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International Notes

Increase in Prevalence of Leprosy Caused by Dapsone-Resistant *Mycobacterium leprae*

The prevalence of secondary resistance of *Mycobacterium leprae* to dapsone (among lepromatous leprosy patients treated for a minimum of 5 years) has been estimated, from surveys conducted before 1976, to be 2.5/100 patients at risk in Malaysia, 3/100 in Israel, 7/100 in Costa Rica, and at least 10/100 in Ethiopia. Apparent primary resistance to dapsone (among patients not known to have had treatment) was first observed in the mid-1970s in 16 of 24 patients studied in Ethiopia. Because some of these estimates may have been biased and because treatment practices in Ethiopia may not have been representative, the THELEP Program (Chemotherapy of Leprosy component of UNDP/World Bank/WHO Special Program for Research and Training in Tropical Diseases) decided, at its inception in 1976, to sponsor in various countries carefully conducted surveys of the prevalence of primary and secondary dapsone-resistant lepromatous leprosy.

In November 1981, at a Scientific Meeting on Leprosy in Rangoon, Burma (sponsored by WHO Western Pacific and Southeast Asia Regional Offices and the THELEP and IMMLEP [Immunology of Leprosy] Programs), estimates of the prevalence of secondary dapsone resistance were reported as 6.4/100 in Gudiyatham Taluk, South India, 4.1/100 in Trivellore Taluk, South India, and 3.6/100 in Shanghai Municipality, China. The surveys are still in progress, and these estimates are thought to be minimal.

Estimates of the prevalence of primary resistance to dapsone showed a marked change: 2/62 (3%) in Cebu, Philippines, 7/40 (18%) in Chingleput, South India, and 12/30 (40%) in Bamako, Mali. Cases of primary resistance were also reported from Gudiyatham Taluk and Jakarta, Indonesia. This high prevalence of primary dapsone resistance probably results from transmission of *M. leprae* by patients whose relapses due to secondary drug resistance were not recognized and who therefore had not been treated with effective drugs.

Because of this prevalence of primary and secondary dapsone resistance, it is now necessary to give combined therapy to all new leprosy patients—both lepromatous and tuberculoid. Lepromatous patients who have thus far been treated only with dapsone should probably also be given combined therapy. Dapsone, which has been the standard drug for control of leprosy, may eventually be of little use, even in combination with more expensive and less-well-tolerated drugs. Earlier recommendations for combined chemotherapy have not been implemented in many countries because of expense and feasibility problems. The WHO Study Group on Chemotherapy of Leprosy for Control Programmes has recently studied relevant problems and has recommended combined-drug regimens based primarily on the intermittent administration of rifampin.

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Leprosy — Continued

Editorial Note: The 3 drugs used most frequently for leprosy are dapsone, rifampin (rifampicin), and clofazimine. In addition, ethionamide (or prothionamide) has shown promise, but data supporting its efficacy are still inadequate. Dapsone is relatively inexpensive, and the side effects are minimal. Rifampin is much more expensive and has important side effects with irregular administration.(*1*). Clofazimine is also expensive and causes skin pigmentation so that patients with light skin often object to taking it.

Dapsone was first used widely in countries with endemic leprosy in the 1950s, and secondary resistance was not reported until 1964 (*2*). Relapse due to secondary drug resistance has appeared after 5-20 years of dapsone use, but after only 1-2 years of rifampin use, when each was used as single drug therapy. Drug resistance can be documented by mouse-foot-pad inoculation after the drug has been mixed in the mouse diet (in 3 dosages in the case of dapsone). Most of the primary dapsone resistance now being reported occurs at the lowest dosage, and it is still possible that patients with such resistant strains can benefit from full-dosage dapsone as part of a combination regimen.

Consequences of the new findings are quite serious and will become increasingly so as infections now in the incubation period reach the clinical stage. Often purchases of rifampin and clofazimine require foreign exchange, which is limited in many countries with endemic leprosy. The potentially serious side effects will require more careful supervision during drug administration. Thus, until the problem of drug-resistant *M. leprae* is controlled, the incidence of leprosy can be expected to increase worldwide, and the disease will be more difficult to treat.

These discouraging findings call attention to the urgent need for development of new antileprosy drugs and an effective antileprosy vaccine. THELEP, IMMLEP, and other organizations are currently sponsoring research in these areas.

References

1. Girling DJ, Hitze KL. Adverse reactions to rifampicin. Bull WHO 1979;57:45-9.
2. Pettit JH, Rees RJ. Sulphone resistance in leprosy. An experimental and clinical study. Lancet 1964;2:673-4.

Epidemiologic Notes and Reports

Psittacosis Associated with Turkey Processing — Ohio

An outbreak of psittacosis occurred among employees of an Ohio turkey-processing plant in July 1981. Approximately 27 of the plant's some 80 employees were ill; 3 were hospitalized. Turkeys being slaughtered at the plant were the probable source of infection, but no specific group of birds could be implicated.

Most patients had an illness characterized by weakness, headache, fever, chills, and cough. To a lesser extent, patients had photophobia, conjunctival suffusion, generalized joint pains, stomach cramps and diarrhea. Eight patients who had chest X rays showed evidence of pneumonia consistent with psittacosis.

Paired serum specimens from 27 workers were tested for complement-fixing antibodies to chlamydial group antigen. Of 15 workers who had recently had an illness compatible with psittacosis, 7 had a $\geq$4-fold titer rise, and 5 had a titer of $\geq$16 in at least 1 specimen. Of 12 workers who had not recently had a compatible illness, none had a significant titer change. Single serum specimens were obtained from 29 other workers 1 to 3 days after onset of the

Psittacosis — Continued

last-recognized case in the employee group. Eight of 11 workers in this group who had recently had illness compatible with psittacosis had a titer of ≥16; 2 of 18 who had not had such an illness had a titer ≥16.

The plant, which operates approximately 40 hours/week, 10 months a year, processes turkeys only, which are delivered by truck from various locations, slaughtered, and defeathered on the day of arrival in the "kill-pick" area. Then they are conveyed on a continuously moving line into the evisceration area, where deep tissues are exposed, the birds are inspected and trimmed, edible organs are removed, and the remaining inedible internal and external parts are discarded.

