	54	40	62	543	13	196	14	110
Fla.	7,486	19,020	22,562	577	592	538	529	165	69	32	61
E.S. CENTRAL	2,093	38,116	43,062	1,747	632	745	1,119	864	854	43	81
Ky.	267	4,515	4,793	39	160	63	74	23	29	10	9
Tenn.	843	12,571	14,243	1,435	290	579	964	839	807	24	43
Ala.	562	15,351	13,604	80	109	103	81	2	18	6	13
Miss.	421	5,679	10,422	193	73	-	-	-	-	3	16
W.S. CENTRAL	5,626	31,074	45,229	4,263	2,925	1,343	1,209	306	296	18	41
Ark.	243	3,445	6,191	597	181	71	24	4	7	1	8
La.	972	9,881	11,092	140	140	202	153	139	167	3	13
Okla.	256	4,955	4,475	1,068	355	206	124	73	55	6	11
Tex.	4,155	12,793	23,471	2,458	2,249	864	908	90	67	8	9
MOUNTAIN	2,071	7,567	9,464	3,830	4,671	739	614	370	426	107	90
Mont.	22	65	84	163	23	22	19	13	13	4	16
Idaho	43	114	81	301	353	82	71	41	67	2	2
Wyo.	15	49	83	101	29	25	23	147	161	12	5
Colo.	631	2,627	3,316	492	539	130	91	54	74	38	18
N. Mex.	155	945	986	745	1,023	268	198	42	45	4	4
Ariz.	635	2,848	3,047	1,201	1,897	102	79	46	30	12	14
Utah	143	131	281	635	578	72	78	10	18	17	7
Nev.	427	788	1,586	192	229	38	55	17	18	18	24
PACIFIC	12,004	25,000	29,837	9,002	8,236	1,881	2,268	702	804	122	69
Wash.	855	2,381	2,679	770	989	180	214	204	248	21	12
Oreg.	426	364	942	2,116	1,046	107	143	31	41	-	-
Calif.	10,441	20,817	24,729	5,916	5,941	1,555	1,872	463	510	96	53
Alaska	62	629	844	51	205	10	13	2	-	-	-
Hawaii	220	809	643	149	55	29	26	2	5	5	4
Guam	-	77	127	6	23	1	4	-	-	1	1
P.R.	2,189	540	463	89	81	488	369	18	183	-	-
V.I.	30	6	41	-	3	2	8	-	1	-	-
Amer. Samoa	-	35	31	6	9	-	-	-	-	-	-
C.N.M.I.	-	42	46	18	12	13	1	-	-	-	-

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS Prevention, National Center for Prevention Services, last update November 30, 1995.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending December 2, 1995, and December 3, 1994 (48th Week)

