CENTERS FOR DISEASE CONTROL

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MORBIDITY AND MORTALITY WEEKLY REPORT

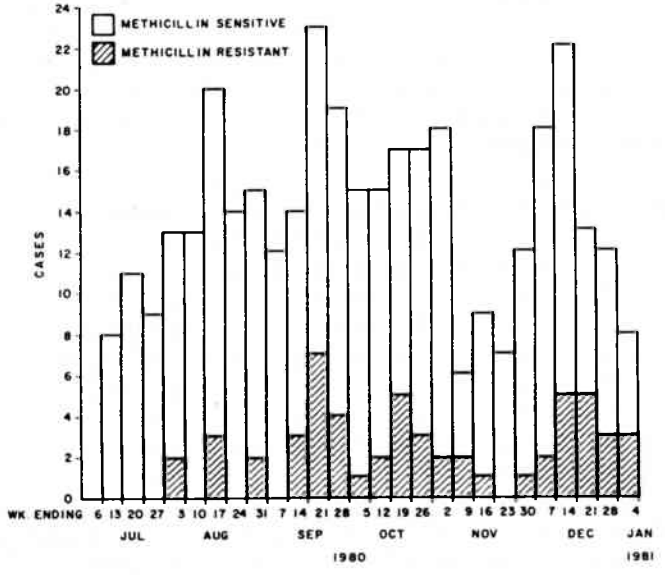
Epidemiologic Notes and Reports

Community-Acquired Methicillin-Resistant *Staphylococcus aureus* Infections — Michigan

Ninety-eight patients have been hospitalized in medical center hospitals in Detroit, Michigan, since June 1980 in the first reported outbreak of community-acquired methicillin-resistant* *Staphyloccus aureus* (MRSA) infection. Nearly one-fourth of all *S. aureus* isolates from patients with invasive disease at 1 inner-city hospital have been methicillin resistant (Figure 1), and patients with MRSA infections continue to be admitted to Detroit area hospitals. Of the 98 patients discussed in this report, 96 had a history of intravenous heroin use.

*In this investigation, methicillin resistance was defined as either the failure of a 1-μg oxacillin disc to inhibit growth of *S. aureus* isolates in disc-diffusion tests *or* a broth-dilution minimal inhibitory concentration of >4 μg/ml.

FIGURE 1. Community-acquired *Staphylococcus aureus* at a Detroit receiving hospital, July-December 1980



Staphylococcus aureus – Continued

Detailed epidemiologic and clinical information available on 53 of the 98 patients indicates that 29 had serious invasive infections, including bacterial endocarditis (13), septic thrombophlebitis (2), and mycotic aneurysm (1). Three patients died, and semisynthetic penicillins alone were often ineffective as treatment. When 83 of the MRSA isolates from the 98 patients were phage typed, 70 were type 29/52/80 (group 1).

Investigation of the outbreak revealed that of the 96 patients with a history of intravenous heroin use, 18 of 21 interviewed at the beginning of the outbreak had used heroin named "Dynamite," obtained from the same distributor at 1 location in Detroit. Some of these individuals regularly used an oral cephalosporin preparation as "prophylaxis" for infectious complications arising from their drug use.

Samples of the heroin used by most patients could not be obtained for culture, and when news of the outbreak reached the community on approximately December 4, heroin was no longer circulating under the name "Dynamite." Cultures of 14 samples of confiscated heroin held by the local police department contained no *S. aureus*.

A survey of nasal and/or anal carriage of MRSA was done in 4 drug treatment centers and among drug-related offenders at the county jail; of 219 individuals tested, 104 carried *S. aureus*. Twenty-nine of these isolates (27.9%) were MRSA.

Studies are planned to examine carriage rates of MRSA for nonaddict populations, isolation rates of MRSA for patients with severe staphylococcal infection in suburban as compared with inner-city hospitals, and risk factors for addicts and nonaddicts that predispose them to methicillin-resistant rather than methicillin-sensitive infections.

Reported by R Cushing, MD, J Jui, MD, DP Levine, MD, Wayne State University, L Chadzynski, MPH, DC Nolan, MD, Epidemiology and Biostatistics Unit, Detroit Health Dept, Detroit; NS Hayner, MD, State Epidemiologist, Michigan State Dept of Public Health; Special Pathogens Br, Bacterial Diseases Div, Center for Infectious Diseases, CDC.

Editorial Note: Users of illicit parenteral drugs are at increased risk for a wide variety of infectious complications (*1*). Shared paraphernalia, in association with inadequate or nonexistant sterilization techniques, has been implicated in the spread of viral infection, primarily hepatitis B (*2*), and occasionally malaria (*3,5*). Invasive bacterial infections are also not uncommon in this population. Focal suppurative complications and bacterial endocarditis are the most commonly reported serious bacterial infections (*6*), and infection is usually caused by the population of microorganisms residing on the addict (*7*). However, contamination of paraphernalia by exogenous flora can cause serious illness; tetanus is perhaps the most dramatic example (*8*).

Most cases of bacterial endocarditis in drug addicts are caused by *S. aureus*; gram-negative infections and fungal infections occur less frequently. Isolated cases of endocarditis caused by "penicillin-tolerant" *S. aureus* and MRSA have been reported (*9,10*). MRSA has also been recognized as an important cause of nosocomial infections in the United States and Europe (*11*). Although the mode of transmission initially may have been a common vehicle (heroin from a single distributor), the high rate of nasal and anal carriage of MRSA for healthy addicts in Detroit suggests that person-to-person transmission via direct contact and/or respiratory droplets may also have occurred.

