



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE

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EPIDEMIOLOGIC NOTES AND REPORTS
DIPHTHERIA ON A NAVAJO INDIAN RESERVATION
Arizona, New Mexico

Between January 1 and October 7, 1973, 44 cases of diphtheria were reported on or near the Navajo Indian Reservation in Arizona and New Mexico (Figure 1); 29 of the 44 cases occurred since August 1. Thirty-seven persons were hospitalized. Five patients had myocarditis and/or varying degrees of neurologic involvement, and 2 of these had respiratory arrests and required artificial ventilation. There were no deaths. Throat swabs from 28 of the 44 persons were positive for toxigenic *Corynebacterium diphtheriae*, biotype intermedius. From the same area a total of 10 cases were reported in 1970, 30 cases in 1971, and 20 cases in 1972.

Of the 29 cases occurring since August 1, 1973, 22 were in females, and 24 were in persons 15 years of age or older (Table 1). Throat swabs from 118 contacts of 12 culture-

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proven cases were taken, and 18 were positive for toxigenic *C. diphtheriae*, biotype intermedius (Table 2). Although the majority of cases were in persons 15 years of age or older, the carrier rates were highest in persons under 15 years.

Epidemiologic investigation showed that 5 cases occurring before August 1 were in students at a single school, which accounted for almost half of the cases reported in the 5- to 14-year age group since January 1. In September a sixth case

TABLE I. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
(Cumulative totals include revised and delayed reports through previous weeks)

DISEASE	41st WEEK ENDING		MEDIAN 1968-1972	CUMULATIVE, FIRST 41 WEEKS		
	October 13, 1973	October 14, 1972		1973	1972	MEDIAN 1968-1972
Aseptic meningitis	108	189	186	3,647	3,144	3,431
Brucellosis	4	7	5	152	156	165
Chickenpox	491	519	---	146,567	116,034	---
Diphtheria	---	6	4	144	82	138
Encephalitis, primary:						
Arthropod-borne and unspecified	31	33	51	1,179	840	1,089
Encephalitis, post-infectious	1	3	3	232	232	289
Hepatitis, serum (Hepatitis B)	132	143	143	6,269	7,168	5,666
Hepatitis, infectious (Hepatitis A)	962	1,014	1,041	40,201	43,229	43,229
Malaria	2	7	70	196	729	2,318
Measles (rubeola)	98	151	151	24,563	27,507	27,507
Meningococcal infections, total	18	12	29	1,119	1,078	1,983
Civilian	18	12	28	1,094	1,035	1,785
Military	---	---	---	25	43	198
Mumps	526	636	971	57,294	58,792	79,440
Rubella (German measles)	112	128	309	26,398	21,707	44,889
Tetanus	2	1	2	75	93	99
Tuberculosis, new active	496	1,170	---	24,837	26,906	---
Tularemia	2	3	3	134	112	126
Typhoid fever	9	11	11	546	287	287
Typhus, tick-borne (Rky. Mt. spotted fever)	10	10	5	591	483	376
Venereal Diseases:						
Gonorrhea	16,329	14,954	---	647,571	588,542	---
Syphilis, primary and secondary	458	532	---	20,263	19,684	---
Rabies in animals	48	55	57	2,786	3,347	2,788

TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax:	1	Poliomyelitis, total:	6
Botulism:	14	Paralytic:	4
Congenital rubella syndrome: Calif.-1, La.-7	28	Psittacosis:	19
Leprosy:	97	Rabies in man:	---
Leptospirosis: Md.-1.	28	Trichinosis:	72
Plague:	2	Typhus, murine:	29

DIPHTHERIA — Continued

Figure 1
44 DIPHTHERIA CASES, BY WEEK OF ONSET
NAVAJO INDIAN RESERVATION — JANUARY 1-OCTOBER 6, 1973

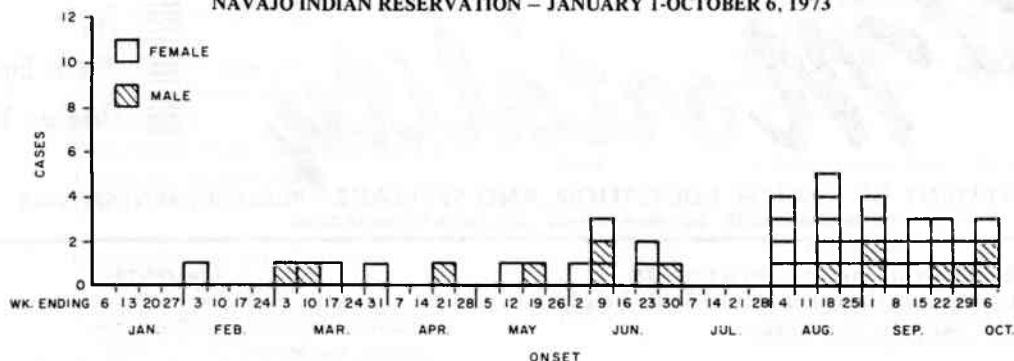


Table 1
Age and Sex Distribution for 29 Diphtheria Cases
Navajo Indian Reservation — August 1-October 7, 1973

	Age Group (Years)			Total
	0-4	5-14	15+	
Male	1	1	5	7
Female	0	2	20	22
Total	1	3	25	29
Rate per 100,000	23	27	103	73

was reported in a teacher at the same school. The only other cases that could be linked epidemiologically were 2 cases in neighbors and 2 in a sister-in-law and a brother-in-law living in separate households.