Reporting Area	Lyme Disease		Malaria		Measles (Rubeola)						Meningococcal Infections		Mumps	
					Indigenous		Imported*		Total					
	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	1995	Cum. 1995	1995	Cum. 1995	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994
UNITED STATES	8,546	11,727	1,166	1,003	-	261	-	26	287	887	2,691	2,494	761	1,319
NEW ENGLAND	1,967	2,690	47	71	-	8	-	2	10	27	131	122	11	25
Maine	26	27	7	6	-	-	-	-	-	5	10	21	4	3
N.H.	26	28	2	3	-	-	-	-	-	1	23	8	1	4
Vt.	8	16	1	3	-	-	-	-	-	3	11	4	-	-
Mass.	191	198	18	33	-	2	-	1	3	7	43	57	2	3
R.I.	285	469	4	9	-	5	-	-	5	7	-	-	1	3
Conn.	1,431	1,952	15	17	-	1	-	1	2	4	44	32	3	12
MID. ATLANTIC	5,437	7,193	318	215	-	7	-	5	12	223	304	271	107	109
Upstate N.Y.	2,641	4,429	61	52	-	1	-	-	1	26	96	89	25	31
N.Y. City	226	28	170	77	-	2	-	3	5	15	44	32	15	10
N.J.	1,303	1,417	62	50	-	4	-	2	6	173	76	55	13	13
Pa.	1,267	1,319	25	36	-	-	-	-	-	9	88	95	54	55
E.N. CENTRAL	87	523	131	99	-	13	-	4	17	102	368	364	165	239
Ohio	52	44	11	15	-	1	-	1	2	17	110	107	51	69
Ind.	20	18	17	13	-	-	-	-	-	1	51	48	10	7
Ill.	10	23	63	42	-	4	-	2	6	56	92	116	46	104
Mich.	5	31	26	26	-	6	-	1	7	25	70	56	58	45
Wis.	-	407	14	3	-	2	-	-	2	3	45	37	-	14
W.N. CENTRAL	254	281	26	45	-	2	-	-	2	170	179	161	47	67
Minn.	174	150	6	14	-	-	-	-	-	-	27	20	8	4
Iowa	15	16	2	5	-	-	-	-	-	7	30	19	10	16
Mo.	40	99	8	13	-	1	-	-	1	160	73	75	23	42
N. Dak.	-	-	2	1	-	-	-	-	-	-	1	1	1	4
S. Dak.	-	-	2	-	-	-	-	-	-	-	8	9	-	-
Nebr.	3	3	3	5	-	-	-	-	-	2	15	13	4	1
Kans.	22	13	3	7	-	1	-	-	1	1	25	24	1	-
S. ATLANTIC	518	784	230	217	-	11	-	1	12	72	501	367	98	192
Del.	23	105	1	3	-	-	-	-	-	-	6	5	-	-
Md.	286	294	60	78	-	-	-	1	1	4	34	32	20	61
D.C.	2	9	16	14	-	-	-	-	-	-	7	6	-	-
Va.	53	127	52	36	-	-	-	-	-	3	59	66	25	42
W. Va.	23	26	4	-	-	-	-	-	-	37	8	12	-	3
N.C.	82	77	16	11	-	-	-	-	-	3	80	51	16	36
S.C.	17	7	3	5	-	-	-	-	-	-	57	31	11	8
Ga.	14	119	37	33	-	2	-	-	2	4	102	76	10	9
Fla.	18	20	41	37	-	9	-	-	9	21	148	88	16	33
E.S. CENTRAL	50	43	25	31	-	-	-	-	-	28	168	179	20	29
Ky.	10	24	3	11	-	-	-	-	-	-	53	36	-	-
Tenn.	24	13	10	10	-	-	-	-	-	28	41	35	5	8
Ala.	9	6	9	9	-	-	-	-	-	-	41	73	4	12
Miss.	7	-	3	1	-	-	-	-	-	-	33	35	11	9
W.S. CENTRAL	111	122	48	42	-	31	-	3	34	19	327	301	53	228
Ark.	9	8	2	3	-	2	-	-	2	1	31	43	10	6
La.	7	2	5	9	-	17	-	1	18	1	49	39	13	31
Okla.	48	73	1	7	-	-	-	-	-	-	38	33	-	23
Tex.	47	39	40	23	-	12	-	2	14	17	209	186	30	168
MOUNTAIN	12	17	58	35	-	68	-	2	70	165	184	167	25	154
Mont.	-	-	3	-	-	-	-	-	-	-	4	6	1	-
Idaho	-	3	1	2	-	1	-	1	2	1	11	17	3	10
Wyo.	3	5	-	1	-	-	-	-	-	-	7	9	-	3
Colo.	1	1	26	15	-	26	-	-	26	19	45	36	2	4
N. Mex.	1	5	6	3	-	30	-	1	31	-	35	15	N	N
Ariz.	1	-	12	8	-	10	-	-	10	2	58	55	2	96
Utah	1	2	6	4	-	-	-	-	-	134	15	19	11	26
Nev.	5	1	4	2	-	1	-	-	1	9	9	10	6	15
PACIFIC	110	74	283	248	-	121	-	9	130	81	529	562	235	276
Wash.	10	4	21	30	-	16	-	4	20	4	85	85	14	19
Oreg.	13	6	21	16	-	-	-	1	1	2	98	130	N	N
Calif.	87	64	228	186	-	105	-	3	108	61	330	338	198	235
Alaska	-	-	3	2	-	-	-	-	-	10	12	3	13	4
Hawaii	-	-	10	14	-	-	-	1	1	4	4	6	10	18
Guam	-	-	-	-	U	-	U	-	-	228	3	-	4	7
P.R.	-	-	1	5	-	11	-	-	11	11	23	7	2	2
V.I.	-	-	-	-	U	-	U	-	-	-	-	-	2	4
Amer. Samoa	-	-	-	-	U	-	U	-	-	-	-	-	-	3
C.N.M.I.	-	-	1	1	U	-	U	-	-	29	-	-	-	2

