



Morbidity and Mortality

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

DATE OF RELEASE: JULY 13, 1973 - ATLANTA, GEORGIA 30333

EPIDEMIOLOGIC NOTES AND REPORTS
NOSOCOMIAL GASTROENTERITIS - Arizona

Between September 1972 and March 1973, an epidemic of nosocomial gastroenteritis occurred in the nursery of a county hospital in Arizona. Thirty-seven infants in the hospital's premature intensive care nursery and 5 infants readmitted after discharge from the term nursery were affected (Figure 1). Four diarrhea-associated deaths occurred. Nine infants had a prolonged illness compatible with "intractable diarrhea of infancy" and required total parenteral nutrition therapy.

Clinical illness was characterized by sudden onset of lethargy, abdominal distention, poor feeding, and profuse watery stools. Age at onset ranged from 3 to 44 days (median 8 days). Duration of symptoms ranged from 3 to 77 days (median 9 days).

In 5 prevalence surveys starting February 21, 64 stool specimens were obtained from 29 infants in the premature nursery and 4 readmitted patients; 23 of these infants had

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diarrhea, and 10 served as well controls. No recognized enteric pathogens were found, and no enteric viruses were detected in a subsample of 11 specimens from infants with diarrhea. However, when specimens were screened for all *Escherichia coli* serotypes using standard pools, isolation of *E. coli* 0142 showed a significant correlation with diarrheal illness (Table 1). All 3 strains of this serotype tested were found to produce filterable enterotoxin by the rabbit ileal loop assay

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

DISEASE	27th WEEK ENDING		MEDIAN 1968-1972	CUMULATIVE, FIRST 27 WEEKS		
	July 7, 1973	July 8, 1972		1973	1972	MEDIAN 1968-1972
Aseptic meningitis	85	66	66	1,203	1,070	1,042
Brucellosis	3	3	7	90	81	98
Chickenpox	1,200	1,810	---	140,406	108,491	---
Diphtheria	—	—	2	94	52	88
Encephalitis, primary:						
Arthropod-borne and unspecified	20	12	22	570	435	500
Encephalitis, post-infectious	5	8	12	159	157	213
Hepatitis, serum (Hepatitis B)	120	114	114	4,017	4,823	3,685
Hepatitis, infectious (Hepatitis A)	669	782	782	26,230	29,018	28,841
Malaria	3	13	46	123	598	1,371
Measles (rubeola)	288	347	476	22,486	25,182	25,182
Meningococcal infections, total	20	19	27	882	837	1,568
Civilian	19	19	26	860	804	1,413
Military	1	—	3	22	33	166
Mumps	776	760	1,135	50,853	52,494	69,197
Rubella (German measles)	140	195	477	24,919	19,327	40,578
Tetanus	—	2	3	40	56	56
Tuberculosis, new active	463	515	---	16,497	17,137	---
Tularemia	—	1	6	62	58	67
Typhoid fever	5	1	7	384	158	146
Typhus, tick-borne (Rky. Mt. spotted fever)	28	24	18	279	189	151
Venereal Diseases:						
Gonorrhea	13,230	13,577	---	403,028	359,577	---
Syphilis, primary and secondary	384	339	---	13,575	12,358	---
Rabies in animals	53	51	53	1,919	2,316	1,961

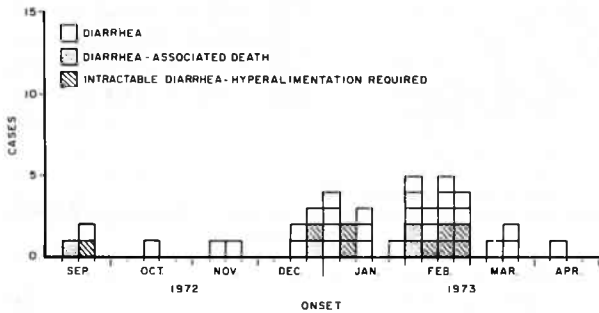
TABLE II. NOTIFIABLE DISEASES OF LOW FREQUENCY

	Cum.		Cum.
Anthrax:	1	Poliomyelitis, total:	2
Botulism:	13	Paralytic:	2
Congenital rubella syndrome:	15	Psittacosis:	10
Leprosy: Hawaii-4, Pa.-1, Tex.-3	58	Rabies in man:	—
Leptospirosis: *Mo.-2, Va.-1	18	Trichinosis:	42
Plague:	—	Typhus, murine: Tex.-1	18

*Delayed report: Leptospirosis: Ark. 1

GASTROENTERITIS - Continued

Figure 1
GASTROENTERITIS CASES IN INFANTS, BY WEEK OF ONSET
MARICOPA COUNTY, ARIZONA - SEPTEMBER 1972-APRIL 1973



and to be non-invasive by the Serény test. Kirby-Bauer sensitivity testing revealed that the organism was sensitive to colistin and gentamicin and resistant to neomycin and ampicillin. Blood specimens obtained from 32 ill infants were negative for *E. coli*. Despite 7 or more days of therapy with 6 mg/kg/day of parental gentamicin, 12 of 16 infants remained symptomatic and had persistently positive stool cultures.

