CENTERS FOR DISEASE CONTROL

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MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Measles in Medical Settings — United States

In 1980, CDC received reports from 16 states of 32 episodes in which measles had probably been transmitted in medical settings. Of these, 20 involved only medical staff, 11 involved only patients, and 1 involved both patients and staff. A total of 57 cases were reported—31 in medical staff and 26 in patients and visitors. The 57 cases represent only 0.4% of the provisional total of 13,430 cases of measles reported during 1980.

Measles transmission apparently occurred in hospital emergency rooms in 5 episodes, in physicians' offices in 6 episodes, and in hospitals in 21 episodes. In only 7 of the 32 episodes could an individual with measles definitely be identified as the probable source of transmission in the medical-care setting. Although the number of cases per episode ranged from 1 to 6, 19 (59%) episodes involved only 1 case. Transmission from medical staff to a patient was documented only once, when a 24-year-old emergency room nurse apparently transmitted infection to 3 pediatric patients, 2 who were 1 year old and 1 who was 9 years old.

Employees who had measles ranged from 19 to 40 years old (Table 1); more than 50% were <30 years old. In contrast, patients and visitors who had measles ranged in age from 3 months to 26 years. More than 75% of this latter group were preschool children. Of the 31 medical staff members who were ill, the largest group was of nurses, followed by clerical staff in hospitals and physicians' offices (Table 2). Only 1 physician became ill.

TABLE 1. Age distribution of measles cases acquired in medical settings, United States, 1980

	Employees		Patients and visitors	
Age (Year)	Number	Percentage	Number	Percentage
<1	0	—	5	19.2
1-4	0	—	15	57.7
5-9	0	—	1	3.9
10-14	0	—	0	0.0
15-19	1	3.7	2	7.7
20-24	8	29.6	1	3.9
25-29	7	25.9	2	7.7
30-34	4	14.8	0	0.0
35-39	6	22.2	0	0.0
40-44	1	3.7	0	0.0
Subtotal	27	99.9	26	100.1
Unknown	4		0	
Total	31		26	

Measles — Continued

TABLE 2. Occupations of medical employees who contracted measles, United States, 1980

Occupation	Number	Percentage
Nurse	9	29.0
Clerical staff	4	12.9
Adminstrative staff	3	9.7
Dietitian	1	3.2
Laboratory technician	1	3.2
Ophthalmology technician	1	3.2
Pharmacist	1	3.2
Physician	1	3.2
Physician's assistant	1	3.2
Respiratory therapist	1	3.2
Security guard	1	3.2
Volunteer	1	3.2
Unknown	6	19.4
Total	31	99.8

Reported by Immunization Div, Center for Prevention Services, and Hospital Infections Br, Bacterial Diseases Div, Center for Infectious Diseases, CDC.

Editorial Note: This report demonstrates that the risk of acquiring measles in medical settings is probably low. Nevertheless, health-care personnel are at risk of exposure since patients with measles frequently seek medical care (*1*), and patients with measles are occasionally hospitalized (*2*).

Ideally, health-care personnel should be immune to measles (*3,4*). Immunity to disease can be documented by history of disease or vaccination, or, if available, by serologic testing. Younger persons, particularly those born since 1957, are less likely to have been infected naturally and thus are more likely to be susceptible to disease than are older persons. Susceptible personnel in medical settings, especially those likely to have contact with pediatric or young adult patients, should be vaccinated.

Hospitalized patients with suspected or confirmed measles should be kept in respiratory isolation in a private room until 4 days after onset of rash (*5*). Preferably, susceptible personnel should not care for the patient, but if this cannot be avoided, these staff members should wear masks. Susceptible close contacts who are exposed should be given immune globulin* if it is within 6 days of exposure. Vaccine might be considered instead of immune globulin for susceptible contacts for whom vaccine is not contraindicated and who have been exposed within the last 72 hours (*4*). Susceptible medical-facility personnel who are exposed should not care for immunosuppressed or susceptible patients during the communicable phases of incubation or disease.

References

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*Formerly called immune serum globulin (ISG).

Sensitization of Laundry-Products Workers to Proteolytic Bacterial Enzymes — New Jersey

The National Institute for Occupational Safety and Health (NIOSH) found in a recent investigation at a laundry-products manufacturing company in New Jersey that some workers exposed to the proteolytic bacterial enzyme Esperase® in the manufacture of an enzyme bleach had become immunologically sensitized to the enzyme (*1*).