*For imported measles, cases include only those resulting from importation from other countries.
N: Not notifiable U: Unavailable -: no reported cases

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending December 2, 1995, and December 3, 1994 (48th Week)

Reporting Area	Pertussis			Rubella			Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal	
	1995	Cum. 1995	Cum. 1994	1995	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994	Cum. 1995	Cum. 1994
UNITED STATES	64	3,869	3,906	-	139	215	13,603	19,290	18,370	20,270	6,288	7,185
NEW ENGLAND	29	552	613	-	49	131	242	207	465	465	1,407	1,770
Maine	1	46	18	-	1	-	2	4	12	27	45	-
N.H.	7	53	82	-	1	-	1	4	18	14	143	199
Vt.	-	64	46	-	-	-	-	-	4	8	170	137
Mass.	21	358	422	-	7	125	64	87	259	240	393	687
R.I.	-	4	6	-	-	3	4	15	45	44	311	40
Conn.	-	27	39	-	40	3	171	97	127	132	345	707
MID. ATLANTIC	1	357	611	-	14	7	782	1,305	3,743	4,174	1,200	1,925
Upstate N.Y.	-	200	227	-	5	6	44	162	477	561	474	1,434
N.Y. City	-	33	176	-	8	-	368	562	1,974	2,398	-	-
N.J.	-	14	15	-	1	1	163	220	722	739	316	261
Pa.	1	110	193	-	-	-	207	361	570	476	410	230
E.N. CENTRAL	4	461	546	-	5	9	2,333	2,843	1,884	1,921	91	66
Ohio	1	153	146	-	-	-	787	1,069	256	306	12	4
Ind.	-	73	63	-	1	-	267	237	305	170	13	13
Ill.	2	113	101	-	1	1	834	980	892	968	15	21
Mich.	1	110	92	-	3	8	287	278	362	424	40	13
Wis.	-	12	144	-	-	-	158	279	69	53	11	15
W.N. CENTRAL	1	247	199	-	1	2	678	1,102	521	519	328	215
Minn.	-	127	87	-	-	-	36	45	124	122	24	19
Iowa	-	12	21	-	-	-	43	65	57	57	119	83
Mo.	-	53	42	-	-	2	562	926	206	223	23	27
N. Dak.	-	8	5	-	-	-	-	1	5	9	28	13
S. Dak.	-	12	22	-	-	-	-	2	22	24	86	39
Nebr.	1	12	9	-	-	-	11	11	21	17	5	-
Kans.	-	23	13	-	1	-	26	52	86	67	43	34
S. ATLANTIC	-	319	335	-	25	16	3,477	5,021	2,976	3,467	1,977	1,872
Del.	-	10	3	-	-	-	16	25	46	40	84	63
Md.	-	38	68	-	-	-	196	298	268	317	299	496
D.C.	-	6	10	-	-	-	97	199	96	103	11	2
Va.	-	31	36	-	-	-	550	751	255	292	418	404
W. Va.	-	-	5	-	-	-	10	9	66	74	110	73
N.C.	-	110	79	-	1	-	1,050	1,536	416	461	435	159
S.C.	-	27	14	-	1	-	541	745	294	355	118	169
Ga.	-	29	30	-	-	2	661	764	319	618	264	348
Fla.	-	68	90	-	23	14	356	694	1,216	1,207	238	158
E.S. CENTRAL	1	270	128	-	-	-	3,436	3,661	1,449	1,476	274	214
Ky.	-	24	60	-	-	-	187	195	286	292	28	25
Tenn.	-	207	22	-	-	-	817	976	372	519	92	71
Ala.	1	36	34	-	-	-	606	613	378	400	145	114
Miss.	-	3	12	N	N	N	1,826	1,877	413	265	9	4
W.S. CENTRAL	-	280	185	-	8	13	1,872	4,102	2,576	2,742	521	646
Ark.	-	41	27	-	1	-	97	439	208	233	-	34
La.	-	17	10	-	-	-	962	1,577	105	193	43	69
Okla.	-	31	27	-	-	4	181	148	330	222	28	35
Tex.	-	191	121	-	7	9	632	1,938	1,933	2,094	450	508
MOUNTAIN	7	529	491	-	5	5	202	229	594	534	162	147
Mont.	-	9	10	-	-	-	4	3	10	9	43	21
Idaho	1	96	80	-	-	-	-	1	15	11	3	3
Wyo.	-	1	-	-	1	-	1	2	4	8	25	19
Colo.	1	103	219	-	-	-	98	116	66	92	9	18
N. Mex.	5	139	32	-	-	-	31	21	72	66	6	8
Ariz.	-	149	112	-	3	-	35	45	300	201	50	56
Utah	-	27	35	-	1	4	4	11	37	41	15	13
Nev.	-	5	3	-	-	1	29	30	90	106	11	9
PACIFIC	21	854	798	-	32	32	581	820	4,162	4,972	328	330
Wash.	21	321	106	-	2	-	15	32	220	239	7	15
Oreg.	-	59	102	-	2	4	9	35	66	90	-	13
Calif.	-	415	571	-	24	24	556	746	3,648	4,338	317	269
Alaska	-	1	-	-	-	-	1	3	63	84	4	33
Hawaii	-	58	19	-	4	4	-	4	165	221	-	-
Guam	U	1	2	U	-	1	8	3	53	75	-	-
P.R.	1	15	3	-	-	-	288	295	195	189	47	73
V.I.	U	-	-	U	-	-	2	28	-	-	-	-
Amer. Samoa	U	-	1	U	-	-	-	1	5	4	-	-
C.N.M.I.	U	-	-	U	-	-	12	2	16	30	-	-