Because most employees worked in various job stations in several departments on a given day, it was difficult to assess the relative importance of respiratory, skin, and conjunctival exposure. However, the attack rate by work department was significantly higher for workers in the kill-pick and evisceration areas than in other departments of the plant (Fisher exact test, 1-tailed, p=0.0001). Furthermore, there was no apparent correlation between degree of skin exposure and clinical psittacosis, suggesting that infections were the result of aerosol transmission or that multiple routes of exposure may have been involved.

Turkey-condemnation rates were analyzed in an effort to identify a specific flock or flocks that were the source of infection. The mean condemnation rate for turkeys in May-July 1981 (1.3%) was similar to that in May-July 1980 (1.7%). Turkeys from 37 flocks were slaughtered in the period June 21-July 13, 1981, the suspected period of exposure to *Chlamydia psittaci*. Birds from 8 flocks that were slaughtered on 7 different days during this period had a condemnation rate 2-fold higher than average (Figure 1). However, investigations by public health veterinarians in the states of origin for these birds revealed no evidence of psittacosis at the implicated sites.

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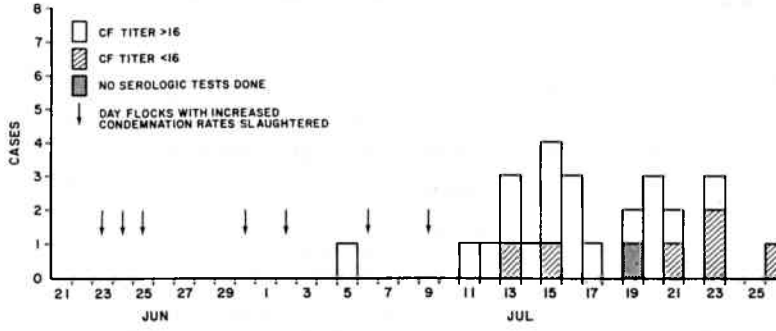
Editorial Note: The last reported outbreak of psittacosis at a turkey-processing plant in the United States occurred in Nebraska in June 1976 (*1*). Twenty-eight of the plant's 98 employ-

FIGURE 1. Confirmed and suspected psittacosis cases* among employees of turkey processing plant, by date of onset, Ohio, June 21-July 26, 1981



*One case omitted-onset date unknown.

Psittacosis — Continued

ees were affected. The outbreak in 1976 and 5 other outbreaks in 1974 were related to the slaughter of retired-breeder birds from Texas (*2*).

Following the psittacosis outbreaks among turkey-processing plant employees in 1974, the U.S. Department of Agriculture, in conjunction with state and local agencies, implemented a temporary preslaughter screening and control program for turkeys from Texas. However, in the outbreak described here, no specific source of infected turkeys could be identified, and there were no reports of psittacosis outbreaks at other turkey-processing plants. Therefore, a program similar to that conducted in Texas is not warranted.

Public health officials and physicians practicing in communities with turkey-processing plants should be aware of the possibility of sporadic outbreaks of psittacosis among plant employees so that a diagnosis can be made and appropriate therapy instituted promptly.

References

1. Anderson DC, Stoesz PA, Kaufmann AF. Psittacosis outbreak in employees of a turkey-processing plant. Am J Epidemiol 1978;107:140-8.
2. CDC. Turkey-associated psittacosis—Nebraska. MMWR 1976;25:301-2.

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

DISEASE	52nd WEEK ENDING			CUMULATIVE, FIRST 52 WEEKS		
	January 2 1982	December 27 1980	MEDIAN 1976-1980	January 2 1982	December 27 1980*	MEDIAN 1976-1980
Aseptic meningitis	91	92	99	9,027	7,774	6,498
Brucellosis	2	3	6	159	182	206
Chickenpox	2,394	3,333	3,550	195,061	186,917	185,886
Encephalitis: Primary (arthropod-borne & unspec.)	19	18	23	1,400	1,198	1,185
Post-infectious	–	2	4	81	214	220
Gonorrhea: Civilian	9,980	9,547	16,944	984,330	999,638	1,001,673
Military	468	247	294	28,033	26,477	26,477
Hepatitis: Type A	397	463	780	25,077	28,393	30,172
Type B	361	338	356	20,613	18,479	15,318
Type unspecified	180	154	183	10,891	11,610	8,913
Leprosy	12	2	5	244	220	161
Malaria	23	17	17	1,304	2,012	730
Measles (rubeola)	9	10	252	3,032	13,385	26,915
Meningococcal infections: Total	68	55	77	3,454	2,715	2,441
Civilian	68	55	73	3,441	2,696	2,413
Military	–	–	–	13	19	20
Mumps	139	84	343	4,729	8,449	16,777
Pertussis	12	24	32	1,189	1,660	1,660
Rubella (German measles)	16	32	138	2,060	3,819	12,193
Syphilis (Primary & Secondary): Civilian	336	299	343	30,610	27,259	23,724
Military	1	5	5	360	322	319
Tuberculosis	658	603	800	27,412	27,396	29,365
Tularemia	9	5	6	268	235	167
Typhoid fever	7	4	7	589	499	499
Typhus fever, tick-borne (RMSF)	–	4	13	1,165	1,162	1,066
Rabies, animal	73	71	50	6,996	6,325	3,173

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	1	Poliomyelitis: Total	6
Botulism (Calif. 1)	79	Paralytic	6
Cholera	19	Psittacosis (Utah 2)	108
Congenital rubella syndrome (Ariz. 1)	12	Rabies, human	1
Diphtheria	4	Tetanus	60
Leptospirosis (Calif. 1)	55	Trichinosis (Calif. 1)	145
Plague	10	Typhus fever, flea-borne (endemic, murine)	48

*For final 1980 totals, refer to 1980 Annual Summary, September 1981, Vol. 29, No. 54.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending January 2, 1982 and December 27, 1980 (52nd week)

