CENTER FOR DISEASE CONTROL

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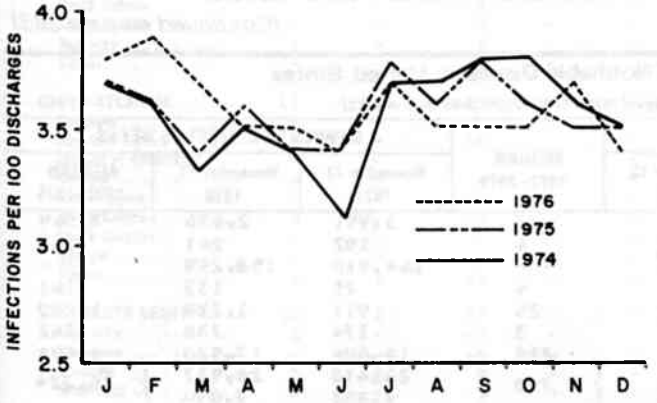
MORBIDITY AND MORTALITY WEEKLY REPORT

Surveillance Summary

National Nosocomial Infections Study — United States, 1975-76

Hospitals participating in the National Nosocomial Infections Study (NNIS) during 1975-76 reported a nosocomial infection rate of 356.6 infections per 10,000 patients discharged.* Although the rate fluctuated from month to month, no marked change has occurred in the reported rate of infection since the data collection system was revised in July 1974 (Figure 1).

FIGURE 1. Overall mean nosocomial infection incidence, by month of report, all sites, 1974-76



During 1975-76, 83 hospitals in 31 states reported nosocomial infections regularly to NNIS. A total of 92,001 infections were reported in 2,579,668 patients. The reported rate of infection was lowest in community hospitals and highest in municipal and county hospitals (Table 1). The rate of infection also varied greatly by service, ranging from 1.0% in pediatric services and 1.5% in newborn nurseries to 1.9% in obstetrical, 3.1% in gynecological, 3.7% in medical, and 5.0% in surgical services. For most services the rate of infection has remained fairly constant for the last several years, but for the gynecology services the rate has decreased steadily from approximately 5.1% in 1972 to 3.0% in 1976.

Urinary tract infections (UTIs) were the most common site of nosocomial infection, accounting for 53% of infections on the medical services, 38% on the surgical services, and 17% on the pediatric services. Surgical wound infections accounted for 33% of the infections of patients on the surgical services, while lower respiratory tract infections (LRIs) were reported for 21% of the infections of medical patients and 15% of the infections of surgical patients. Upper respiratory tract infections accounted for only 1%-2% of infections of medical and surgical patients, but 5.5% of nosocomial infections of pediatric patients. Sporadic cases of nosocomial gastroenteritis occurred rarely; clusters of infections at this site were occasionally reported. Of all nosocomial gastroenteritis reported, 62% of cases were on the pediatric service or the newborn nursery. Over 50% of the nosocomial infections reported from the nursery were cutaneous.

TABLE 1. Reported nosocomial infection rates, by category of hospital, NNIS, 1975-76

Category of Hospital	% of All Patients Discharged	% of Patients With Nosocomial Infections
Community*	38.5	2.56
Community-teaching*	32.0	3.63
Federal	3.2	4.54
Municipal/county	8.6	5.77
University	17.8	4.39
TOTAL	**100.0**	**3.57**

*Community-teaching hospitals are acute-care, general hospitals approved for internship and residency training programs, with a clinical house staff to bed ratio of >1:20. Community hospitals are acute-care, non-governmental or university hospitals which do not meet the house staff standards for community-teaching hospitals.

Bacteremias reported to NNIS are classified as primary or secondary. Primary bacteremia, defined as bacterial infection of the blood with no other site on the patient infected with the same pathogen before onset of the blood infection, was reported at a rate of 14.7 per 10,000 discharges during the 2-year period. Secondary bacteremia, which is an infection of the blood bacteriologically, temporally, and clinically related to an infection at another site on the patient, occurred at a rate of 15.1. The rates varied by category of hospital, ranging for primary bacteremia from 6.3 in community hospitals to 28.7 in municipal hospitals and 29.1 in university hospitals. Similarly, the rates for secondary bacteremia ranged from 6.3 in community hospitals to

*A nosocomial infection is one which occurs during hospitalization but which was not present or incubating upon admission of the patient to the hospital. Infections with onset after the patient has been discharged are also considered nosocomial if the infecting pathogens are judged to have been acquired during hospitalization. The nosocomial infection rates described in this article and the accompanying tables are calculated using either total or service-specific patient discharges for the denominator. Patient deaths are considered discharges and are included in the denominator.

25.9 in university and 36.9 in municipal hospitals. Secondary bacteremia occurred with 4.4% of nosocomial infections reported by NNIS hospitals,** but this figure ranged from 6.4% in pediatric services to 5.1% on medical, 4.3% on surgical, and 1.2% on gynecological services. Secondary bacteremia was primarily associated with infection occurring at the most common sites: UTIs, LRIs, and surgical wound infections. In addition, infections occurring intra-abdominally or in burn wounds were also associated with a high rate of secondary bacteremia.

Of the reported infections, 91.3% were cultured. Site-pathogen tabulations for reported isolates (Table 2) show that 6 groups of pathogens accounted for 70.8% of all isolates: *Escherichia coli* (21.4%), *Staphylococcus aureus* (11.3%), *Streptococcus* group D (10.8%), *Pseudomonas* spp (10.1%), *Proteus* spp (8.7%), and *Klebsiella* spp (8.5%). Over 79% of the *Proteus* isolates were *P. mirabilis,* and almost 71% of the *Pseudomonas* isolates were *Ps. aeruginosa.* Pathogens most frequently associated with secondary bacteremia included *E. coli, S. aureus, Klebsiella pneumoniae, Proteus* spp, *S. pneumoniae, Enterobacter* spp, *Serratia* spp, and *Bacteroides fragilis.*

Reported by Hospital Infections Br, Bacterial Diseases Div, Bur of Epidemiology, CDC.