U: Unavailable -: no reported cases

TABLE III. Deaths in 121 U.S. cities,* week ending December 2, 1995 (48th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	685	474	125	64	13	9	51
Boston, Mass.	125	75	21	19	4	6	9
Bridgeport, Conn.	54	37	12	3	1	1	2
Cambridge, Mass.	23	15	7	1	-	-	2
Fall River, Mass.	34	30	3	1	-	-	4
Hartford, Conn.	74	45	14	11	4	-	2
Lowell, Mass.	27	20	5	2	-	-	2
Lynn, Mass.	17	15	1	1	-	-	2
New Bedford, Mass.	33	27	3	2	1	-	2
New Haven, Conn.	42	23	12	7	-	-	1
Providence, R.I.	73	51	15	5	-	2	9
Somerville, Mass.	5	3	2	-	-	-	1
Springfield, Mass.	63	46	15	2	-	-	4
Waterbury, Conn.	37	29	4	3	1	-	3
Worcester, Mass.	78	58	11	7	2	-	8
MID. ATLANTIC	2,926	1,968	528	322	60	48	152
Albany, N.Y.	55	36	13	4	-	2	2
Allentown, Pa.	20	16	3	1	-	-	-
Buffalo, N.Y.	100	79	14	4	1	2	5
Camden, N.J.	46	25	12	4	2	3	4
Elizabeth, N.J.	29	17	9	3	-	-	1
Erie, Pa.§	71	58	12	-	1	-	4
Jersey City, N.J.	78	48	20	7	1	2	3
New York City, N.Y.	1,489	961	269	202	36	21	58
Newark, N.J.	50	14	13	18	2	3	3
Paterson, N.J.	32	21	7	3	1	-	6
Philadelphia, Pa.	400	264	82	37	8	9	28
Pittsburgh, Pa.§	92	65	17	5	3	2	9
Reading, Pa.	15	11	1	3	-	-	2
Rochester, N.Y.	184	149	22	9	3	1	12
Schenectady, N.Y.	21	18	1	2	-	-	1
Scranton, Pa.§	25	17	6	2	-	-	1
Syracuse, N.Y.	124	96	15	9	2	2	10
Trenton, N.J.	49	35	7	6	-	1	2
Utica, N.Y.	14	13	1	-	-	-	-
Yonkers, N.Y.	32	25	4	3	-	-	1
E.N. CENTRAL	2,604	1,772	502	201	72	56	157
Akron, Ohio	73	56	12	4	-	1	-
Canton, Ohio	41	29	5	5	1	1	3
Chicago, Ill.	407	254	81	36	13	22	31
Cincinnati, Ohio	182	122	45	7	5	3	14
Cleveland, Ohio	211	138	49	21	1	2	2
Columbus, Ohio	221	150	48	11	5	7	15
Dayton, Ohio	170	117	32	11	8	2	6
Detroit, Mich.	278	162	57	42	12	5	7
Evansville, Ind.	51	39	8	3	-	1	2
Fort Wayne, Ind.	50	33	12	4	1	-	1
Gary, Ind.	31	17	8	1	4	1	2
Grand Rapids, Mich.	71	57	9	4	1	-	9
Indianapolis, Ind.	255	174	47	21	8	5	27
Madison, Wis.	63	46	11	3	3	-	5
Milwaukee, Wis.	174	129	26	15	2	2	8
Peoria, Ill.	35	30	5	-	-	-	2
Rockford, Ill.	66	41	16	3	4	2	6
South Bend, Ind.	57	45	7	4	1	-	5
Toledo, Ohio	104	80	15	5	2	2	7
Youngstown, Ohio	64	53	9	1	1	-	5
W.N. CENTRAL	712	497	111	54	14	19	39
Des Moines, Iowa	63	45	8	8	-	2	7
Duluth, Minn.	26	20	5	1	-	-	1
Kansas City, Kans.	20	16	2	2	-	-	1
Kansas City, Mo.	82	50	3	9	2	1	2
Lincoln, Nebr.	35	28	6	-	1	-	1
Minneapolis, Minn.	116	89	12	6	4	5	8
Omaha, Nebr.	92	68	18	3	1	2	8
St. Louis, Mo.	139	89	30	11	5	4	4
St. Paul, Minn.	72	48	15	5	-	4	5
Wichita, Kans.	67	44	12	9	1	1	2