REPORTING AREA	ASEPTIC MENINGITIS	BRUCELLOSIS	CHICKEN POX	ENCEPHALITIS		GONORRHEA (Civilian)		HEPATITIS (Viral), by type			LEPROSY
				Primary	Post-infectious			A	B	Unspecified	
	1981	CUM. 1981	1981	CUM. 1981	CUM. 1981	CUM. 1981	CUM. 1980	1981	1981	1981	CUM. 1981
UNITED STATES	91	159	2,394	1,400	81	984,330	999,638	397	361	180	244
NEW ENGLAND	3	7	337	47	8	24,334	25,623	13	20	15	5
Maine	–	–	15	1	–	1,308	1,426	1	1	1	–
N.H.	–	1	4	4	–	886	881	–	1	–	1
Vt.	–	–	1	–	–	429	541	6	1	–	–
Mass.	1	4	167	18	1	10,224	10,799	2	4	14	3
R.I.	–	1	49	1	2	1,504	1,624	2	1	–	–
Conn.	2	1	101	23	5	9,983	10,352	2	12	–	1
MID. ATLANTIC	12	7	141	116	9	120,038	113,502	32	67	21	15
Upstate N.Y.	3	3	118	33	3	21,277	20,124	8	15	3	3
N.Y. City	4	1	23	20	–	48,820	45,487	10	17	2	10
N.J.	1	1	N	17	–	22,656	20,512	14	35	16	2
Pa.	4	2	–	46	6	27,285	27,379	U	U	U	–
E.N. CENTRAL	2	7	1,114	492	11	144,142	155,345	76	52	16	23
Ohio	1	1	167	245	2	45,765	41,477	24	19	3	1
Ind.	–	1	29	145	8	12,673	16,181	3	9	1	–
Ill.	1	–	347	9	–	40,436	48,344	15	11	3	20
Mich.	–	2	496	68	1	32,179	35,149	31	9	9	2
Wis.	–	3	75	25	–	13,089	14,194	3	4	–	–
W.N. CENTRAL	5	21	240	108	7	47,621	47,796	18	12	5	5
Minn.	2	5	1	40	4	7,475	7,965	5	5	2	2
Iowa	1	7	114	34	2	5,283	5,065	2	1	–	–
Mo.	–	4	–	10	–	22,197	20,999	1	1	2	–
N. Dak.	–	–	3	1	–	603	673	–	–	–	–
S. Dak.	2	1	–	1	–	1,279	1,348	6	–	–	–
Nebr.	–	1	11	7	–	3,521	3,689	–	4	–	–
Kans.	–	3	111	15	1	7,263	8,057	4	1	1	3
S. ATLANTIC	20	32	246	154	22	242,128	251,053	36	64	20	13
Del.	–	1	4	–	–	3,930	3,599	–	–	1	–
Md.	1	–	108	25	2	29,223	26,976	5	9	4	2
D.C.	–	–	–	–	–	13,801	17,036	1	1	–	–
Va.	6	9	7	40	6	22,266	23,271	1	3	2	3
W. Va.	–	1	71	22	–	3,539	3,402	1	1	–	–
N.C.	2	1	N	36	1	37,015	37,937	5	9	5	–
S.C.	–	–	–	4	–	23,481	23,177	–	4	1	7
Ga.	–	6	11	2	–	50,488	49,221	10	13	–	1
Fla.	11	14	45	25	13	58,385	66,434	13	24	7	–
E.S. CENTRAL	3	13	11	150	7	82,184	80,881	11	20	3	–
Ky.	–	1	9	21	2	10,336	11,695	1	6	3	–
Tenn.	–	5	N	88	1	31,525	29,670	7	5	–	–
Ala.	3	4	2	23	2	24,479	24,037	2	2	–	–
Miss.	–	3	–	18	2	15,844	15,479	1	7	–	–
W.S. CENTRAL	9	50	275	124	4	129,126	125,136	73	40	24	28
Ark.	1	7	–	7	–	9,824	9,990	2	3	1	1
La.	–	2	N	7	1	23,191	22,289	20	4	2	–
Okla.	1	7	–	26	1	14,289	12,565	6	8	2	–
Tex.	7	34	275	84	2	81,822	80,292	45	25	19	27
MOUNTAIN	3	5	4	54	3	39,135	38,046	19	4	19	5
Mont.	–	–	–	5	–	1,421	1,451	–	–	–	–
Idaho	–	–	–	–	–	1,808	1,729	1	–	–	1
Wyo.	–	–	–	1	–	1,025	1,077	–	1	2	–
Colo.	–	1	–	14	1	10,326	10,425	1	2	1	–
N. Mex.	–	–	–	–	–	4,393	4,562	3	–	–	–
Ariz.	3	1	N	24	–	11,801	10,107	12	–	8	3
Utah	–	–	4	9	2	1,933	1,936	1	–	5	–
Nev.	–	3	–	1	–	6,428	6,759	1	1	3	1
PACIFIC	34	17	26	155	10	155,622	162,256	119	82	57	150
Wash.	4	–	20	14	1	12,975	14,009	11	7	5	5
Oreg.	–	–	–	6	1	9,161	11,098	1	5	–	5
Calif.	28	17	3	126	8	126,408	129,899	102	69	50	91
Alaska	–	–	–	5	–	4,047	4,018	3	1	2	–
Hawaii	2	–	3	4	–	3,031	3,232	2	–	–	49
Guam	U	–	U	–	–	81	124	U	U	U	–
P.R.	–	–	–	1	–	3,235	2,765	12	2	3	2
V.I.	–	–	–	–	–	257	124	–	–	–	–
Pac. Trust Terr.	U	–	U	–	–	474	422	U	U	U	17

N: Not notifiable U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending January 2, 1982 and December 27, 1980 (52nd week)