Risk factors for having MRSA infection as opposed to methicillin-sensitive *S. aureus* infection have not yet been determined, although heroin abuse is the common factor in almost all the cases reported so far. The possible role of selective pressure that widespread cephalosporin prophylaxis may place on *S. aureus* should be examined more closely. Extensive cephalosporin use has been implicated in the emergence of MRSA associated with nosocomial infection (*12*). Unfortunately, it is often difficult to do epi-

Staphylococcus aureus – Continued

demiologic studies in settings involving illegal activities, and controlling this outbreak in the addict population may be extremely difficult. It may be easier to prevent secondary spread to the community at large and in medical settings.

Physicians who treat persons for staphylococcal infection must be aware that organisms resistant to the commonly used semisynthetic penicillins can be spread in both their hospitalized and outpatient populations. MRSA infections may appear in other communities with large addict populations. Methicillin, nafcillin, and the oral and parenteral oxacillins remain the antibiotics of choice for both nosocomial and community-acquired staphylococcal infections until results of antimicrobial susceptibility testing are available. The proper isolation precautions should be instituted until the organism can no longer be recovered from the patient. In communities and hospitals where MRSA has been isolated in large numbers, initial antibiotic treatment should also include vancomycin.

References

1. Louria DB, Hensle T, Rose J. The major medical complications of heroin addiction. Ann Intern Med 1967;67:1-22.
2. CDC. Hepatitis B—New Bern, North Carolina. MMWR 1979;28:373-4.
3. CDC. Induced malaria—California. MMWR 1971;20:99-100.
4. CDC. Needle-induced malaria—North Carolina. MMWR 1971;20:164.
5. CDC. Needle-induced malaria—Illinois. MMWR 1971;20:164.
6. Dryer NP. Fields BN. Heroin-associated infective endocarditis. Ann Intern Med 1973;78:699-702.
7. Tuazon CU, Sheagren JN. Staphylococcal endocarditis in parenteral drug abusers: source of the organism. Ann Intern Med 1975;82:788-90.
8. Cherubin CE. Epidemiology of tetanus in narcotic addicts. NY State J Med 1970;70:266-77.
9. Rajashekaraiah KR, Rice T, Rao VS, et al. Clinical significance of tolerant strains of *Staphylococcus aureus* in patients with endocarditis. Ann Intern Med 1980;93:796-801.
10. Faville RJ Jr., Zaske DE, Kaplan EL, Crossley K, Sabath LD, Quie PG. *Staphylococcus aureus* endocarditis: combined therapy with vancomycin and rifampin. JAMA 1978;240:1963-5.
11. CDC. Methicillin-resistant *Staphylococcus aureus*—United States. MMWR 1981;30:140, 145-7.
12. Peacock JE, Marsik FJ, Wenzel RP. Methicillin-resistant *Staphylococcus aureus*: introduction and spread within a hospital. Ann Intern Med 1980;93:526-32.

PCB Transformer Fire – Binghamton, New York

At 5:30 AM on February 5, 1981, a fire occurred in the basement utility room of the State Office Building in Binghamton, New York. An intensely hot, local electrical fire in the switch gear adjacent to a transformer containing 1,060 gallons of askarel (a type of transformer fluid) caused the transformer bushings to crack, resulting in the spill of 180 gallons of fluid. An estimated 90 gallons of askarel was pyrolyzed and spread throughout the 18-story structure as a fine, oily soot.

The most probable path for the soot to have reached all floors of the building was through 2 vertical shafts that extended the entire height of the building and were open at the bottom to the utility room, where the transformer and switch gear were located.

The askarel contained 65% polychlorinated biphenyl (PCB) (Aroclor 1254)® and 35% chlorinated benzenes (mainly trichlorobenzene and tetrachlorobenzene) with trace additives. Several days after the fire, concentrations of Aroclor 1254® in air in the building averaged 1.5 $\mu g/M^3$. Dry swabs of horizontal surfaces in open office areas averaged

PCB Transformer Fire – Continued

162 μg/M^2 Aroclor 1254®; similar surfaces within cabinets and desks averaged 74 μg/M^2.

Composite soot samples were analyzed for potential pyrolysis products of PCBs and polychlorinated benzenes. The 2,3,7,8 isomer of tetrachlorodibenzo-p-dioxin (TCDD) was identified in concentrations of 2.8 and 2.9 parts per million (ppm). The 2,3,7,8 isomer of tetrachlorodibenzofuran (TCDF) was measured at 273 and 124 ppm in the same samples (*1*). Preliminary results of further analyses have identified numerous other polychlorinated dibenzofurans (PCDF) and an additional group of compounds, the chlorinated biphenylenes (*2*).

Cleanup of the building, which began soon after the fire in February, was suspended when the high concentrations of TCDD and TCDF were found. Plans for eventual cleanup await further assays of soot to determine how uniform PCDF contamination is throughout the building and to what extent such chemicals may be active biologically when bound to soot. No health effects attributable to the soot chemicals have been documented in cleanup and maintenance workers associated with the building.

(Continued on page 193)

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

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

DISEASE	16th WEEK ENDING		MEDIAN 1976-1980	CUMULATIVE, FIRST 16 WEEKS		
	April 25 1981	April 19 1980		April 25 1981	April 19 1980	MEDIAN 1976-1980
Aseptic meningitis	50	52	41	970	976	579
Brucellosis	6	1	2	33	48	48
Chickenpox	7,788	6,447	6,488	99,916	88,927	93,905
Diphtheria	–	–	2	3	1	26
Encephalitis: Primary (arthropod-borne & unspec.)	8	11	11	217	180	178
Post-infectious	–	5	5	24	54	54
Hepatitis, Viral: Type B	419	275	292	5,791	4,926	4,612
Type A	456	462	618	7,621	8,334	9,075
Type unspecified	192	194	145	3,391	3,349	2,768
Malaria	18	29	7	366	439	122
Measles (rubeola)	93	911	1,042	942	5,407	9,908
Meningococcal infections: Total	78	45	50	1,481	1,057	895
Civilian	78	45	50	1,478	1,048	886
Military	–	–	–	3	9	6
Mumps	82	188	445	1,687	4,323	7,059
Pertussis	19	19	16	308	306	313
Rubella (German measles)	68	123	509	884	1,570	5,444
Tetanus	–	2	2	13	13	13
Tuberculosis	569	591	591	7,894	7,732	8,240
Tularemia	6	2	2	38	27	28
Typhoid fever	6	3	4	146	83	108
Typhus fever, tick-borne (Rky. Mt. spotted)	7	5	4	27	19	21
Venereal diseases:						
Gonorrhea: Civilian	17,914	17,712	17,712	291,750	287,770	287,770
Military	433	546	546	8,734	8,269	8,365
Syphilis, primary & secondary: Civilian	537	550	408	9,104	8,011	7,393
Military	6	2	5	109	110	94
Rabies in animals	119	163	79	2,009	1,740	824

