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Epidemiologic Notes and Reports

Salmonellosis from Inadequately Pasteurized Milk — Kentucky

In late April 1984, three isolates of *Salmonella typhimurium*, all from specimens from persons associated with a convent in western Kentucky, were reported by the Kentucky Division for Laboratory Services to the Division of Epidemiology. Subsequent investigation revealed that at least 16 cases of gastroenteritis (predominantly diarrhea) were associated with the convent between March 28 and May 2. The likely vehicle was inadequately pasteurized milk.

One hundred forty nuns reside at the convent; additional persons are employed as caretakers, foodhandlers, and farm workers. All meals are prepared in the convent kitchen and are available to residents and employees.

In early May, 180 (90%) of 200 persons at risk filled out questionnaires on basic demographic information, recent gastrointestinal illness, and frequency of consuming milk, raw milk, chicken, turkey, pork, and eggs. Sixteen (9%) persons met the case definition of a positive stool culture for *S. typhimurium* or at least three loose stools per day lasting 2 or more days or any three of the following symptoms: fever, diarrhea (not meeting the criteria above), nausea and/or vomiting, or abdominal cramps; 12 additional persons (7%) who had gastrointestinal symptoms but did not meet the case definition were excluded from the statistical analysis. Ill persons had diarrhea (100%), abdominal cramps (63%), nausea (50%), fever (44%), and vomiting (13%). Diarrhea lasted 1-8 days (median 3 days), with two to 11 loose stools per day (median five). Patients were 21 years to 86 years of age (median 67 years). Fifteen (94%) were female, and 14 (88%) were convent residents. Three (19%) of the 16 consulted a physician.

Of persons filling out questionnaires, 14 (15%) of 91 persons who admitted drinking pasteurized milk became ill, but only two (3%) of 75 who claimed not to have drunk milk became ill. Persons drinking pasteurized milk were approximately six times more likely to develop illness ($p = 0.01$). No other risk factors were identified.

Fourteen (88%) of the 16 ill persons had onset on or after March 28, with three clusters of cases approximately 2 weeks apart. In late April, 24 symptomatic nuns and 18 asymptomatic foodhandlers submitted single stool-culture specimens. Five (31%) of the 16 ill persons, all nuns, had stool cultures positive for *S. typhimurium;* eight (50%) were negative; and three (19%) had no stool specimen submitted. A 69-year-old culture-positive ill nun was hospitalized for a Guillain-Barré-like illness 20 days after onset of gastrointestinal symptoms. A raw milk sample collected May 9 also yielded *S. typhimurium.* The isolate from milk and three isolates from humans had identical plasmid profiles. The remaining two human isolates were reported to be identical to each other and were probably equivalent to the other isolates. Antibiograms of all six isolates were the same.

Before early March 1984, the convent had its own herd of dairy cattle and pasteurized its own milk. At that time, the convent began purchasing raw milk from a Grade-A dairy farm in

Salmonellosis — Continued

the area. Since the fall of 1983, this latter dairy herd reportedly has had a recurrent problem with gastroenteritis, although no fecal sampling has been performed.

The purchased milk was pasteurized at the convent in 50-gallon lots in a 60-gallon steam pasteurizer. No time-temperature gauge/record or air space heater was available. Pasteurization temperatures and holding times during the epidemic period are not known but may have been as low as 54.5 C (130 F) for only 30 minutes.

A milk sample collected May 4, reportedly pasteurized to 62.8 C (145 F) for 30 minutes, was weakly phosphatase-positive, indicating inadequate pasteurization. A butter sample collected the same day was strongly phosphatase-positive.

Based on the identical plasmid profiles of *S. typhimurium* isolated from milk and humans, the evidence of inadequate pasteurization, and the association between milk consumption and illness, it was concluded that inadequate milk pasteurization accounted for this outbreak. Preventive recommendations centered around the pasteurization process: use of a recording thermometer and air space heater, pasteurization at 65.6 C (150 F) for 35-40 minutes, and routine phosphatase and bacteriologic testing.

No further cases have been reported.

Reported by D Adams, S Well, MA, Green River District Health Dept, BF Brown, MD, S Gregorio, DrPH, Div of Laboratory Svcs, L Townsend, Milk Control Br, JW Skaggs, DVM, Div of Epidemiology, MW Hinds, MD, State Epidemiologist, Kentucky Dept of Health Svcs; Div of Field Svcs, Epidemiology Program Office, Enteric Diseases Br, Div of Bacterial Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Salmonellosis caused by *S. typhimurium* transmitted in raw milk has been previously identified in Kentucky (*1*). The outbreak described here differs from the earlier one in that inadequate milk pasteurization, rather than raw milk consumption, accounted for the outbreak. Unpasteurized milk is a common cause of outbreaks and sporadic cases of disease in the United States. The list of bacteria responsible for illnesses caused by consumption of raw and inadequately pasteurized milk includes various *Salmonella* species, *Campylobacter, Brucella, Escherichia coli, Yersinia enterocolitica,* and *Listeria* (*2*). Recently, a large outbreak of illness occurring in older age groups characterized by profuse diarrhea lasting more than 4 weeks has been under investigation in Minnesota (*3*); the causative agent is not yet known, but there is a clear epidemiologic association with drinking raw milk. Health professionals and persons responsible for milk regulations should be aware of the many health hazards associated with drinking unpasteurized or inadequately pasteurized milk.

References

1. CDC. Salmonellosis—Kentucky. MMWR 1977;26:239.
2. Potter ME, Kaufman AF, Blake PA, Feldman RA. Unpasteurized milk—the hazards of a health fetish. JAMA (in press).
3. Minnesota Department of Health. Chronic diarrhea in Brainerd, Minnesota. Disease Control Newsletter 1984;11:57-8.