**Primary bacteremia infections are excluded from the denominator for this rate since by definition secondary bacteremia cannot occur subsequent to primary bacteremia.

TABLE 2. Incidence of selected pathogens causing nosocomial infections, by site of infection, NNIS, 1975-76*

Pathogens	Primary Bacteremia	Surgical Wound	Lower Respiratory	Urinary Tract	Cutaneous	Other	All Sites†
Staphylococcus aureus	2.2	20.4	7.4	2.8	8.8	5.8	47.3
Staphylococcus epidermidis	1.2	6.3	0.4	4.7	1.2	1.8	15.4
Streptococcus pneumoniae	0.2	0.1	2.8	0.0	0.0	0.3	3.5
Streptococcus, Group A	0.1	0.9	0.3	0.1	0.2	0.5	2.0
Streptococcus, Group B	0.3	1.6	0.3	1.3	0.3	0.7	4.5
Streptococcus, Group D	1.2	13.6	1.0	24.2	1.8	3.3	45.1
Escherichia coli	2.3	19.6	5.5	55.0	2.2	4.9	89.6
Klebsiella spp.	1.6	6.8	7.9	15.7	1.2	2.4	35.5
Enterobacter spp.	0.9	5.2	4.8	7.5	0.9	1.4	20.6
Proteus-Providencia spp.	0.6	9.2	4.2	19.3	1.5	2.9	37.8
Pseudomonas aeruginosa	0.8	5.4	5.2	15.2	1.2	2.1	29.8
Pseudomonas, other spp.	0.3	2.5	2.1	5.9	0.4	1.1	12.2
Serratia spp.	0.5	1.3	2.0	4.0	0.4	0.5	8.7
Citrobacter spp.	0.1	1.1	0.7	1.8	0.2	0.3	4.2
Other oxidizers	0.4	0.8	1.1	1.1	0.2	0.5	4.0
Bacteroides fragilis	1.0	7.9	0.1	0.1	0.3	1.3	10.7
Other anaerobes	0.4	4.3	0.1	0.0	0.3	0.9	6.1
Candida spp.	0.5	1.1	2.6	7.2	0.8	3.4	15.6
Other fungi	0.2	0.3	0.4	2.4	0.2	0.5	4.1
Other**	1.3	11.0	10.7	4.4	1.6	5.8	34.9
No culture	—	7.5	11.7	2.1	2.3	7.6	31.2
TOTAL†	16.1	126.8	71.3	174.8	26.0	47.9	462.8

*Number of isolates reported per 10,000 patients discharged; in some instances up to 4 isolates were reported per infection

**Includes infections cultured but from which no pathogen was isolated or identified

†Rate differs from that reported in text because more than 1 pathogen may have been isolated from a single site

Editorial Note: One-third of all infections in hospitalized patients are nosocomial. Nationally, it is estimated that about 1.5 million patients annually develop a nosocomial infection and that the direct cost of providing medical care for this problem exceeds 1 billion dollars.

(Continued on page 383)

Table I. Summary—Cases of Specified Notifiable Diseases: United States

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

DISEASE	45th WEEK ENDING		MEDIAN 1972–1976	CUMULATIVE, FIRST 45 WEEKS		MEDIAN 1972–1976
	November 12, 1977	November 13, 1976		November 12, 1977	November 13, 1976	
Aseptic meningitis	82	69	80	3,991	2,836	3,569
Brucellosis	3	4	4	192	261	167
Chickenpox	1,305	1,900	—	164,910	158,299	—
Diphtheria	—	1	4	75	133	161
Encephalitis: Primary	24	25	25	911	1,279	1,279
Encephalitis: Post-Infectious	3	2	3	174	238	242
Hepatitis, Viral: Type B	298	224	218	14,006	12,920	8,494
Hepatitis, Viral: Type A	567	421	743	26,410	28,937	36,224
Hepatitis, Viral: Type unspecified	201	110		7,853	7,030	
Malaria	9	6	6	462	405	365
Measles (rubeola)	132	260	260	53,607	35,936	25,130
Meningococcal infections, total	28	26	26	1,498	1,336	1,197
Civilian	28	26	26	1,488	1,319	1,177
Military	—	—	—	10	17	27
Mumps	408	329	894	17,710	34,875	51,174
Pertussis	69	10	—	1,517	826	—
Rubella (German measles)	121	94	143	19,153	11,254	15,482
Tetanus	1	1	1	57	59	83
Tuberculosis	562	580	—	26,254	28,442	—
Tularemia	3	7	2	145	124	124
Typhoid fever	8	6	6	349	366	366
Typhus, tick-borne (Rky. Mt. spotted fever)	5	6	3	1,074	852	742
Venereal Diseases:						
Gonorrhea: Civilian	18,427	17,809	—	865,365	874,543	—
Gonorrhea: Military	334	495	—	23,319	25,545	—
Syphilis, primary and secondary: Civilian	309	378	—	17,755	20,882	—
Syphilis, primary and secondary: Military	5	4	—	261	299	—
Rabies, in animals	58	47	47	2,670	2,615	2,615

Table II. Notifiable Diseases of Low Frequency: United States

	CUM.		CUM.
Anthrax:	—	Poliomyelitis, total:	10
Botulism:*	87	Paralytic: Minn. 1	9
Congenital rubella syndrome:	14	Psittacosis:	58
Leprosy:	112	Rabies in man:	1
Leptospirosis: *Okla. 1	38	Trichinosis: Conn. 1, Ups. NY 1	98
Plague:	15	Typhus, murine: Texas 2	68