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	–	Poliomyelitis: Total	–
Botulism	17	Paralytic	–
Cholera	–	Psittacosis (Mass. 1, Ga. 1, Calif. 2)	24
Congenital rubella syndrome (La. 1)	5	Rabies in man	–
Leprosy (N.Y. City 1, Idaho 1, Calif. 8)	65	Trichinosis	64
Leptospirosis (Fla. 1)	14	Typhus fever, flea-borne (endemic, murine) (Calif. 1)	3
Plague	1		

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending April 25, 1981 and April 19, 1980 (16th week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKENPOX	DIPHTHERIA		ENCEPHALITIS			HEPATITIS (VIRAL), BY TYPE			MALARIA	
						Primary		Post-infectious	B	A	Unspecified		
	1981	1981	1981	1981	CUM. 1981	1981	1980	1981	1981	1981	1981	1981	CUM. 1981
UNITED STATES	50	6	7,788	-	3	8	11	-	419	456	192	18	366
NEW ENGLAND	1	-	687	-	-	-	-	-	15	9	8	1	20
Maine	-	-	47	-	-	-	-	-	2	1	-	-	1
N.H.	1	-	58	-	-	-	-	-	-	3	-	-	3
Vt.	-	-	70	-	-	-	-	-	-	-	-	-	1
Mass.	-	-	226	-	-	-	-	-	1	4	8	1	11
R.I.	-	-	74	-	-	-	-	-	-	-	-	-	1
Conn.	-	-	212	-	-	-	-	-	12	1	-	-	3
MID. ATLANTIC	4	1	551	-	-	-	4	-	79	59	27	3	31
Upstate N.Y.	2	1	336	-	-	-	3	-	18	21	7	-	9
N.Y. City	1	-	140	-	-	-	-	-	8	7	1	-	13
N.J.	-	-	NN	-	-	-	-	-	24	14	15	3	6
Pa.	1	-	75	-	-	-	1	-	29	17	4	-	3
E.N. CENTRAL	7	-	3,513	-	-	-	-	-	41	39	17	-	10
Ohio	2	-	169	-	-	-	-	-	9	10	4	-	3
Ind.	-	-	635	-	-	-	-	-	7	9	3	-	3
Ill.	-	-	998	-	-	-	-	-	2	7	5	-	1
Mich.	5	-	1,103	-	-	-	-	-	18	9	2	-	3
Wis.	-	-	608	-	-	-	-	-	5	4	3	-	-
W.N. CENTRAL	2	-	544	-	-	1	-	-	10	8	13	-	10
Minn.	-	-	1	-	-	-	-	-	1	1	3	-	2
Iowa	1	-	199	-	-	-	-	-	-	3	1	-	2
Mo.	-	-	11	-	-	-	-	-	7	2	8	-	1
N. Dak.	1	-	36	-	-	-	-	-	-	-	-	-	1
S. Dak.	-	-	21	-	-	-	-	-	-	-	-	-	1
Nebr.	-	-	123	-	-	-	-	-	-	-	-	-	-
Kans.	-	-	153	-	-	1	-	-	2	2	1	-	3
S. ATLANTIC	8	1	1,429	-	1	-	1	-	102	56	26	4	40
Del.	-	-	8	-	-	-	-	-	-	-	-	-	-
Md.	1	-	429	-	-	-	-	-	21	7	9	-	6
D.C.	-	-	-	-	-	-	-	-	-	1	-	-	1
Va.	2	-	63	-	-	-	-	-	12	4	2	-	9
W. Va.	-	-	234	-	-	-	-	-	3	4	-	-	-
N.C.	2	-	NN	-	-	-	1	-	9	2	3	-	2
S.C.	-	-	10	-	-	-	-	-	17	1	1	-	-
Ga.	-	1	35	-	-	-	-	-	20	10	-	2	6
Fla.	3	-	650	-	1	-	-	-	20	27	11	2	16
E.S. CENTRAL	2	-	119	-	-	1	1	-	20	35	6	-	2
Ky.	1	-	119	-	-	-	-	-	7	19	-	-	-
Tenn.	-	-	NN	-	-	-	1	-	5	10	2	-	-
Ala.	1	-	-	-	-	1	-	-	2	-	4	-	1
Miss.	-	-	-	-	-	-	-	-	6	6	-	-	1
W.S. CENTRAL	13	2	531	-	-	3	-	-	37	84	29	2	25
Ark.	-	-	4	-	-	-	-	-	3	10	2	-	1
La.	3	-	NN	-	-	1	-	-	10	11	3	-	2
Okla.	1	-	-	-	-	2	-	-	8	8	4	-	2
Tex.	9	2	527	-	-	-	-	-	16	55	20	2	20
MOUNTAIN	1	-	23	-	1	1	3	-	11	27	26	2	9
Mont.	-	-	-	-	1	-	-	-	-	-	-	-	-
Idaho	-	-	1	-	-	-	-	-	1	2	-	-	-
Wyo.	-	-	-	-	-	-	-	-	-	1	-	-	-
Colo.	1	-	-	-	-	1	3	-	-	3	5	1	4
N. Mex.	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
Ariz.	-	-	NN	-	-	-	-	-	4	17	13	-	2
Utah	-	-	-	-	-	-	-	-	3	3	5	-	-
Nev.	-	-	22	-	-	-	-	-	3	1	3	1	3
PACIFIC	12	2	391	-	1	2	2	-	104	139	40	6	219
Wash.	-	-	307	-	-	-	-	-	13	16	4	1	13
Oreg.	1	-	2	-	-	-	-	-	9	17	-	2	8
Calif.	7	2	49	-	-	2	2	-	79	104	34	3	196
Alaska	1	-	14	-	1	-	-	-	3	1	-	-	1
Hawaii	3	-	19	-	-	-	-	-	-	1	2	-	1
Guam	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-
P.R.	2	-	30	-	-	-	-	-	7	5	1	-	3
V.I.	-	-	26	-	-	-	-	-	-	-	-	-	1
Pac. Trust Terr.	NA	NA	NA	NA	-	NA	-	-	NA	NA	NA	NA	-