Vaccination histories from clinic and hospital records of injection dates were available for 28 cases; 6* had been fully vaccinated**, 14 had been incompletely vaccinated, and 8 had no history of vaccination. Vaccination campaigns have now been conducted in many schools in the area, and in the city of Gallup, New Mexico, a program was recently carried out jointly by the state and county health departments and the

*One patient received last Td booster in November 1963 and became ill in June 1973.

**Fully vaccinated is defined as having received a primary series (2 injections of Td with a booster) within the last 10 years or a primary series (3 DPT injections) with a booster within the last 10 years.

Table 2
Age and Sex Distribution and Proportion of Persons Culture-Positive for *C. diphtheriae* Among Contacts of 12 Culture-Proven Cases
Navajo Indian Reservation — 1973

	Age Group (Years)			Total	Percent Positive
	0-4	5-14	15+		
Male	1/5*	6/21	3/28	10/50	20.0
Female	2/8	4/22	2/38	8/68	11.8
Total	3/13	10/43	5/66	18/118	15.3
Percent Positive	23.1	23.3	7.6	15.3	

*Number positive/Number tested

Field Health Unit, Gallup Indian Medical Center. In addition, plans are being made to increase the number of vaccinations given in out-patient clinics of the Indian Health Service, and a large rural vaccination campaign is now in progress.

(Reported by Bernice Laughlin, R.N., Director, Field Health Services, Michael Ogden, M.D., Director, Gallup, New Mexico, Service Unit, John Coulehan, M.D., Director, Field Services Unit, Fort Defiance, Arizona, Service Unit, V. Alton Dohner, M.D., Assistant Area Director, Navajo Area, Indian Health Service; Victor M. Zalma, M.D., Director, Health Agency, State of New Mexico; Philip M. Hotchkiss, D.V.M., State Epidemiologist, Arizona State Department of Health; Phoenix Laboratories Division, Bureau of Epidemiology, CDC; and 2 EIS Officers.)

FOODBORNE SALMONELLOSIS — Minnesota

On September 14, 1973, 10 persons in a small Minnesota town who were ill with diarrhea, abdominal pain or cramps, chills, fever, nausea or vomiting, and headache were hospitalized, 9 locally, 1 in Minneapolis. On September 18, another person with similar symptoms was admitted to the same local hospital. All those hospitalized recovered with supportive care alone; the median hospital stay was 3 days. Stool specimens from 9 of the 10 locally hospitalized patients yielded *Salmonella infantis*, *Salmonella agona*, or both; 1 of these was also positive for *Salmonella schwarzengrund*.

All patients had attended a company picnic on September 11 and/or a smorgasbord dinner on September 12 at the bar-restaurant which catered the picnic. Other persons who

had eaten 1 or both meals were also reported to be ill. Local and state health authorities were notified and began an epidemiologic investigation.

Approximately 55 persons ate at the picnic and 133 at the smorgasbord, including 15 who ate at both. On September 15, a questionnaire was administered, mainly by telephone, to 33 persons who ate only at the picnic, 37 who ate only at the smorgasbord, and 9 who ate at both. Illness was defined as the onset of 1) diarrhea, 2) abdominal pain or cramps, or 3) nausea or vomiting after eating 1 of the meals. About 75% of those interviewed were ill with symptoms similar to those of the hospitalized patients; 92% had diarrhea, and 88% had abdominal pain or cramps.

(Continued on page 347)

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
FOR WEEKS ENDING OCTOBER 13, 1973 AND OCTOBER 14, 1972 (41st WEEK)