Nose, throat, and rectal swabs were obtained from all personnel associated with the nurseries. None were positive for the epidemic organism. Environmental sampling revealed minimal contamination of surfaces with *E. coli* 0142; however, 3 of 20 air samples were positive for this organism. Despite very thorough handwashing with 3% hexachlorophene soap, "wipe-rinse" hand sampling revealed *E. coli* 0142 on the hands of 5 of the 29 personnel examined prior to initiation of control measures. Cultures of the hexachlorophene solution were negative. Epidemiologic analysis did not further elucidate the mode of spread of the organism.

Strict gloving procedures, oral colistin treatment of all infants in the premature unit, and closure of the unit to new admissions on March 23 were associated with termination of the outbreak. Continuing surveillance of both term and premature nurseries has revealed no new isolations of the epidemic organism since reopening of the nurseries on April 23.

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Editorial Note

It has been stated that diarrheal disease caused by enteropathogenic *E. coli* (EEC) has become milder in recent years (1), but this epidemic indicates that severe or fatal illness can still occur. Since asymptomatic carriage is not uncommon (2), isolation of EEC from an infant with diarrhea does not necessarily prove an etiologic relationship; however, a statistically significant correlation between diarrhea and isolation of EEC from stool was demonstrated in this investiga-

Table 1
Escherichia coli 0142 Isolations from Infants With and Without Diarrhea

	At Least 1 Culture Positive for <i>E. coli</i> 0142	No Cultures Positive for <i>E. coli</i> 0142	Number of Patients
Infants with diarrhea (2.0 cultures/patient)	20	3*	23
Infants without diarrhea (1.7 cultures/patient)	4	6	10
Total	24	9	33

$p = .0104$ (Fisher's Exact Test)

*Specimens obtained only during convalescence.

tion. Disease was caused by *E. coli* 0142/K86/H6, a strain not previously associated with epidemics in the United States but implicated in serious outbreaks elsewhere (3,4)

Recent evidence indicates that the ability of some strains of *E. coli* to produce diarrhea is related to their capacity to elaborate enterotoxin (5). Enterotoxin production has been associated with a transferable episome, and it is not surprising that diarrheal disease has been attributed to strains of *E. coli* other than the classic EEC serotypes. Therefore, tests to detect enterotoxin production may be as relevant clinically and epidemiologically as serotyping. Unfortunately, current methodology for detecting enterotoxin is far from ideal, and a simple reproducible inexpensive test is clearly needed.

Epidemiologic investigation of nursery outbreaks of *E. coli* diarrhea has suggested that disease is spread primarily by indirect contact via hands of personnel. Although isolation of *E. coli* from air during epidemics of diarrhea has been reported previously (6), airborne transmission is probably of secondary importance. Control measures should emphasize stool precautions, handwashing, isolation of infected and colonized infants in separate rooms, cohorting of infants and nursery personnel, and early discharge of well babies. Oral antibiotic treatment of colonized infants in epidemic situations, providing the above measures to prevent cross-infection are initiated, also seems worthwhile.

References

1. South MA: Enteropathogenic *Escherichia coli* disease: new developments and perspectives. *J Pediatr* 70:1-11, 1971
2. Solomon P, Weinstein L, Jores SM: Studies of the incidence of carriers of enteropathogenic *Escherichia coli* in a pediatric population. *J Pediatr* 58:716-721, 1961
3. Olarte J, Ramos-Alvarez M: Epidemic diarrhea in premature infants. *Am J Dis Child* 109:436-438, 1965
4. Love WC, Gordon AM, Gross RJ, et al: Infantile gastroenteritis due to *Escherichia coli* 0142. *Lancet* 2:355-357, 1972
5. Gorbach SL, Khurana CM: Toxigenic *Escherichia coli*: a cause of infantile diarrhea in Chicago. *N Engl J Med* 287:791-795, 1972
6. Laurrell G: Airborne Infections, IX. Coliform organisms in the upper respiratory tract of children, with particular reference to their mode of spreading in a children's hospital. *Acta Pathol Microbiol Scand* 31:112-123, 1952

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES FOR WEEKS ENDING JULY 7, 1973 AND JULY 8, 1972 (27th WEEK)

AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS		
						Primary including unspec. cases		Post Infectious	Serum (Hepatitis B)	Infectious (Hepatitis A)	
						1973	1972	1973	1973	1973	1972
UNITED STATES	85	3	1,200	-	94	20	12	5	120	669	782
NEW ENGLAND	3	-	252	-	3	-	-	-	5	47	63
Maine *	-	-	7	-	-	-	-	-	-	1	17
New Hampshire *	1	-	2	-	-	-	-	-	-	3	1
Vermont	-	-	3	-	-	-	-	-	-	-	1
Massachusetts	-	-	86	-	1	-	-	-	1	19	27
Rhode Island	2	-	45	-	2	-	-	-	1	6	6
Connecticut	-	-	109	-	-	-	-	-	3	18	11
MIDDLE ATLANTIC	7	-	77	-	-	2	5	2	9	51	55
Upstate New York	1	-	-	-	-	1	2	-	1	9	20
New York City	3	-	76	-	-	-	-	-	3	18	11
New Jersey	-	-	NN	-	-	-	-	-	-	-	24
Pennsylvania	3	-	1	-	-	1	3	2	5	24	-
EAST NORTH CENTRAL	8	-	468	-	-	9	4	-	12	108	141
Ohio	7	-	35	-	-	9	2	-	4	36	29
Indiana	-	-	44	-	-	-	-	-	-	9	9
Illinois	-	-	-	-	-	-	-	-	2	20	45
Michigan	-	-	85	-	-	-	2	-	5	35	41
Wisconsin	1	-	304	-	-	-	-	-	1	8	17
WEST NORTH CENTRAL	-	-	43	-	8	1	-	-	3	29	61
Minnesota	-	-	1	-	-	-	-	-	1	4	1
Iowa	-	-	9	-	-	1	-	-	1	2	1
Missouri	-	-	7	-	1	-	-	-	1	11	49
North Dakota	-	-	16	-	-	-	-	-	-	-	-
South Dakota	-	-	-	-	7	-	-	-	-	-	2
Nebraska	-	-	-	-	-	-	-	-	-	2	-
Kansas	-	-	10	-	-	-	-	-	-	10	8
SOUTH ATLANTIC	19	-	131	-	-	4	-	-	16	99	143
Delaware	-	-	-	-	-	-	-	-	-	-	2
Maryland *	2	-	5	-	-	-	-	-	3	4	14
District of Columbia	-	-	2	-	-	-	-	-	-	1	2
Virginia	3	-	31	-	-	1	-	-	2	9	14
West Virginia *	-	-	73	-	-	-	-	-	-	4	3
North Carolina	7	-	NN	-	-	1	-	-	2	18	48
South Carolina	1	-	19	-	-	-	-	-	1	-	8
Georgia	-	-	1	-	-	-	-	-	-	18	18
Florida	6	-	-	-	-	2	-	-	8	45	34
EAST SOUTH CENTRAL	10	-	23	-	-	1	2	1	11	50	37
Kentucky	3	-	17	-	-	-	-	-	1	12	13
Tennessee	4	-	NN	-	-	1	-	1	2	27	19
Alabama	3	-	4	-	-	-	1	-	5	3	4
Mississippi	-	-	2	-	-	-	1	-	3	8	1
WEST SOUTH CENTRAL	6	1	84	-	8	2	1	1	12	103	71
Arkansas *	-	-	5	-	-	-	-	-	-	1	3
Louisiana *	3	-	NN	-	-	-	1	-	2	10	12
Oklahoma *	1	-	11	-	-	2	-	-	3	18	12
Texas	2	1	68	-	8	-	-	1	7	74	44
MOUNTAIN	-	-	30	-	2	1	-	-	1	24	39
Montana	-	-	-	-	-	-	-	-	-	4	3
Idaho	-	-	-	-	-	-	-	-	-	1	6
Wyoming	-	-	-	-	-	-	-	-	-	1	1
Colorado	-	-	1	-	-	-	-	-	1	9	6
New Mexico	-	-	29	-	2	-	-	-	-	7	6
Arizona *	-	-	-	-	-	-	-	-	-	-	12
Utah	-	-	-	-	-	-	-	-	-	2	3
Nevada *	-	-	-	-	-	1	-	-	-	-	2
PACIFIC	32	2	92	-	73	-	-	1	51	158	172
Washington	1	-	30	-	66	-	-	-	3	18	27
Oregon	-	-	3	-	3	-	-	-	4	13	23
California	31	2	-	-	3	-	-	1	44	124	117
Alaska	-	-	10	-	1	-	-	-	-	1	1
Hawaii	-	-	49	-	-	-	-	-	-	2	4
Guam *	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	-	-	16	-	-	-	-	-	-	-	18
Virgin Islands	---	---	---	---	---	---	---	---	---	---	-

*Delayed reports: Chickenpox: Me. 63, N.H. 28, Guam 4
 Encephalitis, primary: Md. delete 1, Okla. delete 1
 Hepatitis B: Ark. 2, Ariz. 2
 Hepatitis A: Me. 4, W. Va. delete 1, Ark. 8, La. delete 4, Ariz. 10, Nev. 11, Guam 4