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,163	787	212	116	28	20	64
Atlanta, Ga.	150	88	37	18	3	4	3
Baltimore, Md.	208	145	29	30	3	1	19
Charlotte, N.C.	78	60	14	3	1	-	6
Jacksonville, Fla.	170	110	41	16	2	1	9
Miami, Fla.	116	79	21	8	7	1	-
Norfolk, Va.	48	30	9	3	3	3	2
Richmond, Va.	86	59	14	9	3	1	5
Savannah, Ga.	40	17	9	11	1	2	4
St. Petersburg, Fla.	62	42	11	2	3	4	2
Tampa, Fla.	195	147	27	16	2	3	14
Washington, D.C.	U	U	U	U	U	U	U
Wilmington, Del.	10	10	-	-	-	-	-
E.S. CENTRAL	832	555	192	57	13	15	58
Birmingham, Ala.	134	89	28	11	1	5	5
Chattanooga, Tenn.	77	50	17	6	3	1	2
Knoxville, Tenn.	105	73	23	7	1	1	13
Lexington, Ky.	77	44	27	2	1	3	8
Memphis, Tenn.	140	95	28	12	5	-	12
Mobile, Ala.	87	61	18	6	-	2	1
Montgomery, Ala.	49	32	12	3	-	2	-
Nashville, Tenn.	163	111	39	10	2	1	17
W.S. CENTRAL	1,708	1,045	379	180	58	43	109
Austin, Tex.	96	65	18	11	2	-	6
Baton Rouge, La.	86	48	19	14	3	2	2
Corpus Christi, Tex.	47	37	9	1	-	-	2
Dallas, Tex.	233	137	50	29	13	4	8
El Paso, Tex.	65	37	15	5	3	5	5
Ft. Worth, Tex.	131	89	14	16	5	7	11
Houston, Tex.	385	223	100	36	14	9	36
Little Rock, Ark.	86	43	21	12	4	6	5
New Orleans, La.	101	52	29	16	2	2	-
San Antonio, Tex.	268	169	56	26	11	6	20
Shreveport, La.	76	50	19	5	1	1	9
Tulsa, Okla.	134	95	29	9	-	1	5
MOUNTAIN	1,019	673	188	109	25	24	83
Albuquerque, N.M.	115	74	16	19	3	3	3
Colo. Springs, Colo.	48	30	6	8	2	2	4
Denver, Colo.	99	61	14	16	3	5	6
Las Vegas, Nev.	211	140	52	15	2	2	15
Ogden, Utah	37	31	-	4	2	-	3
Phoenix, Ariz.	218	131	49	25	6	7	21
Pueblo, Colo.	34	27	6	1	-	-	-
Salt Lake City, Utah	103	56	23	13	7	4	12
Tucson, Ariz.	154	123	22	8	-	1	19
PACIFIC	1,499	1,037	266	132	35	29	162
Berkeley, Calif.	21	14	5	1	-	1	3
Fresno, Calif.	117	74	13	21	6	3	9
Glendale, Calif.	U	U	U	U	U	U	U
Honolulu, Hawaii	99	64	22	4	4	5	14
Long Beach, Calif.	102	71	15	9	3	4	12
Los Angeles, Calif.	U	U	U	U	U	U	U
Pasadena, Calif.	U	U	U	U	U	U	U
Portland, Oreg.	125	79	30	13	2	1	8
Sacramento, Calif.	108	85	12	8	1	2	13
San Diego, Calif.	187	117	36	27	5	2	22
San Francisco, Calif.	182	107	50	20	1	4	20
San Jose, Calif.	225	163	37	19	5	1	30
Santa Cruz, Calif.	26	23	2	-	1	-	4
Seattle, Wash.	115	92	16	4	1	2	6
Spokane, Wash.	70	56	10	1	1	2	8
Tacoma, Wash.	122	92	18	5	5	2	13
TOTAL	13,148¶	8,808	2,503	1,235	318	263	875