*Delayed reports: Botulism: Alaska 6; Leptospirosis: Ala. 4

Table III

Cases of Specified Notifiable Diseases: United States

Weeks Ending November 12, 1977 and November 13, 1976 – 45th Week

AREA REPORTING	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS, VIRAL			MALARIA	
						Primary: Arthropod-borne and Unspecified		Post Infectious	Type B	Type A	Type Unspecified		
	1977	1977	1977	1977	CUM. 1977	1977	1976	1977	1977	1977	1977	1977	CUM. 1977
UNITED STATES	82	3	1,305	–	75	24	25	3	298	567	201	9	462
NEW ENGLAND	2	–	71	–	–	–	2	–	7	8	2	–	25
Maine	–	–	5	–	–	–	–	–	1	–	–	–	1
New Hampshire	–	–	14	–	–	–	–	–	–	–	–	–	3
Vermont	–	–	37	–	–	–	–	–	–	1	–	–	2
Massachusetts	–	–	–	–	–	–	–	–	–	4	2	–	4
Rhode Island	2	–	5	–	–	–	–	–	5	2	–	–	5
Connecticut	–	–	10	–	–	–	2	–	1	1	–	–	10
MIDDLE ATLANTIC	10	–	40	–	5	–	1	1	26	61	19	3	106
Upstate New York	4	–	32	–	–	–	–	–	13	39	7	1	24
New York City	2	–	8	–	5	–	1	–	2	2	3	1	49
New Jersey*	4	–	NN	–	–	–	–	–	11	20	9	1	15
Pennsylvania	–	–	–	–	–	–	–	1	NA	NA	NA	–	18
EAST NORTH CENTRAL	21	–	541	–	–	10	3	1	47	125	25	1	34
Ohio	2	–	54	–	–	8	–	–	9	48	–	1	13
Indiana*	9	–	32	–	–	–	2	–	5	4	8	–	2
Illinois	–	–	43	–	–	–	1	1	8	37	14	–	2
Michigan*	2	–	194	–	–	1	–	–	19	23	2	–	14
Wisconsin	8	–	218	–	–	1	–	–	6	13	1	–	3
WEST NORTH CENTRAL	1	–	114	–	1	1	4	–	21	28	5	–	35
Minnesota	–	–	–	–	–	–	–	–	15	10	–	–	12
Iowa	–	–	91	–	–	1	–	–	1	1	2	–	1
Missouri*	–	–	–	–	1	–	2	–	3	1	–	–	16
North Dakota	–	–	1	–	–	–	–	–	–	–	–	–	1
South Dakota	–	–	3	–	–	–	–	–	–	1	1	–	1
Nebraska	1	–	8	–	–	–	2	–	–	–	–	–	–
Kansas*	–	–	11	–	–	–	–	–	2	15	2	–	4
SOUTH ATLANTIC	11	1	116	–	–	2	–	–	45	77	39	2	88
Delaware	–	–	–	–	–	–	–	–	–	–	2	–	–
Maryland	1	–	16	–	–	–	–	–	14	8	3	–	21
District of Columbia*	–	–	–	–	–	–	–	–	1	–	8	–	6
Virginia*	4	–	6	–	–	2	–	–	6	14	6	1	21
West Virginia	–	–	70	–	–	–	–	–	–	7	–	–	2
North Carolina	4	–	NN	–	–	–	–	–	5	14	5	–	9
South Carolina	–	–	–	–	–	–	–	–	2	4	7	–	–
Georgia	–	–	–	–	–	–	–	–	9	17	–	–	8
Florida	2	1	24	–	–	–	–	–	8	13	8	1	21
EAST SOUTH CENTRAL	10	1	77	–	–	6	4	–	17	26	–	1	11
Kentucky	3	–	66	–	–	–	1	–	4	2	–	–	4
Tennessee	–	–	NN	–	–	–	–	–	9	14	–	–	1
Alabama	5	1	8	–	–	–	3	–	3	2	–	1	5
Mississippi	2	–	3	–	–	6	–	–	1	8	–	–	1
WEST SOUTH CENTRAL	10	–	83	–	3	1	1	–	32	66	36	–	26
Arkansas	2	–	40	–	–	–	–	–	3	8	2	–	2
Louisiana	–	–	NN	–	–	1	1	–	–	1	–	–	2
Oklahoma	3	–	4	–	–	–	–	–	9	27	12	–	–
Texas	5	–	39	–	3	–	–	–	20	30	22	–	22
MOUNTAIN	1	1	100	–	5	–	–	–	24	44	22	–	14
Montana	–	1	3	–	–	–	–	–	–	1	–	–	2
Idaho	1	–	33	–	–	–	–	–	1	1	–	–	–
Wyoming	–	–	5	–	–	–	–	–	–	–	–	–	2
Colorado	–	–	33	–	–	–	–	–	13	11	8	–	7
New Mexico*	–	–	–	–	4	–	–	–	5	8	1	–	1
Arizona	–	–	NN	–	1	–	–	–	2	20	11	–	2
Utah	–	–	26	–	–	–	–	–	1	3	2	–	–
Nevada*	–	–	–	–	–	–	–	–	2	–	–	–	–
PACIFIC	16	–	163	–	61	4	10	1	79	132	53	2	123
Washington	–	–	145	–	55	–	5	–	1	8	6	–	5
Oregon	5	–	1	–	–	–	–	–	5	15	5	–	2
California*	11	–	–	–	4	3	5	1	71	108	41	2	110
Alaska	–	–	14	–	2	1	–	–	1	1	1	–	2
Hawaii	–	–	3	–	–	–	–	–	1	–	–	–	4
Guam	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
Puerto Rico	–	–	9	–	–	–	–	–	2	1	6	–	2
Virgin Islands	–	–	–	–	–	–	–	–	–	–	–	–	–