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TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES
FOR WEEKS ENDING JULY 7, 1973 AND JULY 8, 1972 (27th 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	40	463	16,497	62	5	384	28	279	13,230	384	53	1,919
NEW ENGLAND	2	19	599	-	-	5	-	1	424	17	3	88
Maine *	-	4	46	-	-	-	-	-	45	-	2	52
New Hampshire	-	1	35	-	-	-	-	-	17	-	1	28
Vermont	-	-	17	-	-	-	-	-	5	-	-	3
Massachusetts	-	8	323	-	-	5	-	1	180	8	-	4
Rhode Island	1	-	41	-	-	-	-	-	35	-	-	-
Connecticut	1	6	137	-	-	-	-	-	142	9	-	1
MIDDLE ATLANTIC	6	92	3,305	-	-	33	1	13	1,714	89	2	14
Upstate New York	-	23	572	-	-	5	-	7	42	-	2	8
New York City	3	31	1,259	-	-	14	-	1	1,044	50	-	-
New Jersey	2	20	585	-	-	6	1	2	342	20	-	-
Pennsylvania	1	18	889	-	-	8	-	3	286	19	-	6
EAST NORTH CENTRAL	4	65	2,516	2	-	18	7	11	1,424	21	1	179
Ohio	1	22	768	-	-	5	4	8	380	9	-	26
Indiana	-	7	321	-	-	-	-	-	153	3	1	45
Illinois	2	7	746	-	-	5	3	3	164	-	-	48
Michigan	-	29	604	2	-	6	-	-	514	9	-	3
Wisconsin	1	-	77	-	-	2	-	-	213	-	-	57
WEST NORTH CENTRAL	5	29	660	8	-	12	1	10	656	1	22	574
Minnesota	-	1	80	-	-	3	-	-	171	1	9	207
Iowa	-	1	66	-	-	-	1	5	-	-	4	131
Missouri	4	23	314	8	-	7	-	5	212	-	3	49
North Dakota	1	1	24	-	-	-	-	-	12	-	3	98
South Dakota	-	1	45	-	-	1	-	-	63	-	-	32
Nebraska	-	-	42	-	-	1	-	-	42	-	-	3
Kansas	-	2	89	-	-	-	-	-	156	-	3	54
SOUTH ATLANTIC	5	83	3,220	6	-	222	13	142	3,622	110	6	154
Delaware *	-	1	39	-	-	-	-	7	56	3	-	1
Maryland	-	10	328	-	-	4	1	5	214	6	-	7
District of Columbia	-	6	151	-	-	-	-	-	278	12	-	-
Virginia	-	12	435	1	-	1	4	30	194	24	1	50
West Virginia	-	2	151	-	-	2	-	-	81	-	-	16
North Carolina	-	8	500	1	-	4	3	57	599	5	-	1
South Carolina	-	2	288	-	-	3	-	19	646	15	-	1
Georgia	1	15	543	3	-	1	5	24	521	5	1	49
Florida	4	27	785	1	-	207	-	-	1,033	40	4	29
EAST SOUTH CENTRAL	7	24	1,469	5	-	12	2	35	650	12	11	325
Kentucky *	1	7	348	1	-	2	-	-	134	2	9	177
Tennessee	4	7	462	3	-	6	-	20	399	7	1	111
Alabama	2	7	382	-	-	2	-	3	30	1	1	37
Mississippi	-	3	277	1	-	2	2	12	87	2	-	-
WEST SOUTH CENTRAL	8	54	1,634	40	-	16	3	57	1,927	48	3	383
Arkansas *	-	10	193	27	-	3	1	10	105	6	-	86
Louisiana *	3	2	262	-	-	5	-	-	464	15	2	27
Oklahoma	3	3	145	11	-	2	2	45	157	2	1	125
Texas	2	39	1,034	2	-	6	-	2	1,201	25	-	145
MOUNTAIN	-	19	544	-	1	5	1	4	451	11	-	17
Montana	-	2	26	-	-	-	-	-	32	-	-	-
Idaho	-	-	23	-	-	-	-	-	12	1	-	-
Wyoming	-	-	11	-	-	1	-	1	10	1	-	-
Colorado	-	5	108	-	1	1	-	1	119	-	-	-
New Mexico	-	7	120	-	-	1	1	2	102	-	-	2
Arizona *	-	3	200	-	-	2	-	-	143	2	-	15
Utah	-	1	19	-	-	-	-	-	17	-	-	-
Nevada	-	1	37	-	-	-	-	-	16	7	-	-
PACIFIC	3	78	2,550	1	4	61	-	6	2,362	75	5	185
Washington	-	6	224	-	-	4	-	3	287	1	-	2
Oregon	-	5	139	-	-	2	-	2	173	1	-	1
California	3	61	1,979	1	4	54	-	1	1,819	71	5	175
Alaska	-	-	54	-	-	-	-	-	44	1	-	7
Hawaii	-	6	154	-	-	1	-	-	39	1	-	-
Guam*	-	-	16	-	-	-	-	-	-	-	-	-
Puerto Rico	4	5	263	-	-	2	-	-	73	9	-	27
Virgin Islands	-	-	-	-	-	-	-	-	-	-	-	-

*Delayed reports: TB: Ky. delete 1, La. delete 1
Tularemia: Ark. 6
RMSF: Del. 3

Gonorrhea: Ariz. 135, Guam 14
Syphilis: Me. 1, Ariz. 1

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TABLE IV. DEATHS IN 122 UNITED STATES CITIES FOR WEEK ENDING JULY 7, 1973

Week No.