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.
†Pneumonia and influenza.
§Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.
¶Total includes unknown ages.
U: Unavailable -: no reported cases

Kombucha Tea — Continued

Prevalence of Kombucha Tea Drinking

To assess the prevalence of Kombucha tea drinking in the town, a 1% sample of households (n=129) was contacted by telephone using random-digit dialing. The mean age of the respondents was 51.2 years (standard deviation=±19.5 years), and 91 (70%) were women. Five persons (3.8%; 95% confidence interval [CI]=1.4%–8.4%) reported that at least one household member had tried Kombucha tea. Of these, two (1.6% of total sample; 95% CI=0.3%–5.0%) were persons who had regularly consumed the tea. Both had stopped drinking the tea after <2 weeks—one because of the tea's taste and one because of symptoms unrelated to those of the two patients.

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Editorial Note: The Kombucha "mushroom" is a symbiotic colony of several species of yeast and bacteria that are bound together by a surrounding thin membrane. Although the composition of the Kombucha colony varies, some of the species reportedly found in the mushroom include *S. ludwigii*, *S. pombe*, *Bacterium xylinum*, *B. gluconicum*, *B. xylinoides*, *B. katogenum*, *Pichia fermentans*, and *Torula* sp. (*1*). Kombucha tea can contain up to 1.5% alcohol and a variety of other metabolites (e.g., ethyl acetate, acetic acid, and lactate). During incubation, the thin, gelatinous mushroom floats in the tea and duplicates itself by producing a "baby" on top of the original mushroom. These offspring are then given to other persons for starting their own cultures. Although there are at least two commercial producers of Kombucha mushrooms in the United States, the sharing of the mushrooms is believed to have helped to promote its popularity in the United States.

Beneficial effects attributed to consumption of Kombucha tea have included prevention of cancer, relief of arthritis, treatment of insomnia, and stimulation of regrowth of hair (*1–3*). Because the tea is believed to stimulate the immune system, it has become popular among persons with human immunodeficiency virus infection (*3*). In addition, the investigation in Iowa suggests that the tea has become popular among the elderly (who are less likely to try alternative therapies) (*4*).

FDA has evaluated the practices of the commercial producers of the Kombucha mushroom and has found no pathogenic organisms or hygiene violations (*5*). However, because the tea is produced under varying conditions in individual homes, contamination with pathogenic organisms such as *Aspergillus* is possible. When prepared as directed, the pH of the tea decreases to 1.8 in 24 hours. Although this level of acidity should prevent the survival of most potentially contaminating organisms, tea drinkers have reported molds growing on the Kombucha (CDC, unpublished data).

Because folk medicines and herbal remedies, including Kombucha tea, are considered neither a food nor a drug (*6–8*), they are not routinely evaluated by FDA or the U.S. Department of Agriculture. Although the investigation described in this report did not establish a causal link between the illness of the two women and their consumption of Kombucha tea, reasons for the occurrence and severity of the lactic acidosis in both cases have not been determined. Drinking this tea in quantities typically consumed (approximately 4 oz daily) may not cause adverse effects in healthy persons; however, the potential health risks are unknown for those with preexisting health problems or those who drink excessive quantities of the tea.