NN: Not notifiable
NA: Not available
*Delayed reports: Asep. meng.: N. Mex. +1; Chickenpox: Mo. +54, Calif. +2; Enceph.: Kans. –1; Hep. B: Mich. –17, Mo. –1, Va. –2, Nev. +3; Hep. A: N.J. +2, Ind. –1, Mich. +17, Mo. –1, Nev. +6,; Hep. unsp. N.J. –1, Mo. –1, D.C. +7, Nev. +4

Table III-Continued
Cases of Specified Notifiable Diseases: United States
Weeks Ending November 12, 1977 and November 13, 1976 – 45th Week

REPORTING AREA	MEASLES (Rubeola)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1977	CUMULATIVE		1977	CUMULATIVE		1977	CUM. 1977	1977	1977	CUM. 1977	CUM. 1977
		1977	1976		1977	1976						
UNITED STATES	132	53,607	35,862	28	1,498	1,331	408	17,710	69	121	19,153	57
NEW ENGLAND	1	2,487	448	3	61	67	23	720	1	2	1,221	1
Maine	1	173	9	–	3	1	5	78	–	–	70	–
New Hampshire*	–	511	9	–	3	6	–	92	–	–	243	–
Vermont	–	294	95	–	6	4	–	8	–	1	65	–
Massachusetts	–	635	37	2	18	21	1	128	–	1	388	–
Rhode Island	–	64	15	–	2	7	2	65	–	–	134	–
Connecticut	–	810	283	1	29	28	15	349	1	–	321	1
MIDDLE ATLANTIC	15	8,418	7,124	7	215	195	8	1,363	4	31	6,069	5
Upstate New York	4	3,849	2,955	1	53	74	4	313	2	2	3,375	1
New York City	8	753	477	1	52	51	–	506	2	6	329	1
New Jersey	–	197	618	2	47	29	3	360	–	2	1,785	2
Pennsylvania	3	3,619	3,074	3	63	41	1	184	–	21	580	1
EAST NORTH CENTRAL	59	11,520	15,216	3	158	168	119	5,955	7	55	3,902	5
Ohio	–	1,859	579	–	61	68	19	709	2	2	1,132	1
Indiana	3	4,349	3,492	1	13	8	1	347	–	4	969	1
Illinois	26	1,815	1,673	1	24	20	57	1,113	3	5	339	1
Michigan	27	1,041	5,885	–	45	61	22	2,009	1	12	1,008	2
Wisconsin	3	2,456	3,587	1	15	11	20	1,777	1	32	454	–
WEST NORTH CENTRAL	11	9,388	1,312	1	75	84	168	4,117	–	8	540	9
Minnesota	5	2,630	426	–	25	14	3	13	–	–	17	2
Iowa	5	4,314	45	–	6	10	11	1,319	–	3	173	1
Missouri*	1	915	24	1	32	34	117	1,502	–	2	42	3
North Dakota	–	26	3	–	1	3	–	20	–	3	16	–
South Dakota*	–	75	4	–	4	3	–	59	–	–	18	–
Nebraska	–	214	55	–	2	6	1	79	–	–	3	–
Kansas*	–	1,214	755	–	5	14	36	1,128	–	–	271	3
SOUTH ATLANTIC	8	4,669	2,199	6	323	259	15	880	6	9	1,699	12
Delaware	–	22	130	–	7	9	3	140	–	1	27	–
Maryland	–	372	715	–	22	22	1	73	–	–	6	–
District of Columbia	–	14	13	–	–	3	–	6	–	–	–	–
Virginia	2	2,742	774	2	32	39	1	112	–	2	582	1
West Virginia*	5	259	202	–	9	8	1	203	–	1	158	–
North Carolina	–	65	17	1	70	50	3	66	–	–	447	–
South Carolina	1	156	4	–	35	36	–	14	–	–	230	–
Georgia	–	768	3	1	53	26	–	26	1	1	56	1
Florida	–	271	341	2	95	66	6	240	5	4	193	10
EAST SOUTH CENTRAL	–	2,014	891	1	156	122	15	978	–	2	1,947	5
Kentucky	–	1,191	753	1	32	23	2	112	–	1	85	1
Tennessee	–	707	121	–	41	50	5	583	–	1	1,743	2
Alabama	–	78	–	–	53	35	7	243	–	–	110	2
Mississippi	–	38	17	–	30	14	1	40	–	–	9	–
WEST SOUTH CENTRAL	8	2,150	820	3	288	196	24	1,605	2	3	822	11
Arkansas	–	29	17	–	16	13	5	118	–	–	3	2
Louisiana	5	80	278	2	132	35	–	56	–	–	27	2
Oklahoma	1	65	298	–	14	21	11	546	–	–	33	–
Texas	2	1,976	227	1	126	127	8	885	2	3	759	7
MOUNTAIN	7	2,541	5,185	–	33	39	5	620	–	1	384	2
Montana	–	1,162	284	–	4	5	–	12	–	–	16	1
Idaho	2	163	2,020	–	4	6	1	127	–	–	13	–
Wyoming	–	19	4	–	1	–	–	4	–	–	6	1
Colorado	–	504	331	–	1	6	2	273	–	–	241	–
New Mexico*	–	256	16	–	9	4	–	105	–	–	11	–
Arizona	4	323	227	–	10	10	–	–	–	1	17	–
Utah	1	21	2,237	–	3	6	2	83	–	–	71	–
Nevada	–	93	66	–	1	2	–	16	–	–	9	–
PACIFIC	23	10,420	2,667	4	189	201	31	1,472	49	10	2,569	7
Washington	4	548	354	1	27	34	4	307	–	–	449	–
Oregon	–	366	173	–	17	17	9	271	45	2	118	–
California	19	9,411	2,128	1	111	125	17	835	4	8	1,587	7
Alaska	–	60	9	1	31	22	–	30	–	–	1	–
Hawaii	–	35	3	1	3	3	1	29	–	–	414	–
Guam	NA	9	16	–	1	–	NA	6	NA	NA	11	–
Puerto Rico	1	996	459	–	1	5	58	834	–	–	35	10
Virgin Islands	–	14	17	–	–	1	–	189	–	–	2	–