REPORTING AREA	MALARIA		MEASLES (RUBEOLA)			MENINGOCOCCAL INFECTIONS (Total)		MUMPS		PERTUSSIS	RUBELLA		
	1981	CUM. 1981	1981	CUM. 1981	CUM. 1980	1981	CUM. 1981	1981	CUM. 1981	1981	1981	CUM. 1981	CUM. 1980
UNITED STATES	23	1,304	9	3,032	13,385	68	3,454	139	4,729	12	16	2,060	3,819
NEW ENGLAND	–	66	–	88	677	5	219	7	266	3	–	129	282
Maine	–	2	–	5	33	–	24	–	47	–	–	33	129
N.H.	–	3	–	10	332	1	22	–	25	–	–	54	45
Vt.	–	6	–	3	226	1	15	–	10	–	–	–	3
Mass.	–	29	–	60	59	2	69	7	104	3	–	29	73
R.I.	–	4	–	–	2	–	20	–	28	–	–	–	9
Conn.	–	22	–	10	25	1	69	–	52	–	–	13	23
MID. ATLANTIC	3	168	3	1,011	3,913	17	538	9	704	–	3	235	587
Upstate N.Y.	1	36	2	237	732	2	166	4	158	–	1	117	223
N.Y. City	2	64	1	108	1,210	–	85	4	95	–	2	57	104
N.J.	–	49	–	59	852	2	111	–	104	–	–	48	108
Pa.	–	19	–	607	1,119	13	176	1	347	–	–	13	152
E.N. CENTRAL	4	76	–	92	2,451	11	431	102	1,640	1	–	425	897
Ohio	3	17	–	20	380	2	167	84	639	1	–	3	9
Ind.	–	10	–	9	94	2	56	–	128	–	–	137	384
Ill.	–	19	–	26	351	7	110	7	229	–	–	113	188
Mich.	1	30	–	34	250	–	91	10	406	–	–	44	129
Wis.	–	–	–	3	1,376	–	7	1	238	–	–	128	187
W.N. CENTRAL	2	38	–	10	1,341	2	154	6	271	–	1	84	213
Minn.	2	17	–	3	1,104	1	49	–	8	–	1	9	28
Iowa	–	5	–	1	20	–	27	6	94	–	–	5	9
Mo.	–	4	–	1	67	–	47	–	26	–	–	2	45
N. Dak.	–	1	–	–	–	–	2	–	–	–	–	–	6
S. Dak.	–	1	–	–	–	1	10	–	1	–	–	–	2
Nebr.	–	2	–	4	83	–	–	–	3	–	–	1	4
Kans.	–	8	–	1	67	–	19	–	139	–	–	67	119
S. ATLANTIC	2	158	–	493	2,006	15	779	3	597	1	1	153	353
Del.	1	2	–	–	4	–	4	–	10	–	–	2	1
Md.	–	36	–	5	84	3	60	–	110	–	–	1	69
D.C.	–	9	–	1	5	–	7	–	4	–	–	–	1
Va.	–	33	–	16	339	1	103	1	134	1	–	9	42
W. Va.	–	4	–	9	10	1	33	2	120	–	–	23	26
N.C.	1	15	–	3	130	1	117	–	23	–	–	5	48
S.C.	–	2	–	2	159	1	92	–	18	–	–	8	58
Ga.	–	10	–	111	851	2	117	–	38	–	–	39	–
Fla.	–	47	–	346	424	6	246	–	140	–	1	66	108
E.S. CENTRAL	–	12	–	6	348	2	227	–	98	–	–	41	92
Ky.	–	–	–	2	57	–	62	–	49	–	–	27	46
Tenn.	–	–	–	2	170	2	72	–	24	–	–	13	41
Ala.	–	10	–	2	22	–	68	–	19	–	–	1	3
Miss.	–	2	–	–	99	–	25	–	6	–	–	–	2
W.S. CENTRAL	1	103	4	907	983	9	548	–	241	–	1	191	152
Ark.	–	4	–	24	16	1	34	–	8	–	–	7	4
La.	–	12	–	4	15	–	136	–	6	–	–	9	13
Okla.	–	8	–	7	775	3	53	–	–	–	1	4	8
Tex.	1	79	4	872	177	5	325	–	227	–	–	171	127
MOUNTAIN	–	45	–	39	490	2	136	7	159	1	2	98	175
Mont.	–	2	–	–	2	–	13	–	14	–	–	4	45
Idaho	–	4	–	1	–	–	7	1	8	–	–	4	27
Wyo.	–	–	–	1	–	–	4	–	3	–	–	12	1
Colo.	–	20	–	11	24	–	45	1	54	–	–	27	12
N. Mex.	–	3	–	8	12	1	9	–	–	–	–	5	5
Ariz.	–	9	–	7	395	–	22	2	39	1	–	22	45
Utah	–	4	–	–	47	–	6	2	24	–	2	12	31
Nev.	–	3	–	11	10	1	30	1	17	–	–	12	9
PACIFIC	11	638	2	386	1,176	5	422	5	753	6	8	704	1,068
Wash.	–	28	–	3	178	1	76	–	165	–	2	108	97
Oreg.	–	19	1	6	1	1	65	–	69	–	–	51	65
Calif.	10	577	1	370	984	3	264	5	473	6	6	533	890
Alaska	–	3	–	–	6	–	12	–	20	–	–	1	12
Hawaii	1	11	–	7	7	–	5	–	26	–	–	11	4
Guam	U	2	U	5	6	U	–	U	8	U	U	1	2
P.R.	–	11	–	303	209	–	14	4	163	–	–	5	28
V.I.	–	4	–	25	6	–	1	–	18	–	–	1	–
Pac. Trust Terr.	U	–	U	1	12	U	–	U	22	U	U	1	2

U: Unavailable

TABLE III (Cont.'d). Cases of specified notifiable diseases, United States, weeks ending January 2, 1982 and December 27, 1980 (52nd week)