27

(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	634	389	22	20	SOUTH ATLANTIC	1,051	558	30	30
Boston, Mass.	162	83	8	2	Atlanta, Ga.	103	41	6	4
Bridgeport, Conn.	47	34	1	2	Baltimore, Md.	158	87	3	3
Cambridge, Mass.	23	16	2	3	Charlotte, N. C.	42	16	1	-
Fall River, Mass.	21	11	1	-	Jacksonville, Fla.	77	42	2	-
Hartford, Conn.	77	44	2	-	Miami, Fla.	98	57	4	2
Lowell, Mass.	23	18	-	-	Norfolk, Va.	49	29	-	4
Lynn, Mass.	19	14	-	-	Richmond, Va.	70	33	1	3
New Bedford, Mass.	32	23	-	3	Savannah, Ga.	36	24	-	2
New Haven, Conn.	46	28	3	-	St. Petersburg, Fla.	86	70	-	4
Providence, R. I.	48	30	1	6	Tampa, Fla.	76	33	4	4
Somerville, Mass.	11	9	-	1	Washington, D. C.	198	93	8	4
Springfield, Mass.	45	25	3	3	Wilmington, Del.	58	33	1	-
Waterbury, Conn.	33	18	1	-	EAST SOUTH CENTRAL	531	281	28	26
Worcester, Mass.	47	36	-	-	Birmingham, Ala.	84	35	8	1
MIDDLE ATLANTIC	3,005	1,788	110	111	Chattanooga, Tenn.	48	28	-	4
Albany, N. Y.	60	33	3	2	Knoxville, Tenn.	28	17	-	-
Allentown, Pa.	30	20	1	1	Louisville, Ky.	88	57	5	5
Buffalo, N. Y.	133	82	4	9	Memphis, Tenn.	127	65	3	7
Camden, N. J.	26	13	1	3	Mobile, Ala.	39	22	2	-
Elizabeth, N. J.	32	21	-	5	Montgomery, Ala.	31	19	3	3
Erie, Pa.	32	18	3	5	Nashville, Tenn.	86	38	7	6
Jersey City, N. J.	41	28	2	-	WEST SOUTH CENTRAL	1,087	579	73	31
Newark, N. J.	95	34	23	4	Austin, Tex.	35	16	3	2
New York City, N. Y. †	1,504	887	40	56	Baton Rouge, La.	43	26	-	3
Paterson, N. J.	48	30	4	4	Corpus Christi, Tex.	27	15	2	-
Philadelphia, Pa.	497	281	18	9	Dallas, Tex.	161	84	8	-
Pittsburgh, Pa.	157	89	7	3	El Paso, Tex.	49	26	4	6
Reading, Pa.	51	34	-	1	Fort Worth, Tex.	69	45	5	2
Rochester, N. Y.	123	91	2	9	Houston, Tex.	208	99	14	2
Schenectady, N. Y.	27	20	-	-	Little Rock, Ark.	50	26	2	4
Scranton, Pa.	36	25	-	-	New Orleans, La.	156	71	15	2
Syracuse, N. Y.	38	25	1	2	Oklahoma City, Okla. *	76	43	5	1
Trenton, N. J.	22	15	1	2	San Antonio, Tex.	111	61	9	3
Utica, N. Y.	23	19	-	-	Shreveport, La.	54	34	2	2
Yonkers, N. Y.	30	23	-	1	Tulsa, Okla.	48	33	4	4
EAST NORTH CENTRAL	2,212	1,296	73	59	MOUNTAIN	481	271	17	11
Akron, Ohio	66	42	4	-	Albuquerque, N. Mex.	51	28	1	-
Canton, Ohio	36	26	2	3	Colorado Springs, Colo.	27	12	-	1
Chicago, Ill.	647	369	24	19	Denver, Colo.	107	65	3	-
Cincinnati, Ohio	154	95	2	2	Las Vegas, Nev.	32	16	2	-
Cleveland, Ohio	127	73	3	1	Ogden, Utah	27	17	-	2
Columbus, Ohio	133	78	12	-	Phoenix, Ariz.	130	70	4	2
Dayton, Ohio	106	60	-	2	Pueblo, Colo.	12	10	-	4
Detroit, Mich.	307	168	5	5	Salt Lake City, Utah	57	29	5	-
Evansville, Ind.	47	33	-	5	Tucson, Ariz.	38	24	2	2
Fort Wayne, Ind.	31	16	4	1	PACIFIC	1,376	849	40	30
Gary, Ind.	24	10	1	2	Berkeley, Calif.	25	18	-	-
Grand Rapids, Mich.	52	30	3	5	Fresno, Calif.	43	26	3	-
Indianapolis, Ind.	92	51	2	3	Glendale, Calif.	15	12	1	1
Madison, Wis.	20	13	-	1	Honolulu, Hawaii	42	22	3	2
Milwaukee, Wis.	124	72	4	4	Long Beach, Calif.	83	46	4	1
Peoria, Ill.	32	18	2	1	Los Angeles, Calif.	417	249	9	14
Rockford, Ill.	35	21	-	4	Oakland, Calif.	74	43	2	1
South Bend, Ind.	27	18	1	1	Pasadena, Calif.	19	16	1	1
Toledo, Ohio	97	68	3	-	Portland, Oreg.	117	68	4	1
Youngstown, Ohio	55	35	1	-	Sacramento, Calif.	67	36	3	-
WEST NORTH CENTRAL	592	384	18	11	San Diego, Calif.	87	53	4	1
Des Moines, Iowa	64	43	3	-	San Francisco, Calif.	141	89	2	3
Duluth, Minn.	18	13	-	1	San Jose, Calif.	53	39	-	-
Kansas City, Kans.	28	11	5	-	Seattle, Wash.	114	80	3	-
Kansas City, Mo.	127	82	2	1	Spokane, Wash.	46	29	1	2
Lincoln, Nebr.	26	21	-	-	Tacoma, Wash.	33	23	-	3
Minneapolis, Minn.	74	51	2	1	Total	10,969	6,395	411	329
Omaha, Nebr.	54	41	-	2	Expected Number	12,262	6,954	548	388
St. Louis, Mo.	120	73	5	4	Cumulative Total (includes reported corrections for previous weeks)	354,348	209,714	12,969	15,291
St. Paul, Minn.	53	34	-	-					
Wichita, Kans.	28	15	1	2					