NA: Not available
*Delayed reports: Men. inf.: N. Mex. +1; Mumps: Mo. +6, Kans. –1; Pertussis: N.H. +1, W. Va. –47; Rubella: N.H. +4, S. Dak. +68

Table III-Continued

Cases of Specified Notifiable Diseases: United States

Weeks Ending November 12, 1977 and November 13, 1976 — 45th Week

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS-FEVER TICK-BORNE (RMSF)		VENEREAL DISEASES (Civilian Cases Only)						RABIES IN ANIMALS
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1977	CUM. 1977	CUM. 1977	1977	CUM. 1977	1977	CUM. 1977	1977	CUMULATIVE 1977	CUMULATIVE 1976	1977	CUMULATIVE 1977	CUMULATIVE 1976	CUM. 1977
UNITED STATES	562	26,254	145	8	349	5	1,074	18,427	865,365	874,543	309	17,755	20,882	2,670
NEW ENGLAND	19	969	2	–	19	–	10	488	23,298	24,614	11	700	711	47
Maine	3	76	–	–	–	–	–	77	1,742	2,102	1	26	21	32
New Hampshire	–	25	–	–	1	–	–	34	967	738	–	4	10	1
Vermont	–	32	–	–	–	–	–	14	580	611	–	7	9	–
Massachusetts	9	544	2	–	13	–	5	161	9,845	11,607	6	488	510	8
Rhode Island	2	81	–	–	3	–	3	46	1,858	1,762	–	8	17	–
Connecticut	5	211	–	–	2	–	2	156	8,306	7,794	4	167	144	6
MIDDLE ATLANTIC	91	4,252	3	3	67	–	74	1,526	90,367	100,096	42	2,501	3,482	101
Upstate New York	30	747	3	–	8	–	41	360	15,538	16,700	1	232	210	59
New York City	22	1,339	–	1	27	–	2	646	34,978	43,671	26	1,574	2,201	–
New Jersey	24	1,063	–	2	21	–	11	57	16,139	15,538	9	326	493	28
Pennsylvania	15	1,103	–	–	11	–	20	463	23,712	24,187	6	369	578	14
EAST NORTH CENTRAL	117	4,078	3	–	32	–	37	2,602	137,437	137,403	28	1,809	1,802	130
Ohio*	14	700	1	–	10	–	17	425	36,560	34,126	5	421	433	–
Indiana	8	468	–	–	3	–	2	250	12,712	13,213	5	139	91	9
Illinois	65	1,606	–	–	6	–	16	951	44,454	47,796	15	936	954	39
Michigan*	21	1,124	–	–	12	–	2	726	31,671	30,010	3	218	227	6
Wisconsin	9	180	2	–	1	–	–	250	12,040	12,258	–	95	97	76
WEST NORTH CENTRAL	15	673	26	–	22	–	33	1,092	45,212	46,097	10	398	400	667
Minnesota	–	184	–	–	5	–	–	93	8,045	8,040	7	129	90	241
Iowa	6	80	–	–	–	–	1	144	5,273	5,844	1	40	38	108
Missouri	5	373	23	–	12	–	18	612	18,834	18,405	2	155	161	50
North Dakota	–	27	–	–	1	–	–	20	846	716	–	–	–	134
South Dakota	–	44	2	–	–	–	2	23	1,365	1,364	–	9	5	120
Nebraska*	–	35	1	–	1	–	1	46	3,864	3,848	–	25	33	3
Kansas	4	130	–	–	3	–	11	154	6,985	7,880	–	40	73	41
SOUTH ATLANTIC	108	5,718	11	1	56	2	574	4,841	212,903	213,922	50	4,814	6,296	320
Delaware	–	54	–	–	–	–	3	77	2,945	3,001	–	19	58	2
Maryland*	26	820	2	–	4	–	75	812	26,250	27,858	3	297	502	–
District of Columbia	6	293	–	–	1	–	–	254	13,931	14,552	6	484	495	–
Virginia*	14	652	2	–	8	1	155	464	22,216	22,784	NA	465	598	5
West Virginia	4	211	–	–	5	–	5	84	2,886	2,700	–	3	22	9
North Carolina*	14	929	2	–	4	–	218	914	32,121	30,844	6	655	1,141	12
South Carolina	16	523	2	1	4	1	53	518	20,138	20,108	1	213	322	32
Georgia	10	776	3	–	14	–	64	774	40,987	40,562	15	1,071	953	189
Florida	18	1,460	–	–	16	–	1	944	51,429	51,513	19	1,607	2,205	71
EAST SOUTH CENTRAL	76	2,435	8	–	11	1	170	1,455	76,383	77,399	20	691	806	73
Kentucky	19	636	2	–	5	–	43	305	10,357	10,275	6	93	112	27
Tennessee	20	750	5	–	2	1	100	569	30,386	30,825	6	224	268	35
Alabama	11	609	1	–	1	–	19	184	21,018	21,574	2	146	170	11
Mississippi	26	440	–	–	3	–	8	397	14,622	14,725	6	228	256	–
WEST SOUTH CENTRAL	61	3,070	72	1	30	2	158	2,894	109,024	109,710	45	2,582	2,492	712
Arkansas	8	328	49	1	7	–	53	168	8,349	10,145	–	61	91	104
Louisiana	15	558	1	–	1	–	6	548	16,524	16,033	2	610	512	22
Oklahoma	4	262	12	–	2	2	71	215	10,581	10,705	–	69	86	222
Texas	34	1,922	10	–	20	–	28	1,963	73,570	72,827	43	1,842	1,803	364
MOUNTAIN	15	738	14	–	27	–	13	753	34,982	35,666	6	407	521	177
Montana	–	48	1	–	–	–	6	29	1,842	1,780	–	5	11	45
Idaho	–	28	–	–	–	–	4	37	1,592	1,929	1	12	22	–
Wyoming	–	18	1	–	–	–	2	33	818	729	1	5	5	1
Colorado	2	103	3	–	8	–	1	196	9,115	8,981	2	109	118	57
New Mexico	4	142	–	–	–	–	–	94	5,130	6,429	–	111	127	19
Arizona	7	313	3	–	13	–	–	174	9,690	10,542	2	140	186	44
Utah	–	34	6	–	5	–	–	66	2,102	1,964	–	10	20	11
Nevada	2	52	–	–	1	–	–	124	4,693	3,312	–	15	32	–
PACIFIC	60	4,121	6	3	85	–	5	2,776	135,759	129,636	97	3,853	4,372	443
Washington	NA	272	–	–	2	–	–	275	10,560	10,948	NA	216	146	2
Oregon	2	156	1	–	3	–	1	118	9,357	9,680	2	127	95	7
California	54	3,105	5	3	78	–	4	2,255	108,719	102,883	93	3,451	4,032	397
Alaska*	–	77	–	–	–	–	–	83	4,264	3,783	–	25	22	37
Hawaii	4	511	–	–	2	–	–	45	2,839	2,342	2	34	77	–
Guam	NA	49	–	NA	1	NA	–	NA	179	290	NA	2	2	–
Puerto Rico	7	337	–	–	7	–	–	56	2,789	2,385	9	456	539	49
Virgin Islands	–	1	–	–	–	–	–	6	184	210	1	9	48	–