Kombucha Tea — Continued

Because of the acidity of Kombucha tea, it should not be prepared or stored in containers made from materials such as ceramic or lead crystal, which both contain toxic elements than can leach into the tea. Because of the increasing use of this tea (even in groups that usually do not use alternative therapies), health-care professionals should consider consumption of Kombucha tea in the differential diagnosis of persons with unexplained lactic acidosis. Physicians and the public should report adverse health effects associated with consumption of Kombucha tea to FDA's MedWatch program, telephone (800) 332-1088 or (301) 738-7553.

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Update: Respiratory Syncytial Virus Activity — United States, 1995–96 Season

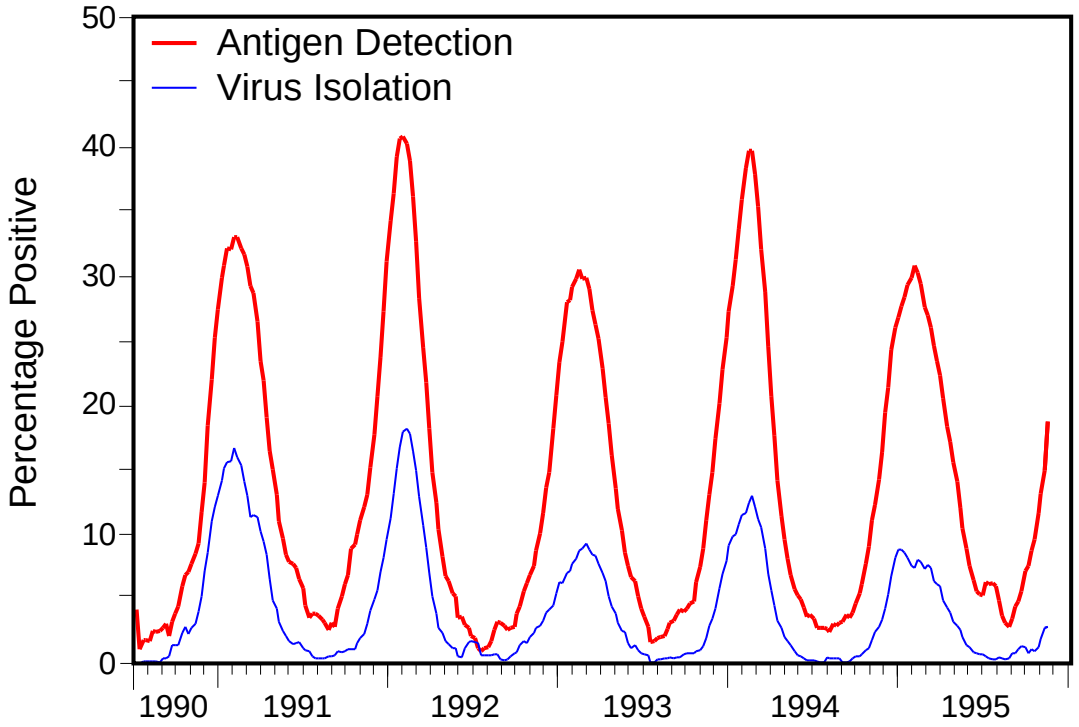
Respiratory syncytial virus (RSV), a common cause of winter outbreaks of acute respiratory disease, is associated each year with an estimated 90,000 hospitalizations and 4500 deaths from lower respiratory tract disease in both infants and young children in the United States (*1*). Outbreaks occur annually throughout the United States, and community activity usually peaks within 1 month of the national peak in January or February (Figure 1) (*2*). RSV activity in the United States is monitored by the National Respiratory and Enteric Virus Surveillance System (NREVSS), a voluntary, laboratory-based system. This report presents provisional surveillance results from the NREVSS for RSV during July 1–December 1, 1995, and summarizes trends in RSV from July 1990 through June 1995.

Since July 1, 1990, a total of 107 hospital-based and public health laboratories in 47 states have participated in the NREVSS and have reported weekly to CDC the number of specimens tested for RSV by the antigen-detection and virus-isolation methods and the number of positive results. Widespread RSV activity is defined by the NREVSS as the first of 2 consecutive weeks when at least half of participating laboratories report any RSV detections. This definition generally indicates a mean percentage of specimens positive by antigen detection >10%.