AREA	ASEPTIC MENIN- GITIS	BRUCEL- LOSIS	CHICKEN- POX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS		
						Primary including unspec. cases		Post In- fectious	Serum (Hepatitis B)	Infectious (Hepatitis A)	
						1973	1972	1973	1973	1973	1972
UNITED STATES	108	4	491	—	144	31	33	1	132	962	1,014
NEW ENGLAND	3	—	44	—	3	1	—	—	—	44	64
Maine*	—	—	—	—	—	—	—	—	—	1	5
New Hampshire	—	—	—	—	—	—	—	—	—	5	6
Vermont	—	—	1	—	—	—	—	—	—	1	3
Massachusetts	1	—	—	—	1	—	—	—	—	27	26
Rhode Island	2	—	35	—	2	—	—	—	—	3	10
Connecticut	—	—	8	—	—	1	—	—	—	7	14
MIDDLE ATLANTIC	33	—	11	—	—	6	3	—	12	87	127
Upstate New York	—	—	1	—	—	1	1	—	3	28	45
New York City	4	—	8	—	—	—	—	—	—	—	20
New Jersey	23	—	NN	—	—	2	—	—	1	28	29
Pennsylvania	6	—	2	—	—	3	2	—	8	31	33
EAST NORTH CENTRAL	27	—	141	—	—	12	13	—	15	125	173
Ohio	5	—	5	—	—	7	6	—	—	21	27
Indiana	3	—	7	—	—	—	1	—	—	21	6
Illinois	1	—	—	—	—	1	1	—	1	15	55
Michigan*	18	—	25	—	—	4	5	—	11	65	77
Wisconsin	—	—	104	—	—	—	—	—	3	3	8
WEST NORTH CENTRAL	6	2	85	—	7	3	4	—	3	47	46
Minnesota	5	—	—	—	—	—	4	—	—	2	3
Iowa	1	—	73	—	—	1	—	—	1	3	2
Missouri	—	—	2	—	—	—	—	—	1	33	22
North Dakota	—	—	10	—	—	—	—	—	—	—	6
South Dakota	—	—	—	—	7	—	—	—	—	3	1
Nebraska	—	—	—	—	—	—	—	—	—	—	—
Kansas	—	2	—	—	—	2	—	—	1	6	12
SOUTH ATLANTIC	15	2	27	—	1	4	6	—	13	171	139
Delaware	—	—	1	—	—	—	—	—	—	4	3
Maryland	—	—	2	—	—	—	1	—	4	10	26
District of Columbia	2	—	1	—	—	—	—	—	3	—	1
Virginia	6	1	—	—	—	—	2	—	2	7	11
West Virginia	—	—	21	—	—	1	1	—	1	2	7
North Carolina	2	—	NN	—	—	1	—	—	1	37	15
South Carolina	2	—	2	—	—	2	—	—	—	25	16
Georgia	—	1	—	—	—	—	—	—	—	23	17
Florida	3	—	—	—	1	—	2	—	2	63	43
EAST SOUTH CENTRAL	3	—	19	—	1	1	2	—	15	50	39
Kentucky	1	—	9	—	—	—	—	—	7	15	17
Tennessee	1	—	NN	—	—	1	—	—	5	26	13
Alabama	—	—	9	—	1	—	1	—	—	—	4
Mississippi*	1	—	1	—	—	—	1	—	3	9	5
WEST SOUTH CENTRAL	2	—	25	—	14	—	2	—	8	115	120
Arkansas*	—	—	—	—	—	—	—	—	—	3	4
Louisiana	1	—	NN	—	—	—	—	—	4	17	3
Oklahoma	1	—	1	—	—	—	—	—	1	23	37
Texas	—	—	24	—	14	—	2	—	3	72	76
MOUNTAIN	—	—	24	—	35	1	—	—	3	66	82
Montana	—	—	10	—	—	—	—	—	—	13	3
Idaho	—	—	—	—	—	—	—	—	—	1	16
Wyoming	—	—	2	—	—	—	—	—	—	4	2
Colorado	—	—	5	—	—	—	—	—	2	12	7
New Mexico	—	—	2	—	20	1	—	—	1	34	27
Arizona*	—	—	—	—	15	—	—	—	—	—	15
Utah	—	—	3	—	—	—	—	—	—	2	7
Nevada	—	—	2	—	—	—	—	—	—	—	5
PACIFIC	19	—	115	—	83	3	3	1	63	257	224
Washington	—	—	104	—	75	—	—	—	5	34	28
Oregon	2	—	—	—	3	—	—	—	3	20	35
California	16	—	—	—	3	3	3	1	55	169	155
Alaska	—	—	5	—	2	—	—	—	—	33	—
Hawaii	1	—	6	—	—	—	—	—	—	1	6
Guam	—	—	—	—	—	—	—	—	—	—	—
Puerto Rico	—	—	3	—	—	—	—	—	—	22	19
Virgin Islands	—	—	—	—	—	—	—	—	—	—	—

* Delayed reports: Diphtheria: Ariz. 1

Encephalitis, primary: Mich. 7

Hepatitis A: Me. 1, Mich. delete 7, Miss. delete 1, Ark. 2, Ariz. 6

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
FOR WEEKS ENDING OCTOBER 13, 1973 AND OCTOBER 14, 1972 (41st WEEK) - Continued