†Delayed report for week ended June 30, 1973
 *Estimate based on average percent of divisional total

TABLE III. CASES OF SPECIFIED NOTIFIABLE DISEASES: UNITED STATES FOR WEEKS ENDING JULY 7, 1973 AND JULY 8, 1972 (27th 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	3	123	288	22,486	25,182	20	882	837	776	50,853	140	24,919
NEW ENGLAND	-	10	57	7,250	2,872	4	40	35	81	2,536	14	3,501
Maine *	-	-	-	63	236	-	-	3	-	261	-	68
New Hampshire *	-	-	6	842	222	-	6	2	4	170	-	353
Vermont	-	2	2	116	120	-	2	-	2	240	-	43
Massachusetts	-	4	28	3,857	551	-	11	17	12	751	10	1,974
Rhode Island	-	-	-	594	517	2	3	10	1	273	-	205
Connecticut	-	4	21	1,778	1,226	2	18	3	62	841	4	858
MIDDLE ATLANTIC	1	18	52	2,159	860	3	123	103	148	6,605	20	4,088
Upstate New York	1	11	15	706	116	1	43	25	NN	NN	4	370
New York City	-	1	16	831	213	2	24	34	125	4,046	12	434
New Jersey*	-	2	8	338	478	-	28	20	15	1,417	2	2,999
Pennsylvania	-	4	13	284	53	-	28	24	8	1,142	2	285
EAST NORTH CENTRAL	-	16	113	7,801	10,398	6	116	111	119	13,403	46	5,627
Ohio	-	2	-	264	224	6	52	42	7	2,547	4	659
Indiana	-	3	14	568	1,190	-	4	11	30	1,081	8	904
Illinois	-	8	51	1,886	3,857	-	23	25	19	2,260	3	891
Michigan	-	3	35	4,015	1,868	-	32	29	21	3,772	20	1,718
Wisconsin	-	-	13	1,068	3,259	-	5	4	42	3,743	11	1,455
WEST NORTH CENTRAL	-	4	7	426	910	2	70	65	34	4,402	8	1,178
Minnesota	-	1	-	18	18	-	4	16	-	76	4	214
Iowa	-	-	3	275	641	2	17	2	15	2,770	2	183
Missouri	-	1	-	47	158	-	30	20	6	541	-	249
North Dakota	-	1	4	56	49	-	3	-	1	64	2	276
South Dakota	-	-	-	-	5	-	4	2	-	13	-	22
Nebraska	-	-	-	3	18	-	5	9	8	102	-	139
Kansas	-	1	-	27	21	-	7	16	4	836	-	95
SOUTH ATLANTIC	1	18	15	1,018	1,997	3	145	191	112	5,958	17	2,008
Delaware	-	-	-	8	47	-	-	1	3	249	-	8
Maryland	-	-	-	2	15	-	20	33	10	578	-	9
District of Columbia	1	1	-	3	2	-	4	7	-	55	-	2
Virginia	-	5	7	403	57	-	27	43	43	641	2	615
West Virginia	-	-	3	181	243	-	2	6	30	2,058	-	260
North Carolina	-	5	-	4	28	1	31	25	NN	NN	1	198
South Carolina	-	1	2	54	208	-	10	18	1	338	2	80
Georgia	-	2	-	42	153	-	17	6	-	25	2	9
Florida	-	4	3	321	1,244	2	34	52	25	2,014	10	827
EAST SOUTH CENTRAL	-	3	3	582	996	1	84	67	114	3,941	8	1,213
Kentucky	-	-	1	361	502	-	31	20	42	1,208	1	375
Tennessee	-	-	-	162	186	1	33	26	69	1,801	1	473
Alabama	-	3	1	5	128	-	14	13	3	480	-	182
Mississippi	-	-	1	54	180	-	6	8	-	452	6	183
WEST SOUTH CENTRAL	-	9	4	616	1,349	-	129	104	45	3,219	7	1,377
Arkansas*	-	-	-	68	13	-	13	9	4	325	-	109
Louisiana	-	2	-	83	82	-	26	31	-	63	-	100
Oklahoma*	-	1	1	50	9	-	15	6	11	380	-	165
Texas	-	6	3	415	1,245	-	75	58	30	2,451	7	1,003
MOUNTAIN	-	8	11	542	1,688	1	26	13	24	2,292	6	2,312
Montana	-	1	-	13	12	1	6	2	7	214	2	493
Idaho	-	-	4	236	19	-	4	3	-	110	-	32
Wyoming	-	-	5	72	51	-	-	1	-	418	-	5
Colorado	-	1	-	95	501	-	6	2	7	368	3	1,523
New Mexico	-	2	2	109	105	-	3	1	10	924	1	173
Arizona	-	4	-	16	847	-	3	1	-	140	-	17
Utah	-	-	-	1	153	-	2	2	-	111	-	66
Nevada	-	-	-	-	-	-	2	1	-	7	-	3
PACIFIC	1	37	26	2,092	4,112	-	149	148	99	8,497	14	3,615
Washington	-	3	5	972	964	-	16	11	2	1,391	3	647
Oregon	-	2	8	440	98	-	12	12	19	1,531	4	753
California*	1	29	13	599	2,948	-	117	117	69	4,676	6	2,181
Alaska	-	2	-	65	11	-	4	5	3	666	-	9
Hawaii	-	1	-	16	91	-	-	3	6	233	1	25
Guam*	-	-	-	9	4	-	-	11	-	15	-	7
Puerto Rico	-	-	25	1,645	522	-	4	4	22	587	1	24
Virgin Islands	---	-	---	-	1	---	-	2	---	17	---	2