NN: Not notifiable. NA: Not available.

All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending April 25, 1981 and April 19, 1980 (16th week)

REPORTING AREA	MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS TOTAL			MUMPS		PERTUSSIS	RUBELLA		TETANUS
	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	1981	1981	CUM. 1981	CUM. 1981
UNITED STATES	93	942	5,407	78	1,481	1,057	82	1,687	19	68	884	13
NEW ENGLAND	–	28	416	5	99	64	4	87	–	3	77	1
Maine	–	2	4	2	15	2	–	16	–	–	31	–
N.H.	–	4	207	–	10	4	–	8	–	–	15	–
Vt.	–	1	182	1	5	6	2	4	–	–	–	–
Mass.	–	16	18	–	24	22	2	25	–	3	26	–
R.I.	–	–	2	–	8	5	–	17	–	–	–	–
Conn.	–	5	3	2	37	25	–	17	–	–	5	1
MID. ATLANTIC	5	303	1,538	10	180	172	8	206	2	3	117	1
Upstate N.Y.	4	171	319	6	65	60	3	44	2	2	44	–
N.Y. City	1	27	405	–	22	48	1	29	–	–	21	1
N.J.	–	21	340	–	46	37	4	61	–	1	37	–
Pa.	–	84	474	4	47	27	–	72	–	–	15	–
E.N. CENTRAL	12	56	822	10	163	123	19	486	4	22	188	1
Ohio	2	15	126	5	55	46	4	62	–	–	–	–
Ind.	–	3	44	1	22	21	6	69	2	2	57	–
Ill.	8	14	149	2	45	17	–	84	1	13	55	–
Mich.	2	24	157	2	37	31	8	202	1	2	24	1
Wis.	–	–	346	–	4	8	1	69	–	5	52	–
W.N. CENTRAL	–	4	650	3	57	42	3	149	2	15	52	2
Minn.	–	1	472	–	22	11	–	4	–	–	5	1
Iowa	–	1	15	–	12	5	2	34	–	–	–	–
Mo.	–	–	59	2	15	17	–	22	–	–	3	1
N. Dak.	–	–	–	–	1	1	–	–	–	–	–	–
S. Dak.	–	–	–	1	2	3	–	1	–	–	–	–
Nebr.	–	1	59	–	–	–	–	3	–	–	1	–
Kans.	–	1	45	–	5	5	1	85	2	15	43	–
S. ATLANTIC	16	244	979	8	380	256	20	233	7	7	88	1
Del.	–	–	1	–	4	2	–	3	–	–	–	–
Md.	–	1	27	1	21	24	7	46	–	1	1	–
D.C.	–	–	–	–	1	1	–	–	–	–	–	–
Va.	–	2	186	1	44	17	5	57	–	1	5	–
W. Va.	–	7	5	–	16	7	4	44	1	–	15	–
N.C.	–	3	38	–	57	47	–	4	–	–	4	–
S.C.	–	–	115	–	50	33	–	5	4	2	6	1
Ga.	–	80	389	5	63	57	1	22	1	1	25	–
Fla.	16	151	218	1	124	68	3	52	1	2	32	–
E.S. CENTRAL	–	–	115	7	121	101	1	52	–	2	20	1
Ky.	–	–	33	–	37	31	–	22	–	–	11	–
Tenn.	–	–	6	3	35	22	1	18	–	2	9	–
Ala.	–	–	16	3	37	29	–	11	–	–	–	1
Miss.	–	–	60	1	12	19	–	1	–	–	–	–
W.S. CENTRAL	55	129	412	25	262	118	5	93	1	–	51	2
Ark.	–	–	9	1	20	6	–	–	–	–	–	1
La.	–	–	7	11	62	46	–	3	–	–	6	–
Okla.	–	5	301	3	21	8	–	–	–	–	–	–
Tex.	55	124	95	10	159	58	5	90	1	–	45	1
MOUNTAIN	–	15	105	3	50	38	12	65	2	7	45	1
Mont.	–	–	1	1	3	1	–	3	–	–	1	–
Idaho	–	–	–	–	3	3	–	4	–	–	1	–
Wyo.	–	–	–	–	–	2	–	–	–	–	1	–
Colo.	–	4	4	2	23	10	7	33	2	2	23	–
N. Mex.	NA	–	5	–	4	6	NA	–	NA	NA	1	–
Ariz.	–	2	55	–	12	5	1	10	–	4	10	1
Utah	–	–	38	–	3	1	3	8	–	–	3	–
Nev.	–	9	2	–	2	10	1	7	–	1	5	–
PACIFIC	5	163	370	7	169	143	10	316	1	9	246	3
Wash.	–	1	115	–	32	23	3	93	1	1	44	–
Oreg.	–	–	–	2	17	32	1	39	–	–	15	–
Calif.	5	162	247	5	113	86	5	171	–	8	187	3
Alaska	–	–	5	–	3	2	1	4	–	–	–	–
Hawaii	–	–	3	–	4	–	–	9	–	–	–	–
Guam	NA	1	3	–	–	1	NA	1	NA	NA	–	–
P.R.	14	132	44	–	3	7	8	54	–	–	3	–
V.I.	–	3	4	–	–	1	1	3	–	–	–	–
Pac. Trust Terr.	NA	–	3	–	–	–	NA	4	NA	NA	1	–

NA: Not available.
*Delayed reports received for 1979 are not shown below but are used to update last year's weekly and cumulative totals.