AREA	MALARIA		MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS, TOTAL			MUMPS		RUBELLA	
	1973	Cum. 1973	1973	Cumulative		1973	Cumulative		1973	Cum. 1973	1973	Cum. 1973
				1973	1972		1973	1972				
UNITED STATES	2	196	98	24,563	27,507	18	1,119	1,078	526	57,294	112	26,398
NEW ENGLAND	1	16	22	7,427	3,232	1	48	45	59	3,073	4	3,654
Maine	-	-	-	67	244	-	1	4	5	346	-	69
New Hampshire	-	-	17	874	302	-	7	3	-	197	-	377
Vermont	-	2	-	119	128	-	3	-	-	267	-	47
Massachusetts	1	7	4	3,957	735	1	13	21	14	900	3	2,054
Rhode Island	-	1	-	605	524	-	3	11	27	393	-	216
Connecticut	-	6	1	1,805	1,299	-	21	6	13	970	1	891
MIDDLE ATLANTIC	-	29	10	2,517	1,046	5	154	131	41	7,367	9	4,212
Upstate New York	-	15	5	811	128	3	55	32	NN	NN	6	433
New York City	-	2	3	919	364	1	31	39	13	4,605	2	474
New Jersey	-	5	1	425	494	-	36	25	3	1,512	1	3,011
Pennsylvania	-	7	1	362	60	1	32	35	25	1,250	-	294
EAST NORTH CENTRAL	-	23	32	8,612	11,196	3	149	155	97	14,558	28	6,073
Ohio	-	4	-	285	256	2	62	61	6	2,700	2	692
Indiana	-	3	1	651	1,264	-	4	11	18	1,260	7	957
Illinois	-	12	7	2,083	4,152	1	25	34	12	2,443	1	969
Michigan	-	4	8	4,388	2,017	-	42	42	23	3,999	3	1,859
Wisconsin	-	-	16	1,205	3,507	-	16	7	38	4,156	15	1,596
WEST NORTH CENTRAL	-	7	4	446	970	-	84	74	39	4,791	5	1,218
Minnesota	-	1	-	21	22	-	8	23	1	83	-	221
Iowa	-	1	-	277	674	-	19	4	28	2,938	4	195
Missouri	-	1	-	53	164	-	32	20	3	692	1	267
North Dakota	-	1	4	62	53	-	3	-	3	69	-	276
South Dakota	-	-	-	-	7	-	4	2	-	19	-	23
Nebraska	-	1	-	6	23	-	10	9	-	147	-	141
Kansas	-	2	-	27	27	-	8	16	4	843	-	95
SOUTH ATLANTIC	-	32	6	1,243	2,193	1	189	245	33	6,695	22	2,166
Delaware	-	-	1	9	51	-	-	1	1	269	-	14
Maryland	-	5	-	13	15	-	26	36	1	637	-	10
District of Columbia	-	1	-	8	2	-	4	10	-	131	-	3
Virginia	-	8	-	421	62	-	36	54	2	709	-	624
West Virginia	-	-	1	216	281	-	5	8	11	2,278	14	327
North Carolina	-	7	-	4	34	1	41	30	NN	NN	-	202
South Carolina	-	1	2	62	216	-	12	20	-	356	-	86
Georgia	-	3	-	152	172	-	22	18	-	31	-	12
Florida	-	7	2	358	1,360	-	43	68	18	2,284	8	888
EAST SOUTH CENTRAL	-	13	2	611	1,054	1	102	83	40	4,772	6	1,339
Kentucky	-	8	2	377	526	1	36	27	15	1,435	2	399
Tennessee	-	-	-	165	193	-	41	28	13	2,207	3	542
Alabama	-	5	-	12	150	-	15	16	11	668	-	187
Mississippi	-	-	-	57	185	-	10	12	1	462	1	211
WEST SOUTH CENTRAL	-	12	7	700	1,530	3	172	134	71	3,934	6	1,468
Arkansas	-	-	1	70	13	-	13	9	21	380	-	112
Louisiana	-	2	-	84	90	2	41	41	-	85	-	99
Oklahoma	-	2	-	55	10	-	30	8	3	446	-	178
Texas	-	8	6	491	1,417	1	88	76	47	3,023	6	1,079
MOUNTAIN	-	10	1	731	1,895	-	33	26	16	2,512	8	2,405
Montana	-	1	-	17	16	-	7	4	4	242	-	507
Idaho	-	-	-	256	134	-	4	8	-	110	-	40
Wyoming	-	-	-	81	51	-	-	1	-	424	-	7
Colorado	-	2	-	105	530	-	11	5	8	479	4	1,550
New Mexico	-	2	1	122	125	-	3	3	4	978	3	201
Arizona *	-	4	-	21	883	-	4	1	-	140	-	19
Utah	-	1	-	128	155	-	2	3	-	131	-	77
Nevada	-	-	-	1	1	-	2	1	-	8	1	4
PACIFIC	1	54	14	2,276	4,391	4	188	185	130	9,592	24	3,863
Washington	-	3	1	1,016	978	-	20	16	10	1,501	11	688
Oregon	-	4	1	461	133	2	15	14	37	1,794	1	788
California	1	44	12	715	3,169	2	147	144	46	5,261	12	2,352
Alaska	-	2	-	65	13	-	6	8	32	762	-	9
Hawaii	-	1	-	19	98	-	-	3	5	274	-	26
Guam	-	-	-	50	16	-	-	13	-	23	-	13
Puerto Rico	-	-	3	1,875	720	-	8	4	5	732	2	33
Virgin Islands	-	-	-	7	3	-	-	2	-	24	-	2

* Delayed reports: Meningococcal infections: Ariz. 1

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
FOR WEEKS ENDING OCTOBER 13, 1973 AND OCTOBER 14, 1972 (41st WEEK) - Continued