The environmental and medical evaluation, which was conducted in April and May 1980, was requested by the local union at the plant after skin rashes, conjunctivitis, and acute shortness of breath were noted in workers who entered the work area containing enzyme dust. In that work area Esperase® has been added to the dry bleach formulation since August 1978. Industrial hygiene monitoring indicated that air concentrations of enzyme dust ranged from 0.002 to 1.57$\mu g/M^3$; all of these levels were below the current occupational criterion of 3.9 $\mu g/M^3$ (*2*). Measurement of aerodynamic particle-size distributions indicated that approximately one-half of the total airborne dust was of respirable size (mass median diameter 4.4 μM).

The medical evaluation involved 24 employees: all 13 workers who had been regularly exposed to the enzyme dust, 2 workers who previously worked with the enzyme but had changed jobs, and a control group of 9 nonexposed workers. A standard questionnaire on respiratory problems was completed for these workers, and all had physical examinations, pulmonary-function tests, and radioallergosorbent tests (RASTs) for evaluation of IgE-mediated immunological sensitization to Esperase®. The prevalence of upper and/or lower respiratory tract symptoms, skin rashes, or post-workshift wheezes did not differ significantly for the exposed and nonexposed groups. However, 3 of the exposed workers had positive RASTs for antibody against the enzyme. All 3 were symptomatic or were noted to develop wheezes after a workshift. None of the nonexposed workers had a positive RAST. The 13 exposed employees also showed a significant mean decrease in lung function (FEV_1) of 0.114 liters between the beginning and end of the workshift ($p<0.05$); not all 13 reported symptoms. The nonexposed workers, however, did not have post-workshift pulmonary-function testing.

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Editorial Note: Enzyme-containing laundry products first came into commercial use in Europe in 1963. It soon became apparent that occupational exposures to detergent dusts containing enzyme material could cause a primary irritant dermatitis (*3*) and respiratory tract disease (*4*). Further medical studies demonstrating specific IgE antibodies (*5*), positive transfer tests (*6*), and positive respiratory tract challenges (*6*) to the enzyme indicated that allergic sensitization to some component of the enzyme material was the cause of the respiratory problems in enzyme-detergent workers. Since that time, some major producers of enzyme bases have reduced the "dustiness" of their products by reducing the content of small particles through agglomeration or encapsulation techniques. However, the NIOSH study demonstrates that despite the use of these techniques and despite apparently good control of occupational exposures to the enzyme dust, allergic sensitization of workers can still occur.* This allergic sensitization may be due

*It should be noted, however, that the air-sampling technique used could not evaluate the movement of workers from 1 area to another or assess intermittent high exposures resulting from spills or from failure of process equipment; thus, the data obtained may underestimate actual exposures.

Bacterial Enzymes – Continued

to a possibly greater antigenicity of Esperase® compared with that of other enzymes, or to initially high exposures of workers when the product was first introduced. Since this evaluation, the company has made plans to further reduce exposure to dust in the work area and has instituted an improved medical surveillance program.

References

1. Kominsky JR, Liss GM. Health hazard evaluation—Jersey City, New Jersey. Report no. 80-65-780. Cincinnati, Ohio: NIOSH, 1980.
2. American Conference of Governmental Industrial Hygienists. Threshold limit values for chemical substances and physical agents in the workroom environment with intended changes for 1980. Cincinnati, Ohio: ACGIH, 1980. (See reference 1 for TLV conversion formula.)
3. Franz T, McMurrain KD, Brooks S, et al. Clinical, immunologic, and physiologic observations in factory workers exposed to *B. subtilis* enzyme dust. Journal of Allergy 1971;47:170-80.
4. Gilson JC, Juniper CP, Martin RB, et al. Biological effects of proteolytic enzyme detergents. Thorax 1976; 31:621-34.
5. Pepys J, Hargreave FE, Longbottom JL, et al. Allergic reactions of the lungs to enzymes of *Bacillus subtilis*. Lancet 1969;1:1181-4.
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TABLE I. Summary – cases of specified notifiable diseases, United States