REPORTING AREA	SYPHILIS (Civilian) (Primary & Secondary)		TUBERCULOSIS		TULAREMIA	TYPHOID FEVER		TYPHUS FEVER (Tick-borne) (RMSF)		RABIES, Animal
	CUM. 1981	CUM. 1980	1981	CUM. 1981	CUM. 1981	1981	CUM. 1981	1981	CUM. 1981	CUM. 1981
UNITED STATES	30,610	27,259	658	27,412	268	7	589	–	1,165	6,996
NEW ENGLAND	605	522	23	822	5	–	16	–	9	43
Maine	5	6	–	50	–	–	1	–	–	17
N.H.	15	8	9	33	–	–	–	–	–	7
Vt.	17	6	–	27	1	–	–	–	–	–
Mass.	384	320	11	492	3	–	8	–	5	11
R.I.	36	33	–	57	–	–	–	–	2	2
Conn.	148	149	3	163	1	–	7	–	2	6
MID. ATLANTIC	4,375	3,793	115	4,294	10	4	86	–	49	119
Upstate N.Y.	393	327	17	718	10	1	14	–	14	81
N.Y. City	2,631	2,471	31	1,614	–	1	47	–	3	–
N.J.	617	438	21	928	–	2	16	–	11	24
Pa.	734	557	46	1,034	–	–	9	–	21	14
E.N. CENTRAL	2,269	2,736	93	3,714	6	–	59	–	40	1,034
Ohio	319	380	–	658	–	–	11	–	27	69
Ind.	315	193	–	389	4	–	3	–	6	88
Ill.	1,169	1,660	66	1,562	–	–	15	–	6	544
Mich.	379	401	27	915	1	–	27	–	1	17
Wis.	87	102	–	190	1	–	3	–	–	316
W.N. CENTRAL	663	371	17	945	38	–	22	–	55	2,688
Minn.	189	129	8	188	–	–	2	–	2	485
Iowa	29	33	–	88	1	–	3	–	7	889
Mo.	386	157	4	420	28	–	12	–	30	242
N. Dak.	12	4	–	31	–	–	–	–	–	357
S. Dak.	2	6	1	66	3	–	1	–	–	310
Nebr.	11	12	–	32	3	–	2	–	3	198
Kans.	34	30	4	120	3	–	2	–	13	207
S. ATLANTIC	8,087	6,562	106	5,758	15	–	61	–	666	648
Del.	17	21	–	54	1	–	–	–	3	1
Md.	570	447	20	607	1	–	14	–	62	47
D.C.	649	489	4	316	–	–	2	–	1	–
Va.	696	588	–	577	4	–	1	–	105	166
W. Va.	32	18	6	196	–	–	6	–	6	35
N.C.	633	493	36	999	2	–	5	–	301	19
S.C.	560	394	–	541	3	–	2	–	102	50
Ga.	1,963	1,851	14	952	4	–	4	–	76	225
Fla.	2,967	2,261	26	1,516	–	–	27	–	10	105
E.S. CENTRAL	1,994	2,213	36	2,399	11	1	12	–	134	503
Ky.	98	129	16	607	3	–	1	–	2	127
Tenn.	683	925	7	794	8	–	3	–	82	249
Ala.	615	480	13	648	–	–	5	–	23	123
Miss.	598	679	–	350	–	1	3	–	27	4
W.S. CENTRAL	7,333	5,540	62	3,101	130	1	143	–	174	1,102
Ark.	160	217	6	346	57	–	9	–	35	152
La.	1,667	1,389	11	542	5	1	3	–	1	34
Okla.	176	106	24	360	47	–	4	–	98	218
Tex.	5,330	3,828	21	1,853	21	–	127	–	40	698
MOUNTAIN	783	641	44	777	41	–	24	–	30	254
Mont.	11	3	1	39	6	–	4	–	12	122
Idaho	19	16	–	11	4	–	–	–	5	7
Wyo.	20	12	–	12	1	–	–	–	5	17
Colo.	249	183	18	117	9	–	9	–	3	35
N. Mex.	132	112	12	152	4	–	–	–	–	28
Ariz.	187	209	11	342	2	–	10	–	–	28
Utah	32	18	2	59	14	–	1	–	2	11
Nev.	133	88	–	45	1	–	–	–	3	6
PACIFIC	4,501	4,881	162	5,602	12	1	166	–	8	605
Wash.	176	259	24	403	1	–	5	–	1	15
Oreg.	122	111	13	207	1	–	4	–	–	10
Calif.	4,115	4,361	114	4,723	10	1	153	–	7	541
Alaska	15	10	11	83	–	–	–	–	–	39
Hawaii	73	140	–	186	–	–	4	–	–	–
Guam	–	5	U	33	–	U	–	U	–	–
P.R.	648	615	1	521	–	–	4	–	–	88
V.I.	18	11	–	1	–	–	6	–	–	–
Pac. Trust Terr.	–	–	U	66	–	U	–	U	–	–