AREA	TETANUS	TUBERCULOSIS (New Active)		TULA- REMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (Rky. Mt. spotted fever)		VENEREAL DISEASES		RABIES IN ANIMALS	
	Cumulative 1973	1973	Cum. 1973	Cumulative 1973	1973	Cum. 1973	1973	Cum. 1973	GONOR- RHEA	SYPHILIS (Pri. & Sec.)	1973	Cum. 1973
									1973	1973		
UNITED STATES	75	496	24,837	134	9	546	10	591	16,329	458	48	2,786
NEW ENGLAND	2	10	904	-	1	16	1	3	301	14	1	104
Maine	-	2	80	-	-	-	-	-	22	-	-	57
New Hampshire	-	-	45	-	-	-	-	-	20	-	1	36
Vermont	-	-	24	-	-	-	-	-	13	-	-	3
Massachusetts	-	4	478	-	1	14	1	2	-	8	-	6
Rhode Island	1	3	77	-	-	-	-	-	20	-	-	-
Connecticut	1	1	200	-	-	2	-	1	226	6	-	2
MIDDLE ATLANTIC	7	108	4,880	-	2	55	-	29	2,469	101	1	43
Upstate New York	1	16	855	-	2	10	-	13	356	8	1	20
New York City	3	36	1,811	-	-	21	-	4	917	52	-	-
New Jersey	2	24	870	-	-	15	-	4	423	19	-	-
Pennsylvania	1	32	1,344	-	-	9	-	8	773	22	-	23
EAST NORTH CENTRAL	12	67	3,700	3	2	41	-	19	2,376	20	1	266
Ohio*	3	20	1,102	-	-	16	-	14	765	-	-	32
Indiana	3	1	482	-	-	-	-	-	300	8	-	51
Illinois	3	31	1,111	1	-	10	-	5	248	6	-	68
Michigan	1	15	927	2	1	12	-	-	840	6	-	7
Wisconsin	2	-	78	-	1	3	-	-	223	-	1	108
WEST NORTH CENTRAL	6	22	1,036	14	-	24	-	20	792	6	17	880
Minnesota	-	-	126	-	-	4	-	-	118	3	9	324
Iowa	-	3	103	-	-	-	-	7	202	1	3	180
Missouri	5	15	487	13	-	12	-	7	200	2	3	89
North Dakota	1	1	36	-	-	-	-	-	24	-	1	135
South Dakota	-	-	76	-	-	1	-	-	36	-	-	77
Nebraska	-	2	69	-	-	1	-	2	89	-	-	3
Kansas	-	1	139	1	-	6	-	4	123	-	1	72
SOUTH ATLANTIC	16	112	4,929	18	1	244	6	296	3,698	141	8	249
Delaware	-	3	82	-	-	-	-	8	32	-	-	3
Maryland	-	15	546	6	1	8	1	14	321	18	-	14
District of Columbia	-	10	228	-	-	-	-	-	339	12	-	-
Virginia	2	19	662	5	-	3	-	59	356	16	4	75
West Virginia	1	5	234	-	-	7	-	4	41	1	-	22
North Carolina*	-	16	806	2	-	5	2	132	554	21	3	9
South Carolina	1	-	372	-	-	6	2	32	284	23	-	5
Georgia	2	16	795	3	-	3	1	46	755	9	1	82
Florida	10	28	1,204	2	-	212	-	1	1,016	41	-	39
EAST SOUTH CENTRAL	8	46	2,218	10	-	39	3	108	1,654	49	2	370
Kentucky*	1	8	504	1	-	10	-	-	166	14	-	198
Tennessee	5	9	694	7	-	12	1	52	586	7	-	129
Alabama	2	22	604	-	-	10	2	23	621	19	2	42
Mississippi	-	7	416	2	-	7	-	33	281	9	-	1
WEST SOUTH CENTRAL	13	53	2,548	84	2	24	-	100	2,016	53	14	498
Arkansas*	1	6	319	59	-	4	-	20	147	3	-	107
Louisiana	4	2	380	-	-	6	-	-	399	24	3	41
Oklahoma	4	-	215	18	-	2	-	71	182	1	2	145
Texas	4	45	1,634	7	2	12	-	9	1,288	25	9	205
MOUNTAIN	-	13	821	4	-	10	-	8	628	11	1	48
Montana	-	-	41	-	-	-	-	1	36	1	-	10
Idaho	-	2	30	-	-	1	-	2	51	-	-	-
Wyoming	-	-	23	-	-	1	-	1	3	1	-	-
Colorado	-	-	152	-	-	2	-	1	339	9	-	-
New Mexico	-	11	173	1	-	2	-	3	143	-	-	6
Arizona*	-	-	318	-	-	4	-	-	-	-	-	28
Utah	-	-	37	2	-	-	-	-	19	-	1	4
Nevada	-	-	47	1	-	-	-	-	37	-	-	-
PACIFIC	11	65	3,801	1	1	93	-	8	2,395	63	3	328
Washington	4	6	291	-	-	7	-	5	246	1	-	8
Oregon	1	3	198	-	-	2	-	2	147	3	-	8
California	6	52	2,956	1	1	79	-	1	1,890	59	3	304
Alaska	-	-	84	-	-	4	-	-	47	-	-	8
Hawaii	-	4	272	-	-	1	-	-	65	-	-	-
Guam	-	-	35	-	-	-	-	-	-	-	-	-
Puerto Rico	4	10	403	-	-	7	-	-	83	11	3	43
Virgin Islands	-	-	2	-	-	-	-	-	-	-	-	-

* Delayed reports: TB: Ohio delete 2, N.C. delete 1, Ky, delete 1

Tularemia: Ark. delete 1
Rabies: Ariz. 3

TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDING OCTOBER 13, 1973

Week No.