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

DISEASE	11th WEEK ENDING		MEDIAN 1976-1980	CUMULATIVE, FIRST 11 WEEKS		
	March 21 1981	March 15 1980		March 21 1981	March 15 1980	MEDIAN 1976-1980
Aseptic meningitis	67	76	44	674	717	419
Brucellosis	1	1	2	14	34	34
Chickenpox	7,438	6,305	6,395	60,485	55,868	61,439
Diphtheria	–	–	2	3	1	21
Encephalitis: Primary (arthropod-borne & unspec.)	23	10	10	155	125	125
Post-infectious	2	8	5	14	33	33
Hepatitis, Viral: Type B	408	377	328	3,805	3,301	3,180
Type A	468	596	629	5,140	5,894	6,262
Type unspecified	242	196	162	2,369	2,202	1,928
Malaria	20	21	12	260	279	83
Measles (rubeola)	73	356	813	550	2,098	4,904
Meningococcal infections: Total	100	85	75	1,087	705	578
Civilian	100	85	72	1,085	699	574
Military	–	–	–	2	6	4
Mumps	146	224	487	1,168	3,084	4,564
Pertussis	22	21	16	208	221	239
Rubella (German measles)	64	177	609	529	972	2,598
Tetanus	–	1	1	8	8	8
Tuberculosis	557	503	584	5,137	5,023	5,435
Tularemia	–	5	1	18	18	18
Typhoid fever	11	12	10	89	59	74
Typhus fever, tick-borne (Rky. Mt. spotted)	1	1	1	13	9	10
Venereal diseases:						
Gonorrhea: Civilian	17,979	18,460	17,976	201,072	202,487	201,005
Military	454	596	546	5,894	5,955	5,935
Syphilis, primary & secondary: Civilian	622	493	466	6,337	5,563	5,139
Military	–	7	4	77	84	64
Rabies in animals	169	104	70	1,169	986	508