*Delayed reports: Measles: Me. 6, N.H. 2, Okla. delete 1, Guam 2
Mumps: Me. 9, Ark. delete 1
Rubella: N.H. 2, N.J. delete 3, Calif. 26, Guam 1

SURVEILLANCE SUMMARY

VIBRIO PARAHAEMOLYTICUS GASTROENTERITIS — United States, 1969-1972

Thirteen common-source gastroenteritis outbreaks attributed to *Vibrio parahaemolyticus* were reported to CDC from Atlantic, Pacific, and Gulf Coast states and Hawaii in 1969-1972 (Table 2). Eight of the outbreaks, in which vibrios were isolated from patients' stool specimens, foods, or both, were classified as laboratory-confirmed. The other 5, in which vibrios were isolated from environments where suspect foods had been prepared, were classified as unconfirmed. In these outbreaks neither patients' stool specimens nor samples of suspect food were available for laboratory study. Maryland, which reported the first laboratory-confirmed outbreaks in 1971, accounted for 6 of the total, while 7 other states reported 1 each. All outbreaks occurred between June and October, and all were attributed to the consumption of contaminated seafood.

Approximately 1,200 persons were ill in all 13 outbreaks. Attack rates ranged from 24% to 88% (median 51%). Most cases were in adults, and no patterns of unusual susceptibility by age group or sex were noted. There was no evidence of secondary spread among family members of cases in any of the outbreaks. Incubation periods for individual cases ranged from 4 to 96 hours; median incubation periods for outbreaks ranged between 15 and 24 hours.

Diarrhea, the dominant symptom, was reported by 80%-100% of persons in all outbreaks. It was generally described as explosive and watery; no bloody or mucoid stools were noted. Abdominal cramps, nausea, and vomiting also occurred frequently. Headache was reported less often, while fever with or without chills was recorded in approximately 1/4 of the cases.

Duration of illness ranged from several hours to more than 10 days in individual cases, with a median of 72 hours. In several outbreaks a small percentage of ill persons were hospitalized, but no severe complications or deaths were reported.

Among the 8 laboratory-confirmed outbreaks, 8 dif-

ferent serotypes of *V. parahaemolyticus* were isolated from patients; in 3 instances, 2 or more different serotypes were isolated from patients within the same outbreak. Most gave a positive Kanagawa hemolysin test result, a trait characteristic of pathogenic strains of the organisms (1). Nineteen different serotypes were isolated from environmental and food samples; these serotypes rarely corresponded with those isolated from patients' stool specimens in the same outbreak, and all gave negative Kanagawa hemolysin tests.