Outbreaks of Respiratory Illness among Employees in Large Office Buildings — Tennessee, District of Columbia

Recurring outbreaks of respiratory illness among office workers have led to epidemiologic and environmental investigations and to relocation of some or all occupants of the affected office areas. Outbreaks in two cities are summarized below.

Knoxville, Tennessee: An outbreak of febrile illness began during the afternoon and evening of September 21, 1981. About 40% of the 325 office workers in a seven-story building

Respiratory Illness — Continued

met the case definition of at least three symptoms (headaches, muscle aches, fever, chills, cough, or wheezing) and a time of onset after 11 a.m. (use of this time of onset helped to exclude individuals with preexisting respiratory conditions that were unrelated to exposures in the building). In most affected individuals, these symptoms subsided by the following morning. Subsequent outbreaks of febrile illness occurred in this same building on October 13 and October 15. After the latter outbreak, building occupants were moved to other office facilities.

In each outbreak, a temporal relationship was observed between starting the heating, ventilation, and air-conditioning (HVAC) system and the onset of symptoms. The HVAC system in this building contained two air washers (components of an air-handler unit that emit a water spray) and was contaminated with bacteria, fungi, protozoa, nematodes, and mites. No single microbial agent could be established as responsible for the outbreaks. The HVAC system was the mode of transmission for the organisms. The building remains vacant.

Washington, D.C.: In late January 1982, a persistent, influenza-like illness was reported among occupants of a large office suite on one floor of an eight-story building. Twelve of 41 employees working in the suite met the case definition of at least two of the following symptoms: headache, muscle aches, chest tightness, feverishness, chills, or nausea occurring on consecutive work days, including the last work day (Friday), with relief on weekends. Tests of the carbon-monoxide-diffusing capacity of affected individuals showed that individuals with two or more symptoms had lower single-breath, carbon-monoxide-diffusing capacities than did controls.

The suite was located directly beneath the kitchen of a cafeteria and had been subjected to a series of "floods" from drainage lines, including a drain from the cafeteria dishwasher. Numerous microorganisms, including *Acanthamoeba polyphaga* and *Thermoactinomyces vulgaris*, were isolated from the office and the HVAC system. However, attempts through serologic testing to link these agents specifically with illness in individuals produced inconclusive results. Epidemiologic evidence suggested that environmental contaminants present in the water drainage were associated with illness. All workers were removed from the affected office; the office was completely refurbished and is presently being reoccupied. There has been no recurrence of illness.

Reported by Div of Respiratory Disease Studies, National Institute for Occupational Safety and Health, CDC.

Editorial Note: Outbreaks of hypersensitivity pneumonitis (HP), humidifier fever, and similar syndromes among office workers have been described since 1970 (*1,2*). Symptoms include headache, fatigue, muscle aches, chills, and fever. Manifestations of pulmonary disease, such as chest tightness, coughing, and wheezing, were also observed. These outbreaks have been attributed to thermophilic actinomycetes, nonpathogenic amoeba, several fungi, and endotoxins (*3-6*). Sources of microbial contamination included humidifiers, air washers, and contaminated filters in air-handling units.

Since October 1981, the National Institute for Occupational Safety and Health has conducted environmental studies in six large multistory office buildings in which HP-like syndromes were reported or were alleged to occur, including those reported here (*7*). Results of these studies suggest that moisture incursion into occupied spaces and into HVAC system components may have been common to these outbreaks. Engineering measures thought to prevent the occurrence of such outbreaks are straightforward, feasible, and inexpensive. They include: (1) promptly and permanently repairing all external and internal leaks; (2) maintaining relative humidity below 70% in occupied spaces and in low-air-velocity plenums (at higher levels of humidity, the germination and proliferation of fungal spores is enhanced [*8,9*]); (3) preventing the accumulation of stagnant water under cooling-deck coils of air-

Respiratory Illness — Continued

handling units through proper inclination and continuous drainage of drain pans; (4) using steam, rather than recirculated water, as a water source for humidifiers in HVAC systems; however, such steam sources should not be contaminated with volatile amines; (5) replacing filters in air-handling units at regular intervals (these should have at least a moderate efficiency rating [50% or more] as measured by the atmospheric-dust spot test [*10,11*] and should be of the extended-surface type; prefilters [e.g., roll type] should be used before air passage over the higher-efficiency filters); (6) discarding, rather than disinfecting, carpets, upholstery, ceiling tiles, and other porous furnishings that are grossly contaminated; (7) providing outdoor air into ventilation systems at minimum rates per occupant of at least 20 cubic feet per minute in areas where occupants are smoking and at least 5 cubic feet per minute in nonsmoking areas (*12*). These activities should be considered in on-going preventive-maintenance programs.

References

1. Arnow PM, Fink JN, Schlueter DP, et al. Early detection of hypersensitivity pneumonitis in office workers. Am J Med 1978;64:236-42.
2. Kreiss K, Hodgson M. Building associated epidemics. In: J Walsh, C Dudney, E Copenhaver, eds. Indoor air pollution. Boca Raton, Florida: CRC Press, 1984:87-106.