NA: Not available

*Delayed reports: TB: Ohio –6, Mich. –4, Md. –2, N.C. –2, Alaska –1; RMSF: Va. –2; Syphilis: Nebr. –1

Table IV
Deaths in 121 United States Cities*
Week Ending November 12, 1977 — 45th Week

REPORTING AREA	ALL CAUSES					Pneumonia and Influenza
	ALL AGES	65 Years and Over	45-64 Years	25-44 Years	Under 1 Year	ALL AGES
NEW ENGLAND	542	355	138	27	12	29
Boston, Mass.	143	93	36	9	2	7
Bridgeport, Conn.	41	25	9	4	2	4
Cambridge, Mass.	15	10	1	–	4	1
Fall River, Mass.	22	12	8	1	–	–
Hartford, Conn.	45	28	11	4	1	1
Lowell, Mass.	25	18	5	1	–	1
Lynn, Mass.	17	14	3	–	–	1
New Bedford, Mass.	29	27	1	1	–	–
New Haven, Conn.	32	23	8	1	–	–
Providence, R.I.	61	38	19	2	1	7
Somerville, Mass.	7	6	1	–	–	–
Springfield, Mass.	32	20	10	1	–	1
Waterbury, Conn.	31	16	13	1	1	2
Worcester, Mass.	42	25	13	2	1	4
MIDDLE ATLANTIC	2,485	1,560	656	171	44	120
Albany, N. Y.	46	32	8	4	–	1
Allentown, Pa.	22	17	5	–	–	–
Buffalo, N. Y.	131	78	38	12	2	14
Camden, N. J.	26	17	8	1	–	1
Elizabeth, N. J.	18	10	8	–	–	1
Erie, Pa.	21	11	6	–	3	4
Jersey City, N. J.	37	32	1	1	–	1
Newark, N. J.	52	27	16	5	2	2
New York City, N. Y.	1,366	834	366	107	24	53
Paterson, N. J.	30	16	9	4	1	4
Philadelphia, Pa.	301	177	92	20	8	11
Pittsburgh, Pa.	88	53	28	4	2	10
Reading, Pa.	47	35	8	2	1	2
Rochester, N. Y.	94	73	17	1	1	8
Schenectady, N. Y.	28	22	4	2	–	–
Scranton, Pa.	26	20	5	1	–	1
Syracuse, N. Y.	83	59	17	6	–	4
Trenton, N. J.	30	17	11	1	–	–
Utica, N. Y.	9	6	3	–	–	1
Yonkers, N. Y.	30	24	6	–	–	2
EAST NORTH CENTRAL	2,078	1,247	549	141	75	59
Akron, Ohio	65	39	19	3	3	–
Canton, Ohio	28	17	8	–	–	3
Chicago, Ill.	543	298	150	51	25	5
Cincinnati, Ohio	132	87	29	9	4	2
Cleveland, Ohio	164	90	47	15	4	3
Columbus, Ohio	137	75	37	12	8	1
Dayton, Ohio	65	36	21	5	–	1
Detroit, Mich.	231	129	75	14	8	5
Evansville, Ind.	44	32	6	3	1	3
Fort Wayne, Ind.	56	44	8	1	1	4
Gary, Ind.	13	3	4	4	–	–
Grand Rapids, Mich.	43	32	9	–	–	6
Indianapolis, Ind.	132	84	35	6	4	5
Madison, Wis.	27	16	7	1	3	3
Milwaukee, Wis.	134	97	28	4	4	2
Peoria, Ill.	38	25	5	4	4	7
Rockford, Ill.	42	28	12	1	1	4
South Bend, Ind.	42	24	14	2	2	–
Toledo, Ohio	98	69	19	3	2	5
Youngstown, Ohio	44	22	16	3	1	–
WEST NORTH CENTRAL	670	417	158	38	30	21
Des Moines, Iowa	54	38	11	4	1	–
Duluth, Minn.	20	16	2	–	1	4
Kansas City, Kans.	39	20	14	2	1	2
Kansas City, Mo.	104	60	26	6	7	3
Lincoln, Nebr.	29	22	6	–	–	–
Minneapolis, Minn.	88	59	15	8	3	2
Omaha, Nebr.	62	27	23	6	5	1
St. Louis, Mo.	155	100	30	8	10	2
St. Paul, Minn.	65	42	16	3	2	2
Wichita, Kans.	54	33	15	1	–	5
SOUTH ATLANTIC	1,118	593	320	94	78	42
Atlanta, Ga.	133	72	34	15	9	3
Baltimore, Md.	185	101	57	10	8	4
Charlotte, N. C.	46	26	17	–	3	1
Jacksonville, Fla.	80	38	27	7	6	4
Miami, Fla.	121	63	29	15	10	3
Norfolk, Va.	35	24	3	5	1	1
Richmond, Va.	70	35	26	5	3	6
Savannah, Ga.	30	16	6	4	3	3
St. Petersburg, Fla.	72	58	9	3	2	4
Tampa, Fla.	61	31	12	9	6	5
Washington, D. C.	244	110	82	21	25	7
Wilmington, Del.	41	19	18	–	2	1
EAST SOUTH CENTRAL	586	328	158	57	19	26
Birmingham, Ala.	95	51	23	13	1	2
Chattanooga, Tenn.	64	43	14	4	3	5
Knoxville, Tenn.	44	28	13	2	1	1
Louisville, Ky.	98	50	31	9	3	6
Memphis, Tenn.	135	78	30	16	5	3
Mobile, Ala.	48	24	15	6	1	3
Montgomery, Ala.	26	11	6	6	2	3
Nashville, Tenn.	76	43	26	1	3	3
WEST SOUTH CENTRAL	1,119	610	300	82	62	34
Austin, Tex.	44	28	4	4	3	4
Baton Rouge, La.	26	16	6	3	–	1
Corpus Christi, Tex.	46	28	10	2	1	3
Dallas, Tex.	175	92	48	11	11	3
El Paso, Tex.	55	21	17	6	4	3
Fort Worth, Tex.	85	59	16	5	2	3