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending April 25, 1981 and April 19, 1980 (16th week)

REPORTING AREA	TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		VENEREAL DISEASES (Civilian)						RABIES (in Animals)
								GONORRHEA			SYPHILIS (Pri. & Sec.)			
	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1980	CUM. 1981
UNITED STATES	569	7,894	38	6	146	7	27	17,914	291,750	287,770	537	9,104	8,011	2,009
NEW ENGLAND	23	218	–	–	7	–	–	573	7,155	7,430	8	200	176	9
Maine	–	20	–	–	–	–	–	22	376	455	–	1	3	6
N.H.	–	2	–	–	–	–	–	20	259	259	–	7	1	1
Vt.	–	7	–	–	–	–	–	11	121	197	–	11	2	–
Mass.	9	118	–	–	6	–	–	355	2,952	2,997	6	121	99	–
R.I.	2	13	–	–	–	–	–	14	339	438	–	13	11	–
Conn.	12	58	–	–	1	–	–	151	3,108	3,084	2	47	60	2
MID. ATLANTIC	74	1,368	9	–	26	–	3	2,454	34,448	31,501	67	1,436	1,127	2
Upstate N.Y.	14	220	9	–	4	–	1	317	5,450	5,461	–	121	86	1
N.Y. City	38	590	–	–	17	–	2	1,477	14,152	12,487	49	909	732	–
N.J.	17	264	–	–	2	–	–	279	6,835	5,784	9	168	150	–
Pa.	5	294	–	–	3	–	–	381	8,011	7,769	9	238	159	1
E.N. CENTRAL	75	1,037	5	1	8	–	1	2,187	44,363	45,399	24	497	786	260
Ohio	14	189	4	–	–	–	1	882	17,948	11,977	4	86	138	16
Ind.	13	67	–	–	–	–	–	135	3,655	4,539	1	39	69	12
Ill.	26	429	–	–	4	–	–	544	9,109	14,449	16	232	427	207
Mich.	19	299	1	1	3	–	–	472	9,662	9,898	3	109	121	–
Wis.	3	53	–	–	1	–	–	154	3,989	4,536	–	31	31	25
W.N. CENTRAL	30	269	3	1	4	–	1	842	14,067	12,611	15	163	87	862
Minn.	3	42	–	–	1	–	–	107	2,224	2,223	6	62	31	157
Iowa	–	36	–	–	1	–	–	111	1,460	1,401	–	8	7	295
Mo.	13	114	3	1	1	–	1	440	6,464	5,276	5	77	47	70
N. Dak.	2	10	–	–	–	–	–	6	184	184	–	2	–	130
S. Dak.	5	22	–	–	1	–	–	42	391	377	2	2	–	94
Nebr.	–	7	–	–	–	–	–	33	1,002	1,066	–	3	1	53
Kans.	7	38	–	–	–	–	–	103	2,342	2,084	2	9	1	63
S. ATLANTIC	106	1,751	5	2	22	1	6	3,778	73,093	69,092	132	2,448	1,944	105
Del.	–	20	1	–	–	–	–	73	1,084	981	–	7	5	–
Md.	–	162	–	1	7	–	1	498	7,951	7,210	17	193	145	1
D.C.	6	110	–	–	1	–	–	219	4,714	5,159	14	223	138	–
Va.	NA	185	–	–	1	1	1	387	6,854	5,834	17	235	170	17
W. Va.	6	64	–	–	3	–	–	65	1,111	951	1	7	5	3
N.C.	24	322	1	–	1	–	4	564	11,568	10,537	7	184	141	–
S.C.	8	149	2	–	–	–	–	448	6,725	6,658	8	170	96	6
Ga.	35	288	1	–	–	–	–	763	14,355	12,573	43	633	581	55
Fla.	27	451	–	1	9	–	–	761	18,731	19,189	25	796	663	23
E.S. CENTRAL	74	705	2	–	4	3	6	1,428	24,085	23,514	43	627	652	148
Ky.	20	181	2	–	–	–	1	260	3,168	3,386	–	23	50	41
Tenn.	20	233	–	–	1	–	1	472	8,949	8,367	19	250	245	91
Ala.	16	197	–	–	2	–	–	294	7,458	6,815	7	169	136	16
Miss.	18	94	–	–	1	3	4	402	4,510	4,946	17	185	221	–
W.S. CENTRAL	77	724	6	–	12	3	9	2,393	38,697	37,283	151	2,121	1,513	378
Ark.	5	76	1	–	–	–	2	201	2,578	2,814	6	44	59	65
La.	24	162	2	–	–	–	–	335	6,321	6,346	–	446	356	14
Okla.	7	94	2	–	3	3	5	291	4,069	3,668	10	62	23	62
Tex.	41	392	1	–	9	–	2	1,566	25,729	24,455	135	1,569	1,075	237
MOUNTAIN	10	212	7	–	8	–	1	803	12,072	11,181	14	233	185	39
Mont.	–	19	1	–	4	–	–	43	441	411	–	8	–	37
Idaho	–	5	2	–	–	–	1	67	501	543	–	2	5	–
Wyo.	–	2	1	–	–	–	–	14	254	329	–	2	7	2
Colo.	4	15	2	–	2	–	–	211	3,143	2,889	4	75	50	–
N. Mex.	NA	43	–	NA	–	NA	–	66	1,323	1,459	6	53	33	–
Ariz.	5	90	–	–	2	–	–	191	3,966	3,083	–	44	62	–
Utah	–	14	1	–	–	–	–	54	560	547	1	5	5	–
Nev.	1	24	–	–	–	–	–	157	1,884	1,920	3	44	23	–
PACIFIC	100	1,610	1	2	55	–	–	3,456	43,770	49,759	83	1,379	1,541	206
Wash.	7	134	–	1	3	–	–	229	3,758	4,006	–	37	88	–
Oreg.	5	60	–	–	2	–	–	176	3,160	3,529	2	34	37	1
Calif.	73	1,348	1	1	48	–	–	2,896	34,756	39,968	81	1,275	1,366	192
Alaska	–	15	–	–	–	–	–	91	1,200	1,165	–	4	2	13
Hawaii	15	53	–	–	2	–	–	64	896	1,091	–	29	48	–
Guam	NA	–	–	NA	–	NA	–	NA	14	35	NA	–	–	–
P.R.	–	34	–	–	3	–	–	74	1,015	833	22	230	174	21
V.I.	–	–	–	–	1	–	–	7	31	52	–	–	7	–
Pac. Trust Terr.	NA	21	–	NA	–	NA	–	NA	117	113	NA	–	–	–