(Continued on page 513)

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

Disease	36th Week Ending			Cumulative, 36th Week Ending		
	Sept. 8, 1984	Sept. 10, 1983	Median 1979-1983	Sept. 8, 1984	Sept. 10, 1983	Median 1979-1983
Acquired Immunodeficiency Syndrome (AIDS)	66	N	N	2,814	N	N
Aseptic meningitis	278	544	349	4,485	7,137	5,307
Encephalitis: Primary (arthropod-borne & unspec.)	28	72	66	674	1,114	893
Post-infectious	-	1	1	67	67	67
Gonorrhea: Civilian	15,091	17,665	17,814	567,669	615,117	677,108
Military	505	567	567	14,676	16,728	19,113
Hepatitis: Type A	389	328	440	14,310	14,289	17,328
Type B	526	479	378	17,368	16,358	13,964
Non A, Non B	59	77	N	2,512	2,355	N
Unspecified	94	138	186	4,055	4,903	6,917
Legionellosis	17	18	N	429	492	N
Leprosy	3	3	2	150	172	144
Malaria	38	29	29	630	549	750
Measles: Total*	59	16	20	2,278	1,222	2,542
Indigenous	57	10	N	2,029	1,012	N
Imported	2	6	N	249	210	N
Meningococcal infections: Total	24	25	32	1,994	2,011	2,011
Civilian	24	25	32	1,989	1,996	1,996
Military	-	-	-	5	15	14
Mumps	16	14	47	2,187	2,421	4,208
Pertussis	115	107	36	1,424	1,632	1,031
Rubella (German measles)	18	12	25	553	770	1,980
Syphilis (Primary & Secondary): Civilian	394	458	505	19,022	22,192	20,900
Military	2	7	7	224	283	257
Toxic Shock syndrome	13	9	N	306	306	N
Tuberculosis	330	407	470	14,558	16,005	18,456
Tularemia	7	10	8	224	214	171
Typhoid fever	12	11	9	219	284	319
Typhus fever, tick-borne (RMSF)	27	33	33	655	937	920
Rabies, animal	111	88	119	3,656	4,420	4,451

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1984		Cum. 1984
Anthrax	1	Plague	19
Botulism: Foodborne	7	Poliomyelitis: Total	2
Infant (Utah 1)	66	Paralytic	2
Other	6	Psittacosis (Ariz. 1)	59
Brucellosis (Va. 1, Tex. 1)	76	Rabies, human	1
Cholera	-	Tetanus (Wash. 1)	43
Congenital rubella syndrome	3	Trichinosis (Mass. 1)	60
Diphtheria	-	Typhus fever, flea-borne (endemic, murine)	15
Leptospirosis (Hawaii 6)	19		

*There were no cases of internationally imported measles reported for this week.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending September 8, 1984 and September 10, 1983 (36th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1984	1984	Cum. 1984	Cum. 1984	Cum. 1984	Cum. 1983	1984	1984	1984	1984	1984	Cum. 1984
UNITED STATES	2,814	278	674	67	567,669	615,117	389	526	59	94	17	150
NEW ENGLAND	93	15	37	1	16,104	15,581	8	32	1	17	-	7
Maine	-	-	-	-	672	776	-	-	-	-	-	-
N.H.	1	3	6	-	454	502	2	2	-	-	-	-
Vt.	-	1	3	-	261	307	-	-	-	-	-	-
Mass.	51	6	20	-	6,590	6,659	5	13	1	16	-	5
R.I.	6	3	-	-	1,171	843	-	8	-	-	-	2
Conn.	35	2	8	1	6,956	6,494	1	9	-	1	-	-
MID. ATLANTIC	1,239	52	88	8	76,538	78,328	44	113	10	10	-	30
Upstate N.Y.	116	27	30	5	11,803	12,608	5	17	2	1	-	2
N.Y. City	888	9	7	-	31,319	31,379	10	34	-	3	-	28
N.J.	173	12	24	-	13,026	14,655	13	30	4	6	-	-
Pa.	62	4	27	3	20,390	19,686	16	32	4	-	-	-
E.N. CENTRAL	124	29	172	17	78,415	88,049	5	33	8	4	6	6
Ohio	15	8	52	9	20,199	22,437	1	10	-	1	1	2
Ind.	20	5	36	-	8,564	8,906	1	6	2	1	4	-
Ill.	63	-	20	6	17,822	25,111	1	2	-	-	-	2
Mich.	16	16	41	-	23,056	23,847	2	15	6	2	1	2
Wis.	10	-	23	2	8,774	7,748	-	-	-	-	-	-
W.N. CENTRAL	26	14	55	1	27,837	28,930	14	12	1	1	1	1
Minn.	7	5	21	-	4,188	4,018	1	4	-	-	-	-
Iowa	1	4	23	-	3,045	3,158	5	2	1	-	-	1
Mo.	13	2	7	-	13,402	14,265	2	4	-	1	-	-
N. Dak.	-	1	-	-	267	301	-	-	-	-	-	-
S. Dak.	-	-	-	1	649	759	3	-	-	-	-	-
Nebr.	2	-	1	-	1,966	1,812	-	-	-	-	-	-
Kans.	3	2	3	-	4,320	4,617	3	2	-	-	1	-
S. ATLANTIC	399	62	100	15	144,561	159,399	27	115	6	10	5	6
Del.	4	-	1	-	2,637	2,861	1	-	-	-	-	-
Md.	28	-	23	-	16,562	20,302	-	-	-	-	-	-
D.C.	63	1	-	-	10,366	10,842	-	3	-	-	-	1
Va.	24	9	23	5	13,735	14,223	2	14	-	-	1	4
W. Va.	4	9	9	-	1,772	1,665	-	-	-	-	-	-
N.C.	9	15	20	7	23,380	24,460	-	20	-	1	1	-
S.C.	6	2	4	-	14,496	15,138	-	23	-	-	-	-
Ga.	39	12	2	1	26,362	31,760	5	11	1	1	3	-
Fla.	222	14	18	2	35,251	38,148	19	44	5	8	-	1
E.S. CENTRAL	20	40	35	6	50,048	51,660	18	45	3	-	2	-
Ky.	9	2	6	-	6,009	6,036	11	15	-	-	2	-
Tenn.	5	8	10	1	20,772	21,405	2	18	-	-	-	-
Ala.	4	29	17	5	15,744	15,837	3	12	2	-	-	-
Miss.	2	1	2	-	7,523	8,382	2	-	1	-	-	-
W.S. CENTRAL	181	12	47	4	77,491	86,612	56	27	2	28	1	16
Ark.	1	2	-	2	6,759	6,745	1	2	-	3	-	1
La.	24	-	6	-	17,251	16,246	6	3	-	4	-	1
Okla.	6	3	16	1	8,484	10,084	15	3	1	-	1	-
Tex.	150	7	25	1	44,997	53,537	34	19	1	21	-	14
MOUNTAIN	43	17	23	7	18,465	19,537	46	19	8	4	2	7
Mont.	-	4	-	-	775	824	4	2	-	-	1	-
Idaho	-	-	-	-	922	830	-	-	-	-	-	-
Wyo.	1	-	-	-	505	515	-	-	-	-	-	-
Colo.	25	5	7	-	5,268	5,489	10	4	-	2	-	-
N. Mex.	-	-	-	-	2,178	2,410	2	-	1	-	-	-
Ariz.	9	2	9	3	4,977	5,555	17	6	6	1	1	5
Utah	3	4	7	4	904	923	4	1	1	1	-	1
Nev.	5	2	-	-	2,936	2,991	9	6	-	-	-	1
PACIFIC	689	37	117	8	78,210	87,021	171	130	20	20	-	77
Wash.	34	8	7	-	5,650	6,773	8	9	2	2	-	3
Oreg.	7	-	-	-	4,717	4,672	28	12	2	1	-	1
Calif.	635	27	108	8	64,558	71,580	135	109	16	16	-	58
Alaska	1	-	-	-	1,968	2,270	-	-	-	1	-	-
Hawaii	12	2	2	-	1,317	1,726	-	-	-	-	-	15
Guam	-	U	-	-	95	114	U	U	U	U	U	-
P.R.	33	4	2	1	2,349	2,019	1	26	-	-	-	2
V.I.	-	U	-	-	325	192	U	U	U	U	U	-
Pac. Trust Terr.	-	U	-	-	-	-	U	U	U	U	U	-