41

(By place of occurrence and week of filing certificate. Excludes fetal deaths)

Area	All Causes			Pneumonia and Influenza All Ages	Area	All Causes			Pneumonia and Influenza All Ages
	All Ages	65 years and over	Under 1 year			All Ages	65 years and over	Under 1 year	
NEW ENGLAND	692	417	31	35	SOUTH ATLANTIC	1,010	578	44	47
Boston, Mass.	219	120	10	10	Atlanta, Ga.	116	48	6	4
Bridgeport, Conn.	43	31	—	2	Baltimore, Md.	145	83	10	4
Cambridge, Mass.	30	24	—	4	Charlotte, N. C.	51	27	2	—
Fall River, Mass.	24	23	—	—	Jacksonville, Fla.	68	42	3	2
Hartford, Conn.	62	31	2	2	Miami, Fla.	103	60	4	6
Lowell, Mass.	21	12	—	4	Norfolk, Va.	52	32	—	5
Lynn, Mass.	23	17	—	2	Richmond, Va.	73	43	1	8
New Bedford, Mass.	23	16	—	2	Savannah, Ga.	28	15	3	2
New Haven, Conn.	50	27	7	1	St. Petersburg, Fla.	107	91	4	8
Providence, R. I.	50	21	6	1	Tampa, Fla.	71	38	3	3
Somerville, Mass.	11	8	—	1	Washington, D. C.	144	69	6	5
Springfield, Mass.	44	27	3	5	Wilmington, Del.	52	30	2	—
Waterbury, Conn.	23	14	1	—	EAST SOUTH CENTRAL	676	377	33	28
Worcester, Mass.	69	46	2	3	Birmingham, Ala.	113	59	5	—
MIDDLE ATLANTIC	2,993	1,874	86	138	Chattanooga, Tenn.	62	37	4	8
Albany, N. Y.	47	29	1	2	Knoxville, Tenn.	36	23	—	—
Allentown, Pa.	26	16	1	2	Louisville, Ky.	123	73	3	6
Buffalo, N. Y.	140	93	5	10	Memphis, Tenn.	155	76	14	4
Camden, N. J.	33	20	2	1	Mobile, Ala.	63	35	3	—
Elizabeth, N. J.	33	20	1	1	Montgomery, Ala.	26	11	1	4
Erie, Pa.	32	17	1	1	Nashville, Tenn.	98	63	3	6
Jersey City, N. J.	60	40	1	2	WEST SOUTH CENTRAL	1,320	691	67	45
Newark, N. J.	72	35	3	2	Austin, Tex.	36	17	3	—
New York City, N. Y. †	1,512	953	34	52	Baton Rouge, La.	38	19	—	2
Paterson, N. J.	41	22	1	—	Corpus Christi, Tex.	27	13	2	—
Philadelphia, Pa.	408	239	10	31	Dallas, Tex.	145	78	5	—
Pittsburgh, Pa.	178	98	9	12	El Paso, Tex.	55	25	3	4
Reading, Pa.	28	18	—	3	Fort Worth, Tex.	82	58	4	2
Rochester, N. Y.	122	95	2	9	Houston, Tex.	212	93	17	4
Schenectady, N. Y.	20	16	—	—	Little Rock, Ark.	64	34	5	4
Scranton, Pa.	37	26	—	2	New Orleans, La.	187	97	12	3
Syracuse, N. Y.	102	65	3	2	Oklahoma City, Okla. *	92	52	5	2
Trenton, N. J.	45	33	—	2	San Antonio, Tex.	140	76	4	—
Utica, N. Y.	23	15	1	2	Shreveport, La.	159	81	6	18
Yonkers, N. Y.	34	24	1	2	Tulsa, Okla.	83	48	1	2
EAST NORTH CENTRAL	2,308	1,324	116	48	MOUNTAIN	498	267	39	24
Akron, Ohio	60	39	3	—	Albuquerque, N. Mex.	24	8	3	1
Canton, Ohio	33	19	—	1	Colorado Springs, Colo.	27	17	—	6
Chicago, Ill.	632	336	35	11	Denver, Colo.	119	55	18	7
Cincinnati, Ohio	141	92	6	4	Las Vegas, Nev.	47	19	8	1
Cleveland, Ohio	184	92	11	4	Ogden, Utah	21	11	—	2
Columbus, Ohio	134	81	9	1	Phoenix, Ariz.	121	71	5	2
Dayton, Ohio	97	55	5	1	Pueblo, Colo.	28	16	1	3
Detroit, Mich.	342	195	15	5	Salt Lake City, Utah	54	29	4	1
Evansville, Ind.	45	32	—	2	Tucson, Ariz.	57	41	—	1
Fort Wayne, Ind.	38	20	3	1	PACIFIC	1,395	830	52	33
Gary, Ind.	14	6	1	2	Berkeley, Calif.	11	7	—	—
Grand Rapids, Mich.	57	38	5	4	Fresno, Calif.	58	34	2	1
Indianapolis, Ind.	141	84	9	—	Glendale, Calif.	16	8	—	—
Madison, Wis.	31	12	—	2	Honolulu, Hawaii	54	24	3	2
Milwaukee, Wis.	120	77	3	1	Long Beach, Calif.	75	51	3	1
Peoria, Ill.	32	15	5	—	Los Angeles, Calif.	382	235	16	8
Rockford, Ill.	42	27	2	5	Oakland, Calif.	76	35	10	—
South Bend, Ind.	33	22	—	2	Pasadena, Calif.	31	22	3	—
Toledo, Ohio	73	45	3	1	Portland, Oreg.	114	72	1	4
Youngstown, Ohio	59	37	1	1	Sacramento, Calif.	57	31	3	—
WEST NORTH CENTRAL	718	461	27	15	San Diego, Calif.	90	52	4	1
Des Moines, Iowa	51	38	2	1	San Francisco, Calif.	179	109	4	2
Duluth, Minn.	23	17	1	1	San Jose, Calif.	54	31	—	2
Kansas City, Kans.	27	18	2	—	Seattle, Wash.	113	67	2	2
Kansas City, Mo.	121	69	3	4	Spokane, Wash.	46	30	—	3
Lincoln, Nebr.	20	16	—	1	Tacoma, Wash.	39	22	1	7
Minneapolis, Minn.	96	67	3	—	Total	11,610	6,819	495	413
Omaha, Nebr.	72	42	5	—	Expected Number	12,214	6,948	542	396
St. Louis, Mo.	177	103	8	4	Cumulative Total (includes reported corrections for previous weeks)	526,746	309,768	19,798	21,220
St. Paul, Minn.	61	41	1	4					
Wichita, Kans.	70	50	2	—					