NA: Not available.
All delayed reports and corrections will be included in the following week's cumulative totals.

TABLE IV. Deaths in 121 U.S. cities,* week ending April 25, 1981 (16th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	<1	
NEW ENGLAND	645	422	147	33	20	41
Boston, Mass.	171	105	46	7	6	20
Bridgeport, Conn.	38	30	4	3	–	–
Cambridge, Mass.	20	14	4	–	–	–
Fall River, Mass.	24	18	5	–	–	1
Hartford, Conn.	71	38	26	4	2	1
Lowell, Mass.	26	16	7	2	–	–
Lynn, Mass.	22	19	3	–	–	1
New Bedford, Mass.	23	19	3	1	–	–
New Haven, Conn.	44	25	8	4	4	2
Providence, R.I.	76	46	18	6	5	6
Somerville, Mass.	7	7	–	–	–	1
Springfield, Mass.	39	26	6	1	2	–
Waterbury, Conn.	30	25	2	1	1	1
Worcester, Mass.	54	34	15	4	–	8
MID. ATLANTIC	2,591	1,693	613	156	63	107
Albany, N.Y.	52	32	12	–	5	1
Allentown, Pa.	21	16	5	–	–	2
Buffalo, N.Y.	100	68	21	7	3	7
Camden, N.J.	38	17	15	–	5	–
Elizabeth, N.J.	30	22	6	2	–	2
Erie, Pa.†	43	30	7	4	–	3
Jersey City, N.J.	50	44	3	3	–	2
Newark, N.J.	55	19	20	9	2	1
N.Y. City, N.Y.	1,311	865	300	92	23	42
Paterson, N.J.	24	15	5	1	1	2
Philadelphia, Pa.†	394	248	102	20	13	24
Pittsburgh, Pa.†	77	45	22	6	1	1
Reading, Pa.	48	36	9	1	–	6
Rochester, N.Y.	135	93	30	5	5	9
Schenectady, N.Y.	21	14	6	–	1	1
Scranton, Pa.†	32	22	8	1	1	2
Syracuse, N.Y.	89	60	22	2	3	1
Trenton, N.J.	20	11	8	1	–	–
Utica, N.Y.	30	21	7	1	–	–
Yonkers, N.Y.	21	14	5	1	–	1
E.N. CENTRAL	2,385	1,468	599	142	96	76
Akron, Ohio	43	30	8	2	1	–
Canton, Ohio	43	31	11	1	–	–
Chicago, Ill.	491	280	131	50	15	15
Cincinnati, Ohio	241	156	62	6	10	21
Cleveland, Ohio	173	91	51	14	10	3
Columbus, Ohio	136	86	35	8	4	4
Dayton, Ohio	117	71	33	4	3	2
Detroit, Mich.	263	142	77	23	13	10
Evansville, Ind.	56	38	14	2	1	–
Fort Wayne, Ind.	58	36	13	2	4	3
Gary, Ind.	18	9	7	–	–	–
Grand Rapids, Mich.	61	40	13	–	5	1
Indianapolis, Ind.	170	113	35	8	8	2
Madison, Wis.	29	17	8	1	1	2
Milwaukee, Wis.	167	110	41	8	4	1
Peoria, Ill.	25	17	3	–	4	1
Rockford, Ill.	35	25	8	1	1	–
South Bend, Ind.	32	20	7	1	1	1
Toledo, Ohio	143	94	31	7	5	7
Youngstown, Ohio	84	62	11	4	6	3
W.N. CENTRAL	660	420	146	40	35	24
Des Moines, Iowa	35	25	8	1	1	–
Duluth, Minn.	27	24	3	–	–	4
Kansas City, Kans.	35	22	7	1	4	2
Kansas City, Mo.	118	80	26	5	4	4
Lincoln, Nebr.	24	13	7	3	1	2
Minneapolis, Minn.	85	53	19	2	7	3
Omaha, Nebr.	71	43	17	4	5	2
St. Louis, Mo.	151	88	34	14	9	4
St. Paul, Minn.	60	40	14	5	–	–
Wichita, Kans.	54	32	11	5	4	3
S. ATLANTIC	1,103	628	302	72	63	29
Atlanta, Ga.	109	85	48	8	25	6
Baltimore, Md.	156	87	36	17	10	3
Charlotte, N.C.	48	24	15	4	2	3
Jacksonville, Fla.	92	47	19	6	3	2
Miami, Fla.	105	59	29	9	3	1
Norfolk, Va.	59	30	25	1	1	1
Richmond, Va.	86	45	36	–	4	3
Savannah, Ga.	47	32	7	2	4	3
St. Petersburg, Fla.	83	70	9	2	2	1
Tampa, Fla.	57	29	17	6	2	2
Washington, D.C.	183	103	53	15	6	4
Wilmington, Del.	28	17	8	2	1	–
E.S. CENTRAL	745	461	187	41	29	33
Birmingham, Ala.	117	71	33	9	3	2
Chattanooga, Tenn.	71	42	21	–	1	4
Knoxville, Tenn.	55	37	15	2	1	–
Louisville, Ky.	112	71	28	3	7	6
Memphis, Tenn.	189	117	45	13	7	14
Mobile, Ala.	38	25	10	1	–	2
Montgomery, Ala.	45	26	11	3	3	1
Nashville, Tenn.	118	72	24	10	7	4
W.S. CENTRAL	1,198	642	314	108	61	35
Austin, Tex.	41	27	5	5	1	2
Baton Rouge, La.	45	21	17	4	3	1
Corpus Christi, Tex.	50	27	12	4	1	–
Dallas, Tex.	184	82	58	21	12	3
El Paso, Tex.	37	23	7	5	1	–
Fort Worth, Tex.	91	48	28	6	1	6
Houston, Tex.	220	110	61	19	18	3
Little Rock, Ark.	84	52	20	8	4	8
New Orleans, La.	142	74	46	13	6	–
San Antonio, Tex.	151	83	34	15	6	2
Shreveport, La.	49	28	15	2	3	3
Tulsa, Okla.	94	67	11	6	5	7
MOUNTAIN	650	376	150	50	20	27
Albuquerque, N.Mex.	90	31	25	15	3	6
Colo. Springs, Colo.	42	29	6	3	1	1
Denver, Colo.	115	74	31	2	1	4
Las Vegas, Nev.	71	37	21	6	1	3
Ogden, Utah	30	13	10	3	3	4
Phoenix, Ariz.	131	86	23	6	8	1
Pueblo, Colo.	23	12	5	4	–	3
Salt Lake City, Utah	48	30	8	2	3	–
Tucson, Ariz.	100	64	21	9	–	5
PACIFIC	2,139	1,415	462	127	58	94
Berkeley, Calif.	19	13	4	1	–	–
Fresno, Calif.	84	62	12	2	5	3
Glendale, Calif.	37	31	6	–	–	4
Honolulu, Hawaii	54	28	15	4	5	7
Long Beach, Calif.	85	57	17	6	2	4
Los Angeles, Calif.	807	544	167	52	10	28
Oakland, Calif.	63	39	16	4	3	3
Pasadena, Calif.	35	27	5	1	1	3
Portland, Oreg.	121	77	30	6	5	2
Sacramento, Calif.	89	65	10	8	4	6
San Diego, Calif.	153	97	35	7	10	3
San Francisco, Calif.	176	109	43	12	5	5
San Jose, Calif.	170	106	44	10	4	14
Seattle, Wash.	152	94	37	12	1	5
Spokane, Wash.	48	34	9	2	2	4
Tacoma, Wash.	46	32	12	–	1	3
TOTAL	12,106	7,525	2,920	769	445	466