Houston, Tex.	270	134	77	32	15	3
Little Rock, Ark.	47	28	12	2	3	1
New Orleans, La.	114	68	28	3	11	1
San Antonio, Tex.	129	62	43	8	8	2
Shreveport, La.	53	31	15	3	2	3
Tulsa, Okla.	75	43	24	3	2	7
MOUNTAIN	430	253	106	29	22	22
Albuquerque, N. Mex.	56	26	14	7	5	5
Colorado Springs, Colo.	30	17	5	7	–	4
Denver, Colo.	89	55	20	3	4	1
Las Vegas, Nev.	24	14	5	3	–	2
Ogden, Utah	19	12	5	–	2	1
Phoenix, Ariz.	89	48	31	3	4	3
Pueblo, Colo.	27	16	6	1	3	4
Salt Lake City, Utah	50	32	13	2	2	2
Tucson, Ariz.	46	30	7	3	2	–
PACIFIC	1,495	937	379	88	46	27
Berkeley, Calif.	25	20	3	2	–	–
Fresno, Calif.	72	42	16	7	4	1
Glendale, Calif.	15	12	3	–	–	1
Honolulu, Hawaii	43	26	12	2	–	–
Long Beach, Calif.	118	68	35	6	7	3
Los Angeles, Calif.	423	268	108	26	11	13
Oakland, Calif.	68	45	15	3	–	1
Pasadena, Calif.	40	33	6	–	–	–
Portland, Oreg.	120	65	40	9	4	1
Sacramento, Calif.	49	35	10	3	–	1
San Diego, Calif.	103	62	29	3	4	–
San Francisco, Calif.	140	88	31	13	5	1
San Jose, Calif.	54	32	16	1	1	1
Seattle, Wash.	127	77	31	9	7	1
Spokane, Wash.	56	32	15	4	2	2
Tacoma, Wash.	42	32	9	–	1	1
TOTAL	10,523	6,297	2,764	727	388	380
Expected Number	11,346	6,924	2,924	725	378	380

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

The Morbidity and Mortality Weekly Report, circulation 70,000, is published by the Center for Disease Control, Atlanta, Georgia. The data in this report are provisional, based on weekly telegraphs to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Send reports to: Center for Disease Control, Attn.: Editor, Morbidity and Mortality Weekly Report, Atlanta, Georgia 30333.

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

Nosocomial infections – continued

NNIS was started in 1970 to monitor trends in nosocomial infection rates, pathogens, and antimicrobial susceptibility patterns in the United States. The program relies on voluntary cooperation through surveillance and reporting of nosocomial infections by participating hospitals. NNIS hospitals use continuous prospective surveillance and a standard set of definitions for identifying and reporting infections, but the mechanics of surveillance within each hospital vary considerably. The efficiency of detecting and reporting infections has not been assessed in the hospitals, and the reported rate of infection may underestimate the true rate of infection.

This article is intended to be an introductory overview of nosocomial surveillance. More specific data on such subjects as seasonal patterns of infection, outbreaks, and infections associated with specific procedures will be treated in subsequent articles.

▲ A copy of the report from which these data were derived will be available on request after January 1, 1978, from the Center for Disease Control, Attn: Hospital Infections Br, Bacterial Diseases Div, Bur of Epidemiology, Atlanta, Georgia 30333

Epidemiologic Notes and Reports

Deaths Associated With Liquid Protein Diets

CDC and Food and Drug Administration (FDA) officials are investigating reports of deaths in individuals from the United States and Canada who were on the recently popularized liquid protein modified fast diets.* Preliminary case finding has identified 10 persons without severe underlying disease who died suddenly and unexpectedly while on such diets or shortly after going off them. Six other deaths were reported, but because of severe underlying disease or insufficient information they are not described here.