Crab, shrimp, lobster, and oysters were incriminated as vehicles of infection on 1 or more occasions (Table 2). The incriminated food was eaten raw in 2 instances and cooked in 11. In both outbreaks involving raw seafood, inadequate refrigeration was held responsible. Among those involving cooked seafood, 2 were attributed to inadequate cooking times and temperatures followed by inadequate refrigerations, and the remaining 9 were attributed to cross-contamination between raw products and cooked products.

(Reported by Morris Fishbein, Division of Microbiology, Food and Drug Administration; and the Bacterial Diseases Branch, Epidemiology Program, CDC.)

Editorial Note

The recognition of *V. parahaemolyticus* as a cause of summertime foodborne disease outbreaks in many coastal states involving a variety of seafood products correlates well with the ecology of this organism in the United States (2). Critical to the documentation of such outbreaks has been the recent widespread use of thiosulfate citrate bile sucrose agar (TCBS), an excellent selective media for *V. parahaemolyticus*, by public health laboratories in this country. Persons conducting field investigations in which *V. parahaemolyticus* is suspect should use either Cary-Blair or Stuart's transport media for stool specimens and not the commonly employed buffered glycerol saline, which has been found inhibitory to *V. parahaemolyticus*.

In addition to the nonspecific gastroenteritis syndrome

Table 2
Epidemiologic Features of 13 *Vibrio parahaemolyticus* Gastroenteritis Outbreaks
United States — 1969-1972

Date	State	Vehicle	Persons Exposed	Number Ill	Attack Rate (Percent)
Confirmed Outbreaks					
August 1971	Maryland	steamed crab	559	320*	58
August 1971	Maryland	steamed crab	21	15	71
August 1971	Maryland	steamed crab	47	24	51
September 1971	Maryland	processed crab	100	24	24
July 1972	Maryland	steamed crab	26	20	77
August 1972	Massachusetts	processed lobster	36	31	86
August 1972	Louisiana	boiled shrimp	1,200	612*	51
October 1972	New Jersey	cooked crab and shrimp	15	12	60
Unconfirmed Outbreaks					
August 1969	Washington	roasted oysters	57	21	37
July-Sept. 1971	Texas	raw oysters	59	52	88
August 1971	Maryland	steamed crab	NA	43	NA
June 1972	Hawaii	raw crab	77	31	40
August 1972	Florida	steamed crab	NA	6	NA

*Estimated number of cases based on investigation of representative sample

NA — Information not obtained

GASTROENTERITIS – Continued

usually noted, occasional cases of dysentery-like illness with bloody and/or mucoid stools have been reported (3, 4).

In all outbreaks, stool isolates and food or environmental isolates differed with respect to serotype and Kanagawa test reactions; similar results have also been generally noted among hundreds of outbreaks reported in Japan. To date, these interesting laboratory observations have not been fully explained (5).

The primary involvement of cooked seafood in the U.S. outbreaks contrasts with the reported primary role of raw seafood in Japan. Outbreaks caused by either raw or cooked seafood should be preventable through the application of appropriate hygienic, cooking, and refrigeration practices.

References

1. Miyamoto Y, Kato T, Obara, et al: *In vitro* hemolytic characteristic of *Vibrio parahaemolyticus*: Its close correlation with human pathogenicity. *J Bacteriol* 100:1147-1149, 1969
2. Liston J, Baross J: Distribution of *Vibrio parahaemolyticus* in the natural environment. *J Milk Food Technol* 36:113-117, 1973
3. Chatterjee BD, Neogy KN, Gorbach SL: Study of *Vibrio parahaemolyticus* from cases of diarrhoea in Calcutta. *Indian J Med Res* 58:234-238, 1970
4. Center for Disease Control: *Morbidity and Mortality Weekly Report* 21:245-246, 1972
5. Sakazaki R: Recent trends of *Vibrio parahaemolyticus* as a causative agent of food poisoning. In *Proceeding of the 8th International Symposium The Microbiological Safety of Food*. Reading, England, 17-21 September 1972

**INTERNATIONAL NOTES
QUARANTINE MEASURES**

The following changes should be made in the "Supplement – Vaccination Certificate Requirements for International Travel," MMWR, Vol. 22, No. 17:

Pakistan

Cholera – Delete the note and insert: Cholera: A certificate is also required from travelers arriving from:

Africa: Angola

Asia: Bangladesh, Burma, India, Indonesia, Malaysia, Philippines, Thailand.

A Certificate is also required from travelers leaving Pakistan if they have been in an infected area. Pakistan recommends vaccination.

The *Morbidity and Mortality Weekly Report*, circulation 35,000, is published by the Center for Disease Control, Atlanta, Ga.

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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.

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DHEW Publication No. (CDC) 74-8017

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