*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.

PCB Transformer Fire – Continued

Reported by AJ Schecter, MD, Broome County Health Dept, Binghamton; GF Haughie, MD, R Rothenberg, MD, State Epidemiologist, New York State Dept of Health; Industry-Wide Studies Br, Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, Chronic Diseases Div, Clinical Chemistry Div, Center for Environmental Health, CDC.

Editorial Note: PCBs manufactured in this country contain up to 2 ppm PCDF as contaminants (*3*), and heat can increase concentrations of PCDF (*4*). The high concentration of PCDF in the soot from the Binghamton building presumably resulted from pyrolysis of PCBs. TCDD, however, is not known to be a contaminant of PCBs. It was probably present as a pyrolysis product of the chlorinated benzenes.

Although explosions resulting in the spread of TCDD are known to have occurred in factories engaged in the manufacture of trichlorophenol and similar related compounds (*5*), no comparable situation has been described in the setting of a general office building. The National Institute for Occupational Safety and Health is conducting a national survey regarding the presence and location of transformers in office buildings and is working with Broome County and New York State health officials in health follow-up studies of workers engaged in cleanup of the Binghamton building.

Human health effects associated with chemical compounds such as TCDD and TCDF, as well as PCB, have thus far been observed in situations of high-dose, occupational exposure. Effects observed have included chloracne, liver function abnormalities, elevations in serum lipid levels, and neurologic changes. TCDD has been shown to be oncogenic in rodents. No health effects have yet been clearly demonstrated in human populations in lower-dose levels. In this context, the potential human health risks in connection with the Binghamton fire warrant close study.

References

1. Smith RM, O'Keefe PW, Hilker DL, Jelus-Tyror BL, Aldous K. Analysis of 2,3,7,8 tetrachlorodibenzofuran, and 2,3,7,8 tetrachlorodibenzo-p-dioxin in a soot sample from a transformer explosion in Binghamton, NY. Preliminary report, Division of Labs and Research, New York State Department of Health. 1981 Feb 20.
2. Stalling DL. Chlorinated dibenzofurans and related compounds in soot formed in a transformer fire in Binghamton, NY. Preliminary report, Columbia National Fisheries Research Laboratory, U.S. Fish and Wildlife Service. 1981 Mar 31.
3. Rappe C, Buser HR. Chemical properties and analytical methods. In: Kimbrough RD, ed. Halogenated biphenyls, terphenyls, naphthalenes, dibenzo dioxins, and related compounds. Topics in environmental health. Vol 4. Amsterdam/New York: Elsevier Press, 1980:41-76.
4. Buser HR, Bosshart HP, Rappe C. Formation of polychlorinated dibenzofurans (PCDFs) from the pyrolysis of PCBs. Chemosphere 1978;7:109-19.
5. Holmsted LB. Prolegomena to Seveso. Arch Toxicol 1980;44:211-30.