All 10 cases were in females who ranged in age from 25 to 44 years. All died since July 1, 1977, and had been on the diet for an average of 5 months. Adherence to the diet was very strict in each case, the individuals subsisting exclusively on the liquid protein products and non-caloric fluids. Weight loss averaged nearly 90 pounds. Each woman had been under a physician's care, on a weekly or biweekly basis. Serum electrolytes, specifically potassium, had been monitored. All the women took vitamin-mineral combinations, and 9 of the 10 took supplemental potassium.

All of the women were generally feeling well; however, 7 had experienced either light-headedness or fainting. In some cases, this had prompted hospital admission. None had a history of chest pain or symptoms of congestive heart failure. One had mild pedal edema attributed to resuming a normal diet (refeeding).

In 5 of 7 cases where information is available, electrocardiograms showed prolonged QT intervals; 4 of these also had reduced voltage. Serum potassium tended to be low, ranging from 2.1 to 4.2 meq/l and averaging 3.2 meq/l. Serum calcium and phosphate levels tended to be low normal. Where measured, serum magnesium was normal.

Two of the women died at home. Three women who had cardiopulmonary arrests while outside the hospital subsequently died in the hospital without regaining consciousness. The remaining deaths occurred in the hospital while the patients were under observation in intensive care units.

The immediate cause of death was due to ventricular arrhythmias in the 8 patients who died in the hospital. Resuscitation efforts were generally exhaustive and thorough, but the arrhythmias were intractable to both direct current countershock and pharmacological and electrolyte manipulations.

Autopsies were performed in 9 of the 10 cases. Complete information is available on 8 of these. In 4 cases, myocarditis was found; 3 had mononuclear cell infiltration of the myocardium, the other had polymorphonuclear cell infiltration. In a fifth case there was narrowing of the myofibrils with some evidence of degeneration. There was no significant cardiac pathology in the other 3 cases. Other organ systems were normal, with the exception of fatty infiltration of the liver.

Reported by private physicians and State Epidemiologists from 8 states; E Napke, MD, Bur of Epidemiology, Laboratory Centre for Disease Control, Ottawa, Canada; Food and Drug Administration; Field Services Div, Chronic Diseases Div, Bacterial Diseases Div, Bur of Epidemiology, CDC.

Editorial Note: Adequate data are not available to link definitively the diets to the deaths. Studies are in progress to determine risk factors and rates.

The nature of the underlying cardiac pathology seen in 5 of the cases is not clear. Whether this represents coincidence, increased susceptibility to viral myocarditis, or an inflammatory response to something present or absent in the diet is not known.

Given the present uncertainty, the FDA and CDC recommend that individuals on such diets be closely followed by physicians. Electrolytes, specifically sodium, potassium, calcium, and phosphate, should be monitored, and EKG abnormalities should be sought. Refeeding after prolonged dieting should be slow, gradual, and closely supervised. FDA is examining product label claims for accuracy, has initiated plant inspections and product testing, and has proposed that a warning label appear on such products.

Any sudden, unexpected deaths in persons on such diets should be reported to state and local health departments and to the Food and Drug Administration.

*This designation includes at least 50 brand names. Generally, the products are liquid-based protein hydrolysates, made largely from cowhides, collagen, and/or gelatin to which saccharin and artificial flavoring have been added. The proteins included in such diets are nutritionally of low biological quality, indicating that they do not contain the full complement of essential amino acids.

International Notes

Influenza — Jamaica

The World Health Organization (WHO) collaborating influenza laboratory in the West Indies has isolated 3 A/Victoria/3/75-like influenza A viruses from patients with onsets of illness from mid-September to early October. These are the first A/Victoria/3/75-like infections ever known to have occurred in Jamaica.

Reported by D King, MD, BS, University of the West Indies, Jamaica; WHO Collaborating Center for Influenza, Respiratory Virology Br, Virology Div, Bur of Laboratories, Surveillance and Assessment Br, Immunization Div, Bur of State Services, CDC.

Editorial Note: During the 1975-76 influenza season, when most of the world, including the Americas, experienced major epidemics of A/Victoria/3/75-like strains, these viruses were not isolated in Jamaica. Isolates from the West Indies at that time were closely related to a variant previously seen in Singapore and subsequently isolated in small numbers in England, India, Europe, and North Africa. The variant, designated A/England/864/75, first caused outbreaks in the United States one year later. The U.S. prototype of this strain was designated A/Texas/1/77. The isolation of an A/Victoria/3/75-like virus in Jamaica is a reversal of the trend seen in the rest of the Western Hemisphere where thus far this influenza season increasing A/Texas/1/77 activity has been observed.

Surveillance of Dengue Fever — Dominican Republic

Epidemiologic surveillance activities for the control of dengue fever have been intensified in the Dominican Republic (*1*). Evidence exists that the disease is not uncommon to the country, as occasional high serum antibody titers of dengue virus types 2 and 3 have been found.

Because of the possibility of the introduction of dengue type 1, funds have been allocated to carry out a rigorous program to control the *Aedes aegypti* vector. The program is being coordinated by the Director of Epidemiology. The National Service for Eradication of Malaria and its trained personnel are prepared to initiate spraying. Cooperating with this dengue program are the Pan American Health Organization and the San Juan Laboratories, CDC, in Puerto Rico, where blood samples taken from persons with fever have been sent for typing.

Reported by the World Health Organization in the Weekly Epidemiological Record 26:349, 1977.

Reference

1. MMWR 26:25, 1977

Erratum, Vol. 26, No. 39

p 321 In the article, "Lead Poisoning in Children of Battery Plant Employees — North Carolina," it was incorrectly stated in paragraph 1 that the 1-year-old son had symptoms similar to those of his mother. In fact, the infant was asymptomatic.

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE / CENTER FOR DISEASE CONTROL
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