TABLE II. Notifiable diseases of low frequency, United States

	CUM. 1981		CUM. 1981
Anthrax	–	Poliomyelitis: Total	–
Botulism Hawaii 1	11	Paralytic	–
Cholera	–	Psittacosis	15
Congenital rubella syndrome	2	Rabies in man	–
Leprosy N.Y. City 2, Calif. 1	44	Trichinosis	52
Leptospirosis	11	Typhus fever, flea-borne (endemic, murine)	–
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 March 21, 1981 and March 15, 1980 (11th 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	67	1	7,438	–	3	23	10	2	408	468	242	20	260
NEW ENGLAND	–	–	721	–	–	1	–	–	15	6	11	2	13
Maine	–	–	172	–	–	–	–	–	–	–	–	–	1
N.H.	–	–	77	–	–	–	–	–	2	2	1	–	2
Vt.	–	–	33	–	–	–	–	–	–	–	–	–	–
Mass.	–	–	236	–	–	1	–	–	8	–	10	2	8
R.I.	–	–	52	–	–	–	–	–	3	3	–	–	1
Conn.	–	–	151	–	–	–	–	–	2	1	–	–	1
MID. ATLANTIC	14	–	304	–	–	1	2	–	55	50	24	2	20
Upstate N.Y.	5	–	126	–	–	1	1	–	9	9	2	–	5
N.Y. City	2	–	105	–	–	–	1	–	3	5	4	2	12
N.J.	6	–	NN	–	–	–	–	–	23	27	15	–	2
Pa.	1	–	73	–	–	–	–	–	20	9	3	–	1
E.N. CENTRAL	5	–	3,279	–	–	8	1	1	62	37	18	–	5
Ohio	1	–	169	–	–	–	1	1	11	5	5	–	–
Ind.	–	–	417	–	–	–	–	–	7	4	7	–	1
Ill.	–	–	796	–	–	1	–	–	19	11	3	–	1
Mich.	2	–	1,336	–	–	7	–	–	21	16	3	–	3
Wis.	2	–	561	–	–	–	–	–	4	1	–	–	–
W.N. CENTRAL	1	–	867	–	–	–	1	–	14	11	7	1	10
Minn.	–	–	1	–	–	–	–	–	3	3	–	–	2
Iowa	–	–	287	–	–	–	1	–	2	3	3	–	2
Mo.	1	–	80	–	–	–	–	–	4	2	2	–	1
N. Dak.	–	–	65	–	–	–	–	–	–	–	–	1	1
S. Dak.	–	–	13	–	–	–	–	–	–	–	–	–	1
Nebr.	–	–	1	–	–	–	–	–	4	1	–	–	–
Kans.	–	–	420	–	–	–	–	–	1	2	2	–	3
S. ATLANTIC	8	–	838	–	1	2	1	–	99	57	29	4	28
Del.	–	–	7	–	–	–	–	–	4	1	–	–	–
Md.	2	–	202	–	–	–	–	–	15	5	7	–	4
D.C.	–	–	1	–	–	–	–	–	–	–	–	–	1
Va.	1	–	62	–	–	1	–	–	5	6	2	1	9
W. Va.	–	–	144	–	–	–	–	–	1	2	–	–	–
N.C.	–	–	NN	–	–	–	–	–	2	6	3	1	2
S.C.	1	–	7	–	–	–	1	–	11	2	–	–	–
Ga.	–	–	21	–	–	–	–	–	29	8	–	1	4
Fla.	4	–	394	–	1	1	–	–	32	27	17	1	8
E.S. CENTRAL	11	–	334	–	–	1	–	–	19	15	4	–	–
Ky.	–	–	112	–	–	–	–	–	–	–	–	–	–
Tenn.	–	–	NN	–	–	1	–	–	9	9	1	–	–
Ala.	11	–	219	–	–	–	–	–	8	3	3	–	–
Miss.	–	–	3	–	–	–	–	–	2	3	–	–	–
W.S. CENTRAL	8	1	566	–	–	3	1	–	21	90	42	5	17
Ark.	–	–	10	–	–	–	–	–	2	2	–	–	2
La.	–	–	NN	–	–	–	–	–	4	6	3	–	2
Okla.	3	–	–	–	–	1	–	–	1	8	4	1	2
Tex.	5	1	556	–	–	2	1	–	14	74	35	4	11
MOUNTAIN	–	–	62	–	1	–	–	–	17	28	18	–	5
Mont.	–	–	–	–	1	–	–	–	–	4	–	–	–
Idaho	–	–	3	–	–	–	–	–	1	–	–	–	–
Wyo.	–	–	–	–	–	–	–	–	–	–	–	–	–
Colo.	–	–	41	–	–	–	–	–	6	12	4	–	2
N. Mex.	–	–	–	–	–	–	–	–	1	2	2	–	–
Ariz.	–	–	NN	–	–	–	–	–	6	9	11	–	2
Utah	–	–	–	–	–	–	–	–	1	–	1	–	–
Nev.	–	–	18	–	–	–	–	–	2	1	–	–	1
PACIFIC	20	–	467	–	1	7	4	1	106	174	89	6	162
Wash.	1	–	431	–	–	1	–	–	1	3	1	1	10
Oreg.	–	–	1	–	–	–	1	–	10	4	1	1	4
Calif.	19	–	–	–	–	6	3	1	92	167	87	4	148
Alaska	–	–	13	–	1	–	–	–	3	–	–	–	–