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 8, 1984 and September 10, 1983 (36th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1984	1984	Cum. 1984	1984	Cum. 1984	Cum. 1983	Cum. 1984	1984	Cum. 1984	1984	Cum. 1984	Cum. 1983	1984	Cum. 1984	Cum. 1983
UNITED STATES	630	57	2,029	2	249	1,222	1,994	16	2,187	115	1,424	1,632	18	553	770
NEW ENGLAND	39	-	93	-	11	16	117	-	69	3	38	50	-	18	15
Maine	-	-	-	-	-	-	1	-	22	-	1	4	-	1	-
N.H.	-	-	33	-	3	3	7	-	15	-	6	7	-	1	4
Vt.	4	-	2	-	5	-	26	-	5	1	18	7	-	-	5
Mass.	22	-	48	-	-	5	42	-	10	1	10	26	-	16	6
R.I.	4	-	-	-	-	-	11	-	8	1	2	5	-	-	-
Conn.	9	-	10	-	3	8	30	-	9	-	1	1	-	-	-
MID ATLANTIC	100	-	111	-	30	94	348	2	255	6	126	304	14	217	134
Upstate N.Y.	25	-	21	-	10	9	120	1	66	6	72	91	-	101	25
N.Y. City	23	-	86	-	14	55	75	1	20	-	5	48	14	97	86
N.J.	30	-	4	-	2	27	69	-	130	-	11	19	-	15	3
Pa.	22	-	-	-	4	3	84	-	39	-	38	146	-	4	20
E.N. CENTRAL	57	6	608	-	69	640	317	3	874	2	352	376	-	78	115
Ohio	15	-	3	-	6	85	108	3	435	-	62	108	-	2	2
Ind.	2	-	2	-	1	400	38	-	50	-	222	44	-	3	23
Ill.	19	1	177	-	1	147	69	-	162	-	22	131	-	46	48
Mich.	10	5	407	-	54	7	61	-	157	2	23	26	-	19	15
Wis.	11	-	19	-	7	1	41	-	70	-	23	67	-	8	27
W.N. CENTRAL	18	35	38	-	7	7	121	1	89	2	108	102	3	34	36
Minn.	6	35	35	-	3	1	23	-	4	-	12	36	2	4	7
Iowa	1	-	-	-	-	-	21	1	20	1	10	6	-	1	-
Mo.	6	-	3	-	-	1	36	-	9	-	16	20	-	-	-
N. Dak.	1	-	-	-	-	-	1	-	2	-	-	1	-	3	-
S. Dak.	1	-	-	-	-	-	6	-	-	-	8	7	-	-	-
Nebr.	1	-	-	-	-	-	11	-	4	-	11	-	-	-	-
Kans.	2	-	-	-	4	5	23	-	50	1	51	32	1	26	29
S. ATLANTIC	96	1	15	-	28	195	413	3	165	3	110	203	-	21	91
Del.	4	-	-	-	-	-	3	-	2	-	2	3	-	-	-
Md.	23	-	6	-	14	10	32	1	33	-	8	26	-	1	3
D.C.	1	-	-	-	5	-	6	-	-	-	-	-	-	-	-
Va.	26	-	1	-	2	23	47	1	16	-	13	45	-	-	2
W. Va.	1	-	-	-	-	-	5	-	35	-	10	7	-	-	-
N.C.	7	-	-	-	-	1	61	-	17	1	22	23	-	-	10
S.C.	2	-	-	-	-	4	43	-	4	-	1	13	-	-	1
Ga.	8	-	-	-	1	8	84	-	17	-	10	58	-	2	11
Fla.	24	1	8	-	6	149	132	1	41	2	44	28	-	18	64
E.S. CENTRAL	6	-	1	-	2	6	117	2	44	-	12	23	-	9	11
Ky.	-	-	1	-	-	1	47	-	9	-	1	10	-	3	10
Tenn.	2	-	-	-	2	-	29	1	14	-	7	5	-	-	-
Ala.	4	-	-	-	-	5	28	-	6	-	-	4	-	3	1
Miss.	-	-	-	-	-	-	13	1	15	-	4	4	-	3	-
W.S. CENTRAL	57	15	501	-	23	74	210	2	116	15	259	314	-	13	99
Ark.	-	-	-	-	-	13	27	1	6	-	15	19	-	3	-
La.	9	-	8	-	-	25	44	-	-	2	6	5	-	-	9
Okla.	8	-	-	-	8	1	23	N	N	13	221	237	-	-	-
Tex.	40	15	493	-	15	35	116	1	110	-	17	53	-	10	90
MOUNTAIN	21	-	111	1	32	4	67	-	205	-	97	164	-	16	29
Mont.	1	-	-	-	-	-	2	-	6	-	19	1	-	-	3
Idaho	2	-	-	-	23	-	6	-	9	-	7	15	-	1	8
Wyo.	-	-	-	-	-	1	2	-	2	-	3	6	-	2	4
Colo.	4	-	-	-	6	2	24	-	16	-	34	101	-	2	-
N. Mex.	1	-	88	-	-	-	7	N	N	-	6	9	-	-	-
Ariz.	9	-	-	1 §	1	1	14	-	165	-	20	14	-	1	6
Utah	4	-	23	-	2	-	7	-	5	-	6	18	-	6	7
Nev.	-	-	-	-	-	-	5	-	2	-	2	-	-	4	1
PACIFIC	236	-	551	1	47	186	284	3	370	84	322	96	1	147	240
Wash.	8	-	125	-	13	5	43	1	37	79	137	16	-	1	9
Oreg.	10	-	-	- §	-	9	41	N	N	-	14	6	1	2	13
Calif.	215	-	273	1 §	30	169	192	2	307	3	100	68	-	139	216
Alaska	-	-	-	-	-	2	7	-	8	-	-	4	-	1	1
Hawaii	3	-	153	-	4	1	1	-	18	2	71	2	-	4	1
Guam	1	U	83	U	2	2	1	U	5	U	-	-	U	2	-
P.R.	4	-	1	-	-	89	3	-	114	-	-	10	-	7	4
V.I.	-	U	-	U	-	5	-	U	5	U	-	-	U	-	2
Pac. Trust Terr.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 8, 1984 and September 10, 1983 (36th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1984	Cum. 1983	1984	Cum. 1984	Cum 1983	Cum. 1984	Cum. 1984	Cum. 1984	Cum. 1984
UNITED STATES	19,022	22,192	13	14,558	16,005	224	219	655	3,656