During the previous five seasons (i.e., July 1990–June 1995), onset of widespread RSV activity began in November and continued a mean of 22 weeks, until April or early May (Figure 1). Activity peaked each year from late January through mid-February. For the current reporting period (July 1–December 1, 1995), 72 laboratories

Respiratory Syncytial Virus — Continued

FIGURE 1. Percentage* of specimens positive for respiratory syncytial virus, by method of confirmation and month — United States, July 1, 1990–December 1, 1995



*Laboratory-group mean, smoothed using a 5-week moving average.

in 44 states reported results of testing for RSV. Since October 21, more than half of the participating laboratories reported detections of RSV on a weekly basis, indicating the onset of RSV activity for the 1995–96 season.

Reported by: National Respiratory and Enteric Virus Surveillance System collaborating laboratories. Respiratory and Enteric Viruses Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: During the RSV season, health-care providers should consider RSV in the differential diagnosis of acute respiratory disease in both children and adults. Most severe manifestations of RSV infection (e.g., pneumonia and bronchiolitis) occur in infants aged 2–6 months; however, children of any age with underlying cardiac or pulmonary disease or who are immunocompromised are at risk for serious complications from this infection. Because natural infection with RSV provides limited protective immunity, RSV may cause repeated symptomatic infections. In adults, RSV usually causes upper respiratory tract manifestations but may cause lower respiratory tract disease. Infection in immunocompromised persons can be associated with high death rates.

RSV is a common, but preventable, cause of nosocomially acquired infection; the risk for nosocomial transmission is increased during community outbreaks. Sources for nosocomially acquired infection include infected patients, staff, visitors, or contaminated fomites. Nosocomial outbreaks or transmission of RSV can be controlled

Respiratory Syncytial Virus — Continued

with strict attention to contact-isolation procedures (*3*). In addition, chemotherapy with ribavirin may be indicated for some patients (e.g., those at high risk for severe complications or who are seriously ill with this infection) (*4*). Prophylaxis with intravenous RSV immunoglobulin for high-risk patients may become available during future RSV seasons (*5*), and vaccines for RSV are being developed (*6*).

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Monthly Immunization Table

To track progress toward achieving the goals of the Childhood Immunization Initiative (CII), CDC publishes monthly a tabular summary of the number of cases of all diseases preventable by routine childhood vaccination reported during the previous month and year-to-date (provisional data). In addition, the table compares provisional data with final data for the previous year and highlights the number of reported cases among children aged <5 years, who are the primary focus of CII. Data in the table are reported through the National Electronic Telecommunications System for Surveillance (NETSS).

Number of reported cases of diseases preventable by routine childhood vaccination — United States, October 1994 and 1994–1995*

Disease	No. cases, October 1995	Total cases January–October		No. cases among children aged <5 years† January–October	
		1994	1995	1994	1995
Congenital rubella syndrome	2	**3**	**6**	3	5
Diphtheria	0	**2**	**0**	1	0
Haemophilus influenzae§	86	**939**	**974**	247	233
Hepatitis B¶	780	**9423**	**8132**	99	60
Measles	11	**875**	**280**	207	101
Mumps	63	**1203**	**685**	187	130
Pertussis	438	**3363**	**3398**	1813	1951
Poliomyelitis, paralytic**	0	**1**	**0**	0	0
Rubella	5	**209**	**135**	24	17
Tetanus	3	**35**	**26**	0	2

*Data for 1994 and 1995 are provisional.
†For 1994 and 1995, age data were available for ≥93% cases.
§Invasive disease; *H. influenzae* serotype is not routinely reported to the National Notifiable Diseases Surveillance System. Of 233 cases among children aged <5 years, serotype was reported for 56 cases, and of those, 33 were type b, the only serotype of *H. influenzae* preventable by vaccination.
¶Because most hepatitis B virus infections among infants and children aged <5 years are asymptomatic (although likely to become chronic), acute disease surveillance does not reflect the incidence of this problem in this age group or the effectiveness of hepatitis B vaccination in infants.
**One case with onset in 1994 has been confirmed; this case was vaccine-associated. An additional six suspected cases are under investigation. In 1993, three of 10 suspected cases were confirmed; two of the confirmed cases were vaccine-associated, and one was imported. The imported case occurred in a 2-year-old Nigerian child brought to the United States for care of his paralytic illness; no poliovirus was isolated from the child.

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