Erratum, Vol. 30, No. 9

p109. In the article "Tuberculosis – California," Editorial Note, the 4th sentence should read as follows: "Approximately 1%-2% of newly arriving Southeast Asian refugees have tuberculous disease, but they are not infectious on arrival because treatment began *for patients with positive sputum smears or extensive pulmonary disease* before they departed from the resettlement camps."

International Notes

Guinea Worm (Dracunculiasis) and the International Water Supply and Sanitation Decade

Several agencies, including the United Nations Development Programme (UNDP), the World Health Organization (WHO), and the World Bank, have declared the decade 1981-1990 to be the "International Drinking Water Supply and Sanitation Decade." Since one of the Decade's goals is the provision of safe drinking water by 1990 to all who now lack it, the Decade presents an unprecedented opportunity to eliminate a disease, dracunculiasis, the only mode of transmission of which is drinking water. Because of its relevance to the Decade's goals in endemic areas, the following editorial is being reprinted in its entirety from a special issue of the Information Bulletin of the Organisation Centrale Contre les Grande Endemies (OCCGE), a regional public-health organization of West African, French-speaking countries. Surveillance data from the same issue of the OCCGE Bulletin are summarized in Table 1.*

The OCCGE does not actually consider dracunculiasis to be one of its top-priority endemic-epidemic diseases. However, it has been selected as the subject of this special bulletin because the low mortality rate associated with this disease diminishes awareness of the true impact it may have on the health and economy in villages with endemic disease. It is of particular interest to note that this is a disease for which we understand not only the pathogenesis, but more importantly, how to interrupt the chain of transmission.

Dracunculosis will undeniably prove to be a sensitive indicator of the level of sanitary education and the degree of active participation of a population in efforts to improve public health standards.

We would like to emphasize that this disease represents an example of an endemic disease problem which can be rapidly, efficiently, and permanently controlled only by the use of primary health care, without the administration of drugs or treatments, simply by the preventive measures taught and popularized by village health counselors.

When a measure as simple as filtering drinking water through a double-thickness cotton cloth suffices to prevent a disease as painful, incapacitating, and sometimes socially distressing (as in the case of genital lesions) as dracunculiasis, it seems inexcusable that every year thousands of workers and students in certain regions are incapacitated simply because they were not informed.

Reported by OCCGE in the Information Bulletin, 1980 Sep-Oct;8(69).

*The Steering Committee members also include the United Nations, the United Nations Children's Fund, the International Labour Organisation, and the Food and Agriculture Organization.

TABLE 1. Cases of guinea worm disease reported in certain West African countries

Country	1971	1972	1973	1974	1975	1976	1977	1978	1979
Upper Volta	5,822	4,404	4,008	6,277	1,557	....	2,885	....	....
Ivory Coast	8,399	6,348	4,891	4,654	6,283	4,971	4,656	5,207	6,993
Mali	....†	498	668	786	737	452	760	1,084	....
Niger	....	....	....	....	....	....	3,000	5,560	....
Senegal	79	....	334	208	65	137	....	....	....

†No data available.

Guinea Worm – Continued

Editorial Note: Guinea worm disease (dracunculiasis, dracunculosis, dracontiasis) is still a serious impediment to development in some rural areas of Africa, India, and the Middle East (*1*). It is transmitted by drinking water contaminated with a small crustacean (*Cyclops*), which serves as intermediate host for the parasite, *Dracunculus medinensis*. Emergence of the worm through the skin (usually on the lower part of the legs) after a 1-year incubation period causes severe local pain. This disease has been shown to incapacitate up to 40% or more of farmers and other villagers for periods averaging 1-3 months during the annual planting or harvest season (*2,3*).

This is the only communicable disease that is entirely eliminated by substituting safe for unsafe drinking water (*4*), since no other mode of transmission exists. Within a year after introduction of safe drinking water, recurrent seasonal infections disappear (*5*). Other strategies for preventing or treating guinea worm disease are impractical for mass application (*1*).

The Decade presents a unique opportunity to eliminate dracunculiasis in extensive areas (*6*). Reduction of guinea worm disease, in turn, would give a uniquely visible, measurable, rapid, and significant health benefit to help justify the substantial funds required for that program. In affected countries, reduction in the prevalence of guinea worm disease could serve as an indicator of progress of the Decade. In addition to eliminating a crippling disease, increasing agricultural output, and possibly improving nutrition of young children in these poor rural areas, prevention of guinea worm disease would be a tangible stimulus for villagers to help build, maintain, and use safe water sources.

Since the rural population still unserved by safe drinking water in the relevant WHO regions of Africa, Southeast Asia, and the Eastern Mediterranean, is approximately 786 million and there exist an estimated 10-48 million cases of the disease, only about 1.3%-6.2% of the unserved rural populations of those regions would need to be reached with safe drinking water in order to eliminate guinea worm disease. CDC is working with principal supporters of the Decade, especially the UNDP, WHO, and the World Bank, to encourage consideration of guinea worm disease in establishing priorities for provision of safe water supplies.

References

1. Muller R. Guinea worm disease: epidemiology, control and treatment. Bull WHO 1979;57:683-9.
2. Kale OO. The clinico-epidemiological profile of guinea worm in the Ibadan District of Nigeria. Am J Trop Med Hyg 1977;26:208-14.
3. Belcher DW, Wurapa FK, Ward WB, Lourie IM. Guinea worm in Southern Ghana: its epidemiology and impact on agricultural productivity. Am J Trop Med Hyg 1975;24:243-9.
4. White GF, Bradley DJ, White AV. Drawers of water. Chicago: University of Chicago Press, 1972: 191.
5. Muller R. Dracunculus and dracunculiasis. Adv Parasitol 1971;9:73-151.
6. Hopkins D, Foege W. Guinea worm disease. Science 1981;212:495. Letter.

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