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending January 2, 1982 (52nd week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)						P&I** TOTAL
	ALL AGES	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	714	470	171	46	17	10	58
Boston, Mass.	192	120	46	17	6	3	27
Bridgeport, Conn.	48	26	14	5	3	–	3
Cambridge, Mass.	22	14	5	3	–	–	2
Fall River, Mass.	41	28	12	–	1	–	1
Hartford, Conn.	59	34	19	3	1	2	–
Lowell, Mass.	23	17	5	–	–	1	2
Lynn, Mass.	17	12	1	3	1	–	–
New Bedford, Mass.	22	19	3	–	–	–	1
New Haven, Conn.	37	27	5	2	2	1	–
Providence, R.I.	86	61	18	5	1	1	6
Somerville, Mass.	14	11	2	1	–	–	1
Springfield, Mass.	56	35	12	6	2	1	9
Waterbury, Conn.	31	20	10	1	–	–	3
Worcester, Mass.	66	46	19	–	–	1	3
MID. ATLANTIC	2,607	1,721	558	192	75	60	102
Albany, N.Y.	59	42	12	–	2	3	–
Allentown, Pa.	18	13	4	1	–	–	–
Buffalo, N.Y.	99	69	17	7	4	2	7
Camden, N.J.	35	20	8	4	2	1	1
Elizabeth, N.J.	34	25	8	1	–	–	–
Erie, Pa.†	45	37	6	1	1	–	1
Jersey City, N.J.	56	38	13	4	–	1	–
N.Y. City, N.Y.	1,429	918	310	127	44	30	50
Newark, N.J.	89	35	27	13	8	5	5
Paterson, N.J.	30	18	7	3	1	1	1
Philadelphia, Pa.†	220	151	49	11	6	3	12
Pittsburgh, Pa.†	69	44	18	2	1	4	3
Reading, Pa.	42	33	7	2	–	–	2
Rochester, N.Y.	110	86	14	4	1	5	7
Schenectady, N.Y.	22	15	6	1	–	–	–
Scranton, Pa.†	31	21	5	3	2	–	–
Syracuse, N.Y.	107	75	22	3	2	5	4
Trenton, N.J.	49	38	10	1	–	–	3
Utica, N.Y.	26	16	8	2	–	–	2
Yonkers, N.Y.	37	27	7	2	1	–	4
E.N. CENTRAL	2,224	1,428	503	141	69	82	63
Akron, Ohio	30	18	3	2	2	5	–
Canton, Ohio	44	32	11	–	–	1	1
Chicago, Ill.	563	356	127	45	14	21	20
Cincinnati, Ohio	109	68	31	2	5	3	1
Cleveland, Ohio	144	93	36	8	3	4	–
Columbus, Ohio	133	73	34	11	7	8	–
Dayton, Ohio	92	53	22	9	3	5	4
Detroit, Mich.	282	165	68	35	10	4	4
Evansville, Ind.	38	27	6	1	4	–	1
Fort Wayne, Ind.	41	31	9	1	–	–	1
Gary, Ind.	13	8	2	1	1	1	–
Grand Rapids, Mich	69	53	12	2	–	2	5
Indianapolis, Ind.	153	98	39	5	5	6	3
Madison, Wis.	41	25	6	4	5	1	9
Milwaukee, Wis.	130	85	32	3	2	7	2
Peoria, Ill.	39	23	9	–	–	7	–
Rockford, Ill.	50	38	7	1	1	3	4
South Bend, Ind.	59	42	14	2	1	–	5
Toledo, Ohio	126	89	24	7	3	3	3
Youngstown, Ohio	68	51	11	2	3	1	–
W.N. CENTRAL	652	424	148	29	18	33	30
Des Moines, Iowa	52	36	15	–	1	–	1
Duluth, Minn.	17	11	4	–	1	1	2
Kansas City, Kans.	34	20	7	1	3	3	2
Kansas City, Mo.	95	59	23	6	2	5	5
Lincoln, Nebr.	32	24	5	1	1	1	5
Minneapolis, Minn.	62	37	18	1	2	4	2
Omaha, Nebr.	83	54	19	4	1	5	3
St. Louis, Mo.	182	122	38	12	4	6	4
St. Paul, Minn.	47	35	10	2	–	–	3
Wichita, Kans.	48	26	9	2	3	8	3
S. ATLANTIC	1,246	788	299	84	32	42	44
Atlanta, Ga.	145	85	35	9	2	14	5
Baltimore, Md.	190	124	46	14	3	3	2
Charlotte, N.C.	62	34	18	6	2	1	5
Jacksonville, Fla.	99	66	20	9	4	–	2
Miami, Fla.	145	83	43	13	3	3	1
Norfolk, Va.	66	43	15	4	–	4	3
Richmond, Va.	81	51	19	5	4	2	2
Savannah, Ga.	61	40	12	3	2	4	11
St. Petersburg, Fla.	137	113	16	5	2	1	6
Tampa, Fla.	92	57	20	7	4	4	4
Washington, D.C.	130	72	41	6	6	5	3
Wilmington, Del.	38	20	14	3	–	1	–
E.S. CENTRAL	618	390	151	40	21	16	32
Birmingham, Ala.	98	44	38	8	2	6	2
Chattanooga, Tenn.	41	25	8	5	1	2	2
Knoxville, Tenn.	48	34	10	2	1	1	2
Louisville, Ky.	86	60	23	2	–	1	6
Memphis, Tenn.	138	97	27	8	6	–	8
Mobile, Ala.	65	41	17	4	2	1	2
Montgomery, Ala.	40	28	4	3	1	4	3
Nashville, Tenn.	102	61	24	8	8	1	7
W.S. CENTRAL	1,253	716	309	119	56	53	43
Austin, Tex.	45	32	8	2	1	2	1
Baton Rouge, La.	38	25	11	2	–	–	–
Corpus Christi, Tex.	33	23	4	3	3	–	–
Dallas, Tex.	143	76	36	15	9	7	3
El Paso, Tex.	52	30	12	4	3	3	3
Fort Worth, Tex.	73	47	16	7	3	–	7
Houston, Tex.	334	148	96	51	19	20	6
Little Rock, Ark.	76	48	24	–	2	2	10
New Orleans, La.	163	104	36	11	6	6	–
San Antonio, Tex.	155	95	31	13	8	8	6
Shreveport, La.	58	45	11	2	–	–	1
Tulsa, Okla.	83	43	24	9	2	5	6
MOUNTAIN	628	390	143	42	34	19	23
Albuquerque, N.Mex.	66	30	15	10	11	–	–
Colo. Springs, Colo.	43	29	11	2	1	–	7
Denver, Colo.	124	79	37	2	4	2	4
Las Vegas, Nev.	70	38	16	8	6	2	–
Ogden, Utah	23	18	4	–	–	1	1
Phoenix, Ariz.	145	93	31	6	6	9	3
Pueblo, Colo.	21	17	3	1	–	–	2
Salt Lake City, Utah	46	27	8	5	3	3	1
Tucson, Ariz.	90	59	18	8	3	2	5
PACIFIC	1,532	992	349	101	45	44	78
Berkeley, Calif.	22	18	3	1	–	–	–
Fresno, Calif.	72	45	17	5	3	2	5
Glendale, Calif.	21	18	2	–	–	1	–
Honolulu, Hawaii	58	25	21	5	2	5	4
Long Beach, Calif.	78	52	17	6	3	–	6
Los Angeles, Calif.	442	274	99	33	21	15	18
Oakland, Calif.	61	42	13	2	3	1	5
Pasadena, Calif.	27	22	3	1	–	1	3
Portland, Oreg.	124	82	27	9	3	3	5
Sacramento, Calif.	60	46	12	–	1	1	6
San Diego, Calif.	60	41	12	5	1	1	7
San Francisco, Calif.	139	96	31	8	2	1	3
San Jose, Calif.	146	91	39	11	2	3	7
Seattle, Wash.	129	85	28	9	2	5	2
Spokane, Wash.	55	29	19	3	2	2	3
Tacoma, Wash.	38	26	6	3	–	3	4
TOTAL	11,474††	7,319	2,631	794	367	359	473

*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.