† Delayed report for week ending October 6, 1973

* Estimate based on average percent of divisional total

SALMONELLOSIS — Continued

On September 20 and 21, data was obtained from an additional 42 persons, most of whom had only eaten at the smorgasbord. In all, 91% of those who had eaten at the picnic (71% of whom were ill) and 61% of those who had eaten at the smorgasbord (80% of whom were ill) were interviewed. It was estimated that 128 of 173 persons who ate 1 or both meals were ill. The median incubation period was 23 hours for those who ate only 1 meal (Figure 2). The median duration of illness was approximately 5 days. Additional stool specimens were obtained from 10 persons interviewed who were not hospitalized; 9 were positive for *S. infantis*, *S. agona*, or both, and 1 was also positive for *S. schwarzengrund*.

Fourteen food items were served at the picnic and 20 at the smorgasbord in addition to alcoholic and soft drinks. Food-specific attack rates implicated potato salad as the vehicle of infection at the picnic ($p < .001$); cumulated data subsequently implicated the chicken dressing and the potato salad as vehicles of infection at the smorgasbord ($p < .01$ for each).

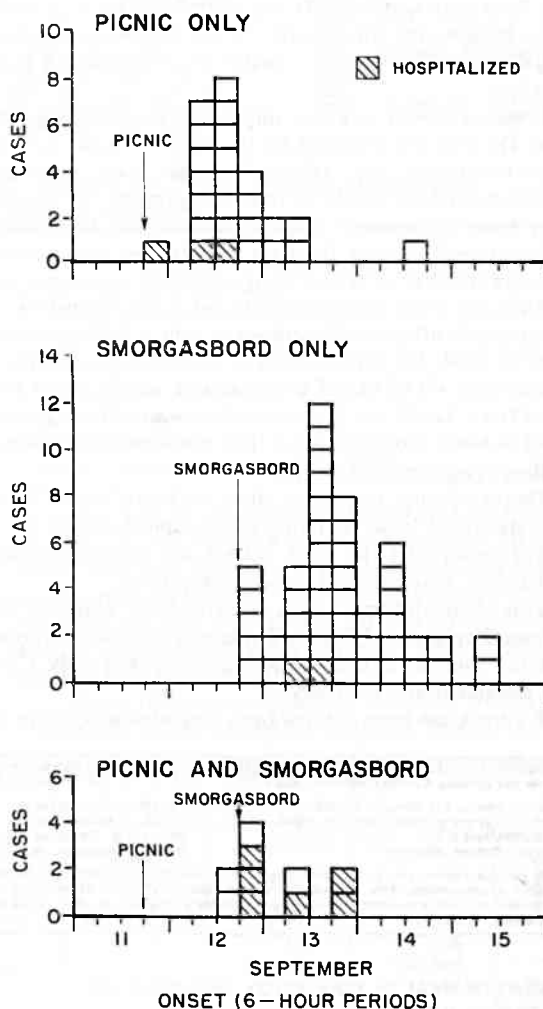
Further investigation at the bar-restaurant revealed that the owner and his wife had prepared all the food for both events. No food served at the picnic was returned and served again at the smorgasbord, but batches of some items served at both meals were prepared at 1 time. On September 10, the day before the picnic, cleaned chickens were delivered to the restaurant, where they were cut up, put in large plastic pans, and stored in a cooler. On the days of the picnic and the smorgasbord the chicken pieces were deep-fried for approximately 7 minutes, then placed in an electric roaster at 225°F. for about 3 hours until served. The same plastic pans used to store the uncooked chicken were also used in preparing the potato salad and cole slaw for both events as well as the bread for the chicken dressing served at the smorgasbord. It is not certain whether or not the pans were washed after being used for the chicken. The dressing was kept in an open-topped heater set at 175°F. for 4 1/2 hours before being served. The same foods were served at the bar-restaurant's smorgasbord every Wednesday night and were prepared the same way.