Hawaii	–	–	22	–	–	–	–	–	–	–	–	–	–
Guam	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	–
P.R.	–	–	25	–	–	1	–	–	1	8	4	–	3
V.I.	NA	NA	NA	NA	–	NA	–	–	NA	NA	NA	NA	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 March 21, 1981 and March 15, 1980 (11th 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	73	550	2,098	100	1,087	705	146	1,168	22	64	529	8
NEW ENGLAND	7	24	217	8	75	33	3	48	-	10	58	-
Maine	1	1	1	1	11	1	1	12	-	1	31	-
N.H.	-	2	121	-	6	4	-	5	-	-	12	-
Vt.	-	1	90	2	2	1	-	1	-	-	-	-
Mass.	6	16	2	2	19	12	1	16	-	7	13	-
R.I.	-	-	2	-	6	2	1	7	-	-	-	-
Conn.	-	4	1	3	31	13	-	7	-	2	2	-
MID. ATLANTIC	19	188	440	12	113	113	19	116	2	5	61	1
Upstate N.Y.	16	141	116	1	34	45	1	24	1	2	27	-
N.Y. City	-	17	125	2	11	32	5	15	-	1	11	1
N.J.	3	12	74	4	37	25	5	25	-	2	21	-
Pa.	-	18	125	5	31	11	8	52	1	-	2	-
E.N. CENTRAL	5	37	255	12	123	86	38	346	7	12	106	1
Ohio	2	13	52	8	44	35	1	49	4	-	-	-
Ind.	1	3	16	-	12	13	3	45	3	3	35	-
Ill.	-	5	60	1	33	11	9	55	-	-	25	-
Mich.	2	16	70	3	30	21	23	148	-	7	17	1
Wis.	-	-	57	-	4	6	2	49	-	2	29	-
W.N. CENTRAL	-	4	270	6	38	30	29	110	-	7	31	2
Minn.	-	1	193	2	17	9	1	2	-	-	5	1
Iowa	-	1	-	1	9	3	2	27	-	-	-	-
Mo.	-	-	34	3	8	13	16	19	-	-	1	1
N. Dak.	-	-	-	-	-	1	-	-	-	-	-	-
S. Dak.	-	-	-	-	1	2	-	1	-	-	-	-
Nebr.	-	1	12	-	-	-	-	-	-	-	-	-
Kans.	-	1	31	-	3	2	10	61	-	7	25	-
S. ATLANTIC	28	148	435	16	284	167	13	164	6	4	54	1
Del.	-	-	1	-	4	1	-	3	-	-	-	-
Md.	1	1	10	1	11	13	4	30	-	-	-	-
D.C.	-	-	-	-	1	-	-	-	-	-	-	-
Va.	2	2	95	-	30	15	4	45	-	1	7	-
W. Va.	-	3	3	-	15	3	3	27	-	-	10	-
N.C.	-	-	34	6	38	33	1	4	-	-	2	-
S.C.	-	-	-	-	39	21	-	4	-	-	4	1
Ga.	9	57	191	2	45	38	1	14	5	2	15	-
Fla.	16	85	101	7	101	43	-	37	1	1	16	-
E.S. CENTRAL	-	1	91	10	88	68	4	39	2	1	14	-
Ky.	-	-	29	5	28	19	1	15	2	1	8	-
Tenn.	-	1	4	1	24	17	3	15	-	-	6	-
Ala.	-	-	12	3	26	18	-	8	-	-	-	-
Miss.	-	-	46	1	10	14	-	1	-	-	-	-
W.S. CENTRAL	3	32	183	23	207	75	4	51	1	4	37	1
Ark.	-	1	1	-	17	4	-	-	-	-	-	-
La.	-	-	3	7	44	26	-	3	-	2	4	-
Okla.	1	3	118	5	15	6	-	-	-	-	-	-
Tex.	2	28	61	11	131	39	4	48	1	2	33	1
MOUNTAIN	-	9	46	2	38	31	3	34	-	-	19	1
Mont.	-	-	1	1	2	1	-	3	-	-	1	-
Idaho	-	-	-	-	2	3	-	2	-	-	-	-
Wyo.	-	-	-	-	-	1	-	-	-	-	1	-
Colo.	-	-	2	1	18	8	1	13	-	-	14	-
N. Mex.	-	-	1	-	4	5	-	-	-	-	-	-
Ariz.	-	1	13	-	7	5	1	7	-	-	1	1
Utah	-	-	27	-	3	1	-	4	-	-	2	-
Nev.	-	8	2	-	2	7	1	5	-	-	-	-
PACIFIC	11	107	161	11	121	102	33	260	4	21	149	1
Wash.	-	-	40	2	26	15	11	82	1	3	35	-
Oreg.	-	-	-	3	12	18	2	33	-	-	4	-
Calif.	11	107	114	5	76	68	16	133	2	18	110	1
Alaska	-	-	4	1	3	1	2	3	-	-	-	-
Hawaii	-	-	3	-	4	-	2	9	1	-	-	-
Guam	NA	-	2	-	-	-	NA	-	NA	NA	-	-
P.R.	8	54	18	-	2	5	12	25	1	-	-	-
V.I.	NA	2	4	-	-	-	NA	1	NA	NA	-	-
Pac. Trust Terr.	NA	-	3	-	-	-	NA	-	NA	NA	1	-