NEW ENGLAND	354	463	1	417	463	4	12	4	36
Maine	3	15	-	20	26	-	-	-	10
N.H.	13	19	1	25	30	-	-	-	12
Vt.	1	1	-	9	6	-	-	-	-
Mass.	204	283	-	222	250	4	10	3	9
R.I.	14	16	-	30	35	-	-	-	-
Conn.	119	129	-	111	116	-	2	1	5
MID ATLANTIC	2,504	2,834	1	2,688	2,794	-	35	19	289
Upstate N.Y.	180	258	-	450	422	-	12	7	50
N.Y. City	1,551	1,662	-	1,057	1,133	-	8	1	-
N.J.	463	543	-	601	616	-	9	3	20
Pa.	310	371	1	580	623	-	6	8	219
E.N. CENTRAL	910	1,210	5	1,946	2,091	6	31	48	160
Ohio	172	312	1	365	330	-	5	31	15
Ind.	94	89	4	221	226	-	3	5	18
Ill.	308	585	-	806	914	6	10	9	61
Mich.	284	162	-	429	512	-	5	3	19
Wis.	52	62	-	125	109	-	8	-	47
W.N. CENTRAL	279	269	-	460	517	71	6	44	576
Minn.	77	106	-	79	103	1	2	-	59
Iowa	11	14	-	48	46	-	-	6	117
Mo.	141	101	-	235	261	35	3	12	41
N. Dak.	10	2	-	10	6	-	-	-	122
S. Dak.	-	11	-	17	33	32	-	4	151
Nebr.	11	11	-	22	20	-	-	4	38
Kans.	29	24	-	49	48	3	1	18	48
S. ATLANTIC	5,658	5,895	2	3,028	3,232	5	30	310	1,074
Del.	14	25	-	39	25	-	-	1	4
Md.	339	374	-	303	254	-	3	28	594
D.C.	233	265	-	124	130	-	6	-	-
Va.	284	409	-	317	345	-	8	48	164
W. Va.	13	20	1	92	97	-	-	6	33
N.C.	584	555	1	447	480	1	1	119	21
S.C.	535	373	-	363	295	-	1	69	41
Ga.	963	1,084	-	429	589	4	1	36	139
Fla.	2,693	2,790	-	914	1,017	-	10	3	78
E.S. CENTRAL	1,330	1,518	-	1,330	1,451	3	5	68	180
Ky.	73	103	-	320	347	-	2	15	46
Tenn.	357	421	-	406	454	3	2	35	62
Ala.	433	606	-	399	374	-	1	11	72
Miss.	467	388	-	205	276	-	-	7	-
W.S. CENTRAL	4,652	5,786	1	1,658	1,977	101	12	147	735
Ark.	132	140	-	178	223	75	-	25	79
La.	822	1,192	-	222	313	7	1	2	44
Okla.	155	148	1	157	172	16	2	97	87
Tex.	3,543	4,306	-	1,101	1,269	3	9	23	525
MOUNTAIN	429	468	1	387	443	26	11	11	205
Mont.	2	7	-	17	34	3	1	8	90
Idaho	19	6	-	24	24	6	-	1	9
Wyo.	4	10	-	-	11	1	-	2	13
Colo.	108	110	-	44	60	5	2	-	34
N. Mex.	60	128	-	80	85	2	3	-	9
Ariz.	156	117	1	177	171	3	4	-	36
Utah	13	17	-	29	31	3	-	-	2
Nev.	67	73	-	16	27	3	1	-	12
PACIFIC	2,906	3,749	2	2,644	3,037	8	77	4	401
Wash.	83	135	1	131	164	2	2	-	1
Oreg.	79	95	-	111	123	2	1	1	1
Calif.	2,686	3,460	1	2,212	2,544	4	69	2	392
Alaska	4	10	-	43	42	-	1	1	7
Hawaii	54	49	-	147	164	-	4	-	-
Guam	-	-	U	5	5	-	-	-	-
P.R.	565	698	-	268	337	-	3	-	43
V.I.	8	16	U	2	2	-	3	-	-
Pac. Trust Terr.	-	-	U	-	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending September 8, 1984 (36th Week Ending)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	602	407	128	37	14	16	51
Boston, Mass.	178	115	34	12	8	9	21
Bridgeport, Conn.	40	32	6	2	-	-	1
Cambridge, Mass.	10	9	1	-	-	-	1
Fall River, Mass.	29	21	8	-	-	-	-
Hartford, Conn.	59	37	12	8	2	-	1
Lowell, Mass.	15	9	5	-	-	1	1
Lynn, Mass.	15	8	3	4	-	-	1
New Bedford, Mass.	32	24	7	1	-	-	-
New Haven, Conn.	35	18	11	4	-	2	4
Providence, R.I.	43	28	11	1	1	2	6
Somerville, Mass.	6	4	2	-	-	-	1
Springfield, Mass.	49	36	9	1	2	1	5
Waterbury, Conn.	41	31	8	2	-	-	4
Worcester, Mass.	50	35	11	2	1	1	5
MID. ATLANTIC	2,388	1,937	238	69	60	58	105
Albany, N.Y.	63	46	14	-	3	-	1
Allentown, Pa.	17	14	3	-	-	-	-
Buffalo, N.Y.	111	80	21	5	-	5	9
Camden, N.J.	31	21	10	-	-	-	-
Elizabeth, N.J.	27	23	3	1	-	-	5
Erie, Pa.†	30	20	8	1	1	-	1
Jersey City, N.J.	50	31	10	8	-	1	1
N.Y. City, N.Y. §	1,317	1,197	6	24	35	30	47
Newark, N.J.	43	22	12	1	5	2	4
Paterson, N.J.	36	21	8	1	2	4	-
Philadelphia, Pa.†	304	190	84	16	5	9	13
Pittsburgh, Pa.†	43	28	11	2	1	1	2
Reading, Pa.	26	22	4	-	-	-	1
Rochester, N.Y.	128	94	20	7	6	1	13
Schenectady, N.Y.	12	10	2	-	-	-	-