Stool specimens were obtained from the owner and his wife, who denied having been ill recently; both were positive for *S. infantis*. Cultures of kitchen tap water, all foods or ingredients remaining from the smorgasbord (baked beans, mayonnaise, cole slaw dressing, dry food mix, and sage), raw chickens which had been delivered the day after the smorgasbord from the same farm that had supplied the others, and 6 swabs of kitchen utensils and food-contact surfaces were negative for *Salmonella* organisms.

On September 16, the Minnesota Department of Health closed the food section of the bar-restaurant, which was to have catered a large church picnic the following day. A week later the owner and his wife decided to close their food service permanently.

(Reported by Franklin Anderson, M.D., private physician; D. H. Dewey, M.D., local health officer; Ward McIntire, Robert Lashbrook, John Hawk, and Charles Schneider, Chief, Hotels, Resorts, and Restaurants Section, Leon Damsky, Ph.D., Henry Bauer, Ph.D., Director, Division of Medical Labora-

Figure 2
SALMONELLOSIS CASES AMONG PERSONS ATTENDING PICNIC ONLY, SMORGASBORD ONLY, AND BOTH, BY TIME OF ONSET MINNESOTA — SEPTEMBER 11-15, 1973



tories, D. S. Fleming, M.D., Chief, Disease Prevention and Control Section, Minnesota Department of Health; and an EIS Officer.)

Editorial Note

Epidemiologic investigation implicated potato salad as the vehicle of transmission at the picnic and both potato salad and chicken dressing at the smorgasbord. The probable source of contamination of these foods was raw chickens containing salmonellae which contaminated the plastic pans in which the potato salad and bread for the chicken dressing were later prepared. Although the owner and his wife had stool specimens positive for *S. infantis*, it is highly unlikely that they harbored 3 serotypes and contaminated food items with them; their infection more likely resulted from ingestion of the contaminated items.

SURVEILLANCE SUMMARY
BACILLUS CEREUS FOOD POISONING – United Kingdom

Since the first reports in the United Kingdom of *Bacillus cereus* food poisoning in 1971 (1), there have been 12 more reports, bringing the total to 18. Twelve Chinese restaurants and "take-out" shops and 1 "health food" restaurant were involved.

Fried or boiled rice was implicated in all of the outbreaks. The rice was prepared by the method found in most Chinese restaurants and "take-out" shops. Large quantities were boiled, then left usually at room temperature for periods ranging from 12 hours to 3 days. The rice was then either reheated (boiled rice) or fried for a short time with freshly beaten egg (fried rice) before being served. *B. cereus* was isolated from the stool specimen of at least 1 affected person in each reported outbreak in quantities as high as 10^9 organisms per gm of stool. The total number of persons reported ill was 57; feces from 40 of the 57 were sampled, and *B. cereus* was isolated from 32. Of the 8 persons from whom the organism was not isolated, most submitted their specimens several days after their symptoms had ceased.

The incubation periods in these outbreaks varied from 15 minutes to 11 hours; in most cases symptoms began 1 1/2 to 4 1/2 hours after the meal. Nausea and vomiting, rather than diarrhea, were the predominant symptoms.

Two of the outbreaks were reported from Scotland, the rest from England and Wales. Thirteen outbreaks occurred during the summer months June-September and only 1 between December and February.

B. cereus has been isolated from a number of samples of

uncooked rice grains. Spores of the organisms survive boiling, and the vegetative cells in the boiled product stored at ambient temperature subsequently grow and multiply. Restaurant owners are reluctant to refrigerate boiled rice because the grains stick together, making it difficult to toss them in beaten egg during frying. Until this method of preparing rice is discontinued, outbreaks of *B. cereus* food poisoning may continue to occur. Boiled rice should be freshly cooked in smaller quantities and should not be stored at warm temperatures especially in the range 20°-50°C.

(From notes based on reports to the Public Health Laboratory Service from Public Health and Hospital Laboratories in the United Kingdom and Republic of Ireland, published in the British Medical Journal, September 15, 1973.)

Editorial Note

B. cereus is an uncommonly reported cause of food-borne disease in the United States; between 1968 and 1973, 7 outbreaks were reported. In addition to the syndrome characterized predominantly by nausea and vomiting and a 1- to 5-hour incubation period, *B. cereus* foodborne illness may also cause diarrhea and abdominal pain after an 8- to 12-hour incubation period (2). The pathogenic mechanism by which *B. cereus* causes illness is unknown.

References

1. *Bacillus cereus* food poisoning. Brit Med J 1(5793):189, 1972
2. Goepfert JM, Spira WM, Kim HU: *Bacillus cereus*: food poisoning organism. A review. Journal of Milk and Food Technology 35:213-227, 1972

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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.

In addition to the established procedures for reporting morbidity and mortality, the editor welcomes accounts of interesting outbreaks or case investigations of current interest to health officials.

Address all correspondence to:

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