Patients with Recurrent Tuberculosis

Forty-five states and the District of Columbia have submitted data on the number of persons who had recurrent episodes of tuberculosis in 1980. Of a total of 20,829 patients reported in these areas, 1,499 (7.2%) were considered to have a recurrence of disease (Table 1). Percentages ranged from 0 in Colorado, Nebraska, and Wyoming to 27.3 in New Hampshire.

In addition, information available from 10 states (Connecticut, Illinois, Indiana, Maine, Mississippi, Nevada, Oklahoma, South Carolina, Washington, Wisconsin) and 3 large cities (Miami, New York, St. Louis) permits a more detailed comparison of persons with tuberculosis for the first time and those with recurrent disease. Of a total of 5,956 patients, 513 (8.6%) were reported to have recurrent disease. When the patients were grouped by age, recurrent tuberculosis was more common among older patients (Figure 2) but was not associated with race, sex, or country of birth. In the 30- to 44- and 45- to 59-year age groups, recurrent dis-

TABLE 1. Patients with recurrent tuberculosis, United States, 1980

State	Total cases	Recurrent cases	
		Number	Percentage
United States	27,749	1,499	7.2*
Alabama	663	NA	NA
Alaska	76	7	9.2
Arizona	342	25	7.3
Arkansas	369	14	3.8
California	4,279	NA	NA
Colorado	135	0	0
Connecticut	173	15	8.7
Delaware	76	7	9.2
District of Columbia	341	25	7.3
Florida	1,647	124	7.5
Georgia	849	55	6.5
Hawaii	127	3	2.4
Idaho	33	5	15.2
Illinois	1,352	145	10.7
Indiana	429	36	8.4
Iowa	91	1	1.1
Kansas	108	5	4.6
Kentucky	570	34	6.0
Louisiana	577	NA	NA
Maine	58	6	10.3
Maryland	610	58	9.5
Massachusetts	452	21	4.6
Michigan	1,168	87	7.4
Minnesota	237	19	8.0
Mississippi	458	23	5.0
Missouri	466	10	2.1
Montana	27	2	7.4
Nebraska	44	0	0
Nevada	44	2	4.5
New Hampshire	22	6	27.3
New Jersey	906	23	2.5
New Mexico	146	6	4.1
New York	2,294	206	9.0
North Carolina	1,066	121	11.4
North Dakota	54	2	3.7
Ohio	747	NA	NA
Oklahoma	333	11	3.3
Oregon	218	17	7.8
Pennsylvania	1,015	81	8.0
Rhode Island	66	12	18.2
South Carolina	520	47	9.0
South Dakota	49	4	8.2
Tennessee	791	63	8.0
Texas	2,075	94	4.5
Utah	61	4	6.6
Vermont	25	1	4.0
Virginia	654	NA	NA
Washington	424	21	5.0
West Virginia	203	18	8.9
Wisconsin	252	33	13.1
Wyoming	27	0	0

*Percentage is calculated on the basis of 20,829 cases from states reporting recurrent cases.
NA = not available.

Tuberculosis – Continued

ease was more common among patients with pulmonary than with extrapulmonary disease.

Reported by the Tuberculosis Control Div, Center for Prevention Svcs, CDC.

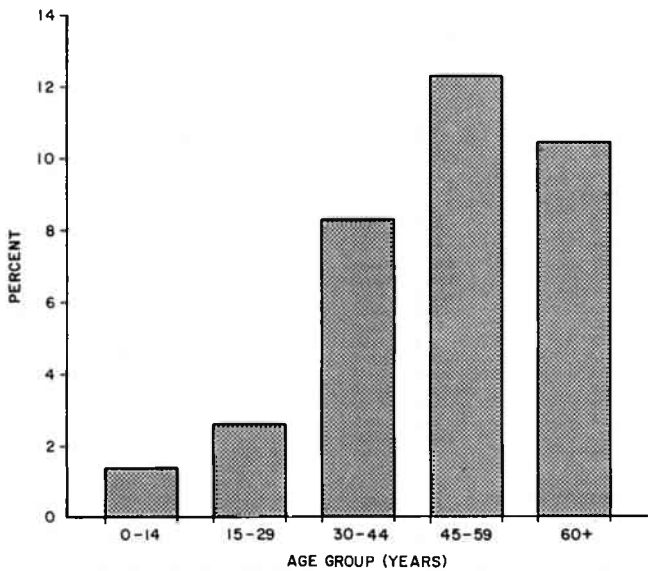
Editorial Note: Before the advent of chemotherapy, recurrent episodes of tuberculosis were common, but chemotherapy has made the disease curable. Nevertheless, some patients still have more than 1 episode of disease. Evaluation of such patients indicates that the most important cause of recurrence is inadequate chemotherapy (*1-4*) when patients are either unwilling or unable to take medication regularly, without interruption, or for a sufficient period of time to ensure successful treatment.

Because older age groups contain a larger proportion of persons who have already had tuberculosis, the proportion of patients with recurrent tuberculosis rises with age. However, age-specific incidence of recurrent disease cannot be calculated because the total number of persons with previous tuberculosis in each age group is not known.

The wide range among the states in the percentage of patients with recurrent disease reflects differences in program performance, demographic characteristics, and definition of recurrence. Although the definition has changed somewhat over the years, the percentage of recurrent cases reported in 1974 (8.4%) is roughly comparable to that reported in 1980 (7.2%). CDC recommends that tuberculosis be designated as recurrent if a patient had verified tuberculosis, was discharged or lost to supervision for more than 12 months, and again has verified tuberculosis.