Scranton, Pa.†	35	27	5	-	-	3	3
Syracuse, N.Y.	49	36	6	3	2	2	-
Trenton, N.J.	22	18	4	-	-	-	-
Utica, N.Y.	16	14	2	-	-	-	2
Yonkers, N.Y.	28	23	5	-	-	-	3
E.N. CENTRAL	1,944	1,223	425	145	73	78	64
Akron, Ohio	42	28	9	3	2	-	-
Canton, Ohio	44	31	10	1	2	-	-
Chicago, Ill.	476	263	103	47	25	38	9
Cincinnati, Ohio	116	65	36	5	4	6	11
Cleveland, Ohio	136	83	34	11	4	4	2
Columbus, Ohio	79	50	18	5	3	3	4
Dayton, Ohio	102	69	26	5	2	-	3
Detroit, Mich.	201	121	44	22	6	8	6
Evansville, Ind.	43	31	7	3	1	1	2
Fort Wayne, Ind.	55	35	14	3	1	2	1
Gary, Ind. §	13	13	-	-	-	-	-
Grand Rapids, Mich.	66	48	10	3	3	2	1
Indianapolis, Ind.	151	99	30	12	7	3	4
Madison, Wis.	41	24	9	2	4	2	3
Milwaukee, Wis.	96	65	21	4	2	4	1
Peoria, Ill.	35	25	9	-	1	-	3
Rockford, Ill.	38	32	3	2	1	-	5
South Bend, Ind.	35	24	6	3	1	1	3
Toledo, Ohio	127	84	26	9	4	4	6
Youngstown, Ohio	48	33	10	5	-	-	-
W.N. CENTRAL	589	388	114	40	23	23	23
Des Moines, Iowa	44	32	5	1	3	3	3
Duluth, Minn.	17	7	3	3	1	3	-
Kansas City, Kans.	27	18	7	2	-	-	-
Kansas City, Mo.	90	60	21	6	1	2	5
Lincoln, Nebr.	20	14	2	2	2	-	1
Minneapolis, Minn.	84	58	13	5	3	5	3
Omaha, Nebr.	54	35	13	1	3	1	2
St. Louis, Mo.	125	87	19	8	4	7	3
St. Paul, Minn.	66	45	9	7	3	2	3
Wichita, Kans.	62	32	22	5	3	-	3
S. ATLANTIC	911	553	227	67	30	34	30
Atlanta, Ga.	113	63	34	10	5	1	3
Baltimore, Md.	170	103	37	16	6	8	4
Charlotte, N.C.	44	28	8	2	2	4	2
Jacksonville, Fla.	103	62	27	10	3	1	3
Miami, Fla.	96	56	27	8	3	2	-
Norfolk, Va.	53	28	15	2	4	4	2
Richmond, Va.	54	29	13	5	2	5	4
Savannah, Ga.	36	21	11	-	-	4	-
St. Petersburg, Fla.	82	73	8	1	-	-	6
Tampa, Fla.	49	28	17	4	-	-	2
Washington, D.C.	69	35	18	7	4	5	2
Wilmington, Del.	42	27	12	2	1	-	2
E.S. CENTRAL	599	372	133	40	29	25	32
Birmingham, Ala.	100	71	16	8	4	1	3
Chattanooga, Tenn.	29	18	8	2	1	-	1
Knoxville, Tenn.	71	41	13	7	2	8	4
Louisville, Ky.	74	42	24	2	1	5	5
Memphis, Tenn.	134	82	27	8	14	3	9
Mobile, Ala.	63	36	16	7	3	1	2
Montgomery, Ala.	26	17	6	1	1	1	1
Nashville, Tenn.	102	65	23	5	3	6	7
W.S. CENTRAL	979	542	232	101	51	53	30
Austin, Tex.	34	22	4	4	4	-	1
Baton Rouge, La.	25	15	3	4	1	2	-
Corpus Christi, Tex.	30	17	7	4	1	1	1
Dallas, Tex.	166	93	45	18	5	5	5
El Paso, Tex.	54	32	11	7	3	1	3
Fort Worth, Tex.	58	33	12	7	3	3	2
Houston, Tex.	257	127	67	28	16	19	3
Little Rock, Ark.	58	36	14	2	3	3	4
New Orleans, La.	81	41	26	9	3	2	-
San Antonio, Tex.	121	67	23	10	8	13	4
Shreveport, La.	20	13	5	2	-	-	1
Tulsa, Okla.	75	46	15	6	4	4	6
MOUNTAIN	519	307	105	54	27	26	21
Albuquerque, N.Mex.	76	46	12	10	6	2	4
Colo. Springs, Colo.	20	14	4	-	1	1	3
Denver, Colo.	102	56	24	10	6	6	4
Las Vegas, Nev.	48	27	14	4	2	1	1
Ogden, Utah	23	14	4	4	-	1	1
Phoenix, Ariz.	115	70	25	8	6	6	-
Pueblo, Colo.	15	10	2	2	1	-	-
Salt Lake City, Utah	47	24	5	10	4	4	-
Tucson, Ariz.	73	46	15	6	1	5	8
PACIFIC	1,748	1,133	355	140	67	46	98
Berkeley, Calif.	12	9	3	-	-	-	-
Fresno, Calif.	69	43	12	7	4	3	2
Glendale, Calif.	31	26	4	1	-	-	1
Honolulu, Hawaii	65	44	11	3	4	3	9
Long Beach, Calif.	75	47	19	6	2	1	7
Los Angeles, Calif.	615	400	121	53	25	9	24
Oakland, Calif.	49	35	7	6	1	-	7
Pasadena, Calif.	25	16	6	2	-	1	2
Portland, Oreg.	109	72	25	5	4	3	2
Sacramento, Calif.	109	75	20	7	3	4	9
San Diego, Calif.	108	63	24	8	6	7	9
San Francisco, Calif.	138	84	34	14	2	4	5
San Jose, Calif.	130	87	20	12	8	3	9
Seattle, Wash.	126	76	29	10	6	5	2
Spokane, Wash.	47	31	10	4	1	1	6
Tacoma, Wash.	40	25	10	2	1	2	4
TOTAL	10,279††	6,862	1,957	693	374	359	454

* Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

** Pneumonia and influenza

† Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

†† Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

Respiratory Illness – Continued

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International Notes

Diarrheal Diseases Control Program: Global Activities, 1983

In its Interim Program Report for 1983,*† the World Health Organization (WHO) Diarrheal Diseases Control (CDD) Program gives a brief overview of its activities and progress to date. Some of the major developments described in the report are summarized below:

HEALTH SERVICES COMPONENT

National program planning and implementation: Eighteen countries formulated plans of operation for national CDD programs in 1983, bringing the total to 72. Of these, 52 (72%) now have operational CDD programs, 14 having been implemented in 1983 (Figure 1).

Training: The CDD Program Managers Training Course was held five times in 1983 and attended by 170 participants from 49 countries. In addition, the first nine Supervisory Skills Training Courses were held and attended by 410 participants from 14 countries. Modules from this course were used in two combined Diarrheal Diseases Control/Expanded Program on Immunization courses and at workshops for United Nations Children's Emergency Fund (UNICEF) field staff. Further technical training courses were held in clinical management, laboratory diagnosis, epidemiology, and environmental health. The number of regional and national CDD training centers increased to 37 with the addition of units in five institutes in the Regions of the Americas and the Eastern Mediterranean.

Production of Oral Rehydration Salts (ORS): Technical collaboration in ORS production was undertaken by WHO and UNICEF with 12 countries in 1983, while UNICEF supplied 29

*The full report (document WHO/CDD/84.10) is obtainable in English or French from: The Director, Diarrhoeal Diseases Control Programme, WHO, 1211 Geneva 27, Switzerland.

†A summary of the program report for 1981-1982 appeared in *Weekly Epidemiological Record* No. 21, 1983, pp. 157-8.

Diarrheal Diseases — Continued

million packets to 78 countries. Thirty-eight developing countries now produce ORS. The Program also continued its research and development activities to develop a more stable and improved ORS formulation.

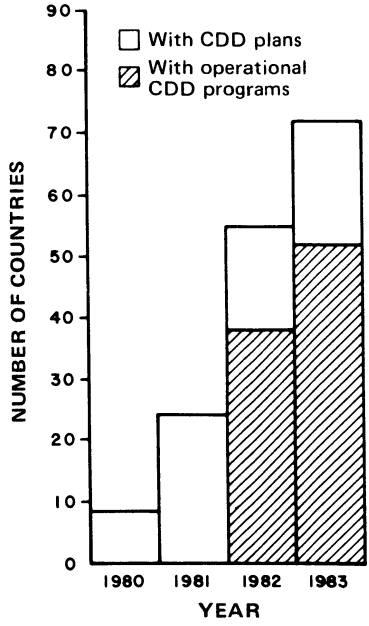
Health education and promotion: Thirty countries in four Regions developed promotional and educational materials in 1983, bringing the total to 43 since 1980.

Evaluation: The Program field-tested and refined its management information system to enable it to monitor progress toward the achievement of its global targets. In addition, it conducted a questionnaire survey to determine the impact of oral rehydration therapy (ORT) in hospitals, which revealed significant decreases in diarrhea admission rates in seven of eight hospitals, decreases in overall diarrhea case-fatality rates in five of eight hospitals, and decreases in inpatient diarrhea case-fatality rates in four of 13 hospitals. An additional 29 diarrhea morbidity and mortality surveys were conducted in 15 countries in 1983, and the methodology of these surveys was revised to increase its accuracy. The Program reviewed six national CDD programs, bringing the total number to 10; of these, seven utilized the Program's comprehensive review methodology.

RESEARCH COMPONENT

Support of research projects: The Program continued to provide support to biomedical and operational research through its global and regional Scientific Working Groups (SWGs) and their Steering Committees. These groups awarded support to 71 new projects in 1983, bringing the total number of projects supported by the Program to 231. These projects were undertaken in 68 countries by investigators from 71 countries, and 59% were in developing countries. In the area of biomedical research, support was provided to 51 of 116 projects

FIGURE 1. Development of national diarrheal diseases control programs (CDD), 1980-1983



Diarrheal Diseases — Continued

submitted; so far, 147 projects have been undertaken in 43 countries in all WHO Regions, and 46% were in developing countries. In addition, five research training grants were awarded to enable investigators to receive appropriate training for specific projects. Regarding operational research, four Regional Offices convened regional SWGs or Steering Committees in 1983. Support was awarded by five Regions to 20 of 71 projects submitted, bringing the total number of projects funded to 84. These projects have been undertaken in 45 countries in all WHO Regions.

Research areas: The broad biomedical research areas receiving support from the three global SWGs continued to be: (1) development of more stable and more effective ORS and homemade solutions and appropriate feeding regimens during diarrhea; (2) etiology and epidemiology of acute diarrhea; (3) development and evaluation of improved diagnostic tests (in particular, to detect rotavirus and enterotoxigenic *Escherichia coli*); (4) development and testing of new vaccines (e.g., against typhoid fever, rotavirus diarrhea, and cholera); and (5) development and testing of new and existing antidiarrheal drugs. The majority of operational research projects were concerned with etiology/epidemiology and case management of acute diarrhea, especially the delivery of ORT in local settings. Research was also in progress on community attitudes and practices in relation to diarrheal disease and on the development of local educational materials.

Research training and strengthening: Research training activities included three courses for research workers; an interregional Workshop on Clinical Trials, attended by investigators from six institutes conducting clinical trials with WHO support, a regional Workshop on Electron Microscopy and Immunoelectron Microscopy attended by investigators undertaking research in viral diarrheas, and a course on Laboratory Aspects of Diarrheal Diseases. In addition, the SWG on Drug Development and Management of Acute Diarrhea awarded institution strengthening grants to three institutes to permit them to improve their facilities and capabilities for conducting clinical trials.

During the 1982-1983 biennium, $13.7 million was received by the Program from 19 contributors. The estimated obligations of the Program for the 1984-1985 biennium amount to $19.7 million.

Reported in Weekly Epidemiological Record *1984;59:245-7.*

Influenza — Southern Hemisphere, Asia, the Tropics, 1984

Influenza usually occurs from about April through September in the Southern Hemisphere and often occurs throughout the year in the tropics. Surveillance in these regions may, therefore, identify strains that subsequently appear in the Northern Hemisphere.

Thus far in 1984, circulation of influenza types A(H1N1), A(H3N2), and B has been detected, with no clear pattern of large increases in one virus type or subtype compared to the others. Recent isolates have most often been associated with sporadic cases or localized outbreaks. Table 1 illustrates the reported influenza virus isolates in the Southern Hemisphere, the tropics, and Asia from April to July 1984.

Reported by Virus Diseases Unit, World Health Organization, Geneva, Switzerland; WHO Collaborating Center for Influenza, Influenza Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Influenza — Continued

TABLE 1. Reported influenza virus isolates — Southern Hemisphere, Asia, and the tropics, 1984

Country	Virus	Period of isolations
Australia	B	July
	A(H1N1)	April-July
	A(H3N2)	June
Brazil	A(H1N1)	April
	B	April
Chile	B	June-July
Taiwan	A(H1N1)	April
	B	April-July
Honduras	A(H3N2)	May-July
Hong Kong	A(H3N2)	June-July
	B	June-July
Korea	B	April
Madagascar	A(H1N1)	June-July
Papua New Guinea	B	June-July
Singapore	A(H1N1)	May
	A(H3N2)	May-July
	B	May
South Africa	A(H1N1)	May-June
	A(H3N2)	May-June
	B	June
Uruguay	B	May

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