Tuberculosis-control programs should evaluate patients with recurrent disease to identify the probable cause(s). Because such patients are at risk of having organisms resistant to previously used drugs, the retreatment regimen should include at least 2 drugs these patients did not receive earlier. In addition, drug-susceptibility studies should be performed on the organisms isolated.

FIGURE 2. Percentage of patients with recurrent tuberculosis, by age group, selected areas,* United States, 1980



*10 states and 3 large cities (See text).

Tuberculosis — Continued

References

1. Groth-Petersen B. The significance of chemotherapy for relapses from respiratory tuberculosis. Scand J Respir Dis 1976;57:108-12.
2. Pamra SP, Prasad G, Mathur GP. Relapse in pulmonary tuberculosis. Am Rev Respir Dis 1976;113:67-72.
3. Edsall J, Collins JG, Gray JA. The reactivation of tuberculosis in New York City in 1967. Am Rev Respir Dis 1970;102:725-36.
4. Grzybowski S, McKinnon NE, Tuters L, Pinkus G, Phillips R. Reactivations in inactive pulmonary tuberculosis. Am Rev Respir Dis 1966;93:352-61.

Lead Poisoning from Lead Tetroxide Used as a Folk Remedy — Colorado

Several community clinics outside the Denver metropolitan area have conducted lead-screening programs among children ages 6 months to 5 years. These screening efforts were initiated, in conjunction with the Epidemiology Division of the Colorado Health Department and the Pediatric Microchemistry Laboratory of the University of Colorado Health Sciences Center, after 2 children in Fort Lupton were found to have lead poisoning 1 year ago as a result of lead paint chip ingestion (*1*).

On July 24, 1981, a 29-month-old Hispanic girl screened in Greeley was found to have a zinc-protoporphyrin level of 19.1 μg/gm hemoglobin (normal <3.5), and a blood-lead level of 59 μg/dL (upper acceptable limit of <30). The child's house was found to be in good condition, with no interior source of leaded paint. The exterior of the house had some peeling leaded paint on the north wall, but there was no evidence that the child had unsupervised access to this area. A capillary blood sample taken in September, immediately before the child was given chelation treatment as an outpatient, had a lead level of 137 μg/dL; the lead level fell to 44 μg/dL after treatment. On November 10, a repeat lead level was 61 μg/dL, and clinic staff revisited the home. After reading an article (*2*) reporting a Los Angeles case of childhood lead poisoning caused by the folk remedy azarcon, the clinic staff asked whether the girl had been treated by a folk healer for "empacho," or chronic indigestion. The parents acknowledged that the child was prone to empacho and that she had been treated with azarcon on at least 3 occasions in the preceding 3 months. The child may also have been treated with this remedy while living with her maternal grandmother in Mexico between the ages of 8 and 24 months. When the child was returned to her parents, the grandmother in Chihuahua also sent along a bottle of azarcon.

The parents stated that the child had been given a dose (1/4 teaspoon) of azarcon early in October because she had swallowed chewing gum. A blood-lead level measured approximately 3 days after she received this dose was 77 μg/dL. Laboratory analysis of the bright orange powder from the bottle used to treat the child showed that the material was 93.5% lead.

Empacho is a popular, rather than scientific, term used to indicate a chronic digestive problem involving such diverse symptoms as constipation, diarrhea, nausea, vomiting, decreased appetite, apathy, and lethargy. It is commonly believed to result from a bolus of food adhering to the stomach wall.

Some Mexican-Americans in Colorado who have close ties with Mexico, where azarcon is readily available, are familiar with this folk medicine as a treatment for both children and adults with empacho. A more common remedy reported by several curanderos (folk healers)

Lead Poisoning — Continued

and their suppliers is azafran (American saffron), an orange herbal plant. Two samples of azafran tested in Colorado contained no lead and could be distinguished easily from the orange azarcon powder. Metallic mercury has also been used for the treatment of empacho by Mexican-Americans (*3*).

Reported by A Ackerman, PhD, E Cronin, MD, D Rodman, RN, Sunrise Community Health Center, K Horan, K Hammond, MS, University of Colorado Health Sciences Center, L Aldaz, MSW, R Kellner, D Ouimette, W Dunn, Colorado Health Dept; SL Fannin, MD, A Martinez, Los Angeles County Dept of Health Svcs, J Chin, MD, State Epidemiologist, California Dept of Health Svcs; Field Services Div, Epidemiology Program Office, Special Studies Br, Chronic Diseases Div, Center for Environmental Health, CDC.

Editorial Note: Recently, authorities in Los Angeles reported a second incident involving azarcon. In mid-October, a 16-year-old Hispanic female was admitted to the Los Angeles County/USC Medical Center with weakness, malaise, and jaundice. Blood studies revealed 7-8 hemoglobin, basophilic stippling, and Howell-Jolly bodies. Urinalysis showed 1+ protein and trace sugar. Liver enzymes were slightly elevated. Heavy-metal poisoning was suspected. However, this diagnosis was not confirmed because the patient left the hospital against medical advice. It was learned later that the patient recently had been given azarcon and that the substance was commonly used by her family. Investigation is continuing.

Lead poisoning from azarcon must now be considered in the differential diagnoses of many complaints in patients of Mexican origin: anemia, abdominal pain, peripheral neuropathy, encephalopathy, and renal disease. A particular concern is that azarcon might be given for the symptoms of lead intoxication. The zinc protoporphyrin or free erythrocyte protoporphyrin tests are inexpensive, reliable blood tests for the effect of lead on porphyrin production. A normal value precludes the presence of chronic increased lead absorption.

References

1. Two children with lead poisoning, Fort Lupton. Colorado Disease Bulletin 1981;20 (May 23).
2. CDC. Use of lead tetroxide as a folk remedy for gastrointestinal illness. MMWR 1981;30:546-7.
3. Geffner ME, Sandler A. Oral metallic mercury. A folk medicine remedy for gastroenteritis. Clin Pediatr 1980;19:435-7.

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