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 March 21, 1981 and March 15, 1980 (11th 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	557	5,137	18	11	89	1	13	17,979	201,072	202,487	622	6,337	5,563	1,169
NEW ENGLAND	11	146	–	2	7	–	–	387	5,115	5,277	16	153	132	5
Maine	1	14	–	–	–	–	–	21	253	336	–	1	–	5
N.H.	–	2	–	–	–	–	–	16	191	175	–	9	–	–
Vt.	–	7	–	–	–	–	–	10	81	150	1	3	1	–
Mass.	6	84	–	1	6	–	–	210	2,092	2,090	5	87	72	–
R.I.	–	6	–	–	–	–	–	20	241	301	–	10	7	–
Conn.	4	33	–	1	1	–	–	110	2,257	2,225	10	43	52	–
MID. ATLANTIC	83	911	–	2	12	–	3	2,333	23,541	22,252	114	987	782	2
Upstate N.Y.	9	150	–	–	3	–	1	446	3,675	3,490	10	88	59	1
N.Y. City	56	399	–	2	9	–	2	1,050	9,225	8,937	69	618	518	–
N.J.	4	175	–	–	–	–	–	342	4,981	4,216	14	116	101	–
Pa.	14	187	–	–	–	–	–	495	5,660	5,609	21	165	104	1
E.N. CENTRAL	95	688	–	–	5	–	1	2,432	30,587	33,082	22	312	535	127
Ohio	24	123	–	–	–	–	1	801	12,561	8,761	15	69	84	9
Ind.	–	35	–	–	–	–	–	232	2,691	3,413	3	27	60	6
Ill.	44	305	–	–	4	–	–	443	5,622	10,421	NA	117	277	87
Mich.	21	194	–	–	–	–	–	676	6,945	7,095	1	76	89	–
Wis.	6	31	–	–	1	–	–	280	2,768	3,392	3	23	25	25
W.N. CENTRAL	18	172	2	–	2	–	1	758	9,625	8,787	11	116	60	479
Minn.	3	25	–	–	1	–	–	113	1,599	1,660	6	41	23	93
Iowa	3	30	–	–	–	–	–	58	973	1,007	–	5	4	175
Mo.	4	65	2	–	–	–	1	319	4,264	3,466	4	59	31	33
N. Dak.	–	7	–	–	–	–	–	11	121	121	–	1	–	74
S. Dak.	5	14	–	–	1	–	–	24	262	288	–	–	–	46
Nebr.	–	7	–	–	–	–	–	48	724	752	–	3	1	29
Kans.	3	24	–	–	–	–	–	185	1,682	1,493	1	7	1	29
S. ATLANTIC	100	1,093	5	2	10	–	4	4,195	50,226	48,904	139	1,651	1,360	73
Del.	1	10	1	–	–	–	–	90	809	730	–	3	5	–
Md.	6	73	–	–	2	–	–	486	4,857	4,989	12	120	105	1
D.C.	9	74	–	–	1	–	–	254	3,366	3,661	12	152	86	–
Va.	1	111	–	–	–	–	–	448	4,787	4,004	14	156	115	14
W. Va.	4	42	–	–	3	–	–	97	714	655	–	3	4	3
N.C.	19	214	1	–	1	–	4	670	8,337	7,762	6	115	103	–
S.C.	13	103	2	–	–	–	–	330	4,583	4,580	8	117	74	2
Ga.	24	178	1	–	–	–	–	712	9,740	8,745	41	429	394	40
Fla.	23	288	–	2	3	–	–	1,108	13,033	13,778	46	556	470	13
E.S. CENTRAL	68	461	2	1	4	–	3	1,238	16,841	16,368	20	440	459	85
Ky.	21	113	2	–	–	–	1	214	2,222	2,353	–	19	27	23
Tenn.	21	160	–	–	1	–	1	291	6,233	5,845	6	170	194	50
Ala.	18	140	–	1	2	–	–	564	5,458	4,615	7	126	87	12
Miss.	8	48	–	–	1	–	1	169	2,928	3,555	7	125	151	–
W.S. CENTRAL	38	428	3	2	8	1	1	2,406	28,503	26,294	148	1,550	1,061	238
Ark.	5	44	–	–	–	–	–	168	1,732	1,955	3	29	40	39
La.	–	93	2	–	–	–	–	382	4,375	4,143	25	316	258	12
Okla.	7	61	–	1	3	–	–	218	2,802	2,593	8	36	16	39
Tex.	26	230	1	1	5	1	1	1,638	19,594	17,603	112	1,169	747	148
MOUNTAIN	11	146	5	–	5	–	–	680	8,272	7,646	8	162	123	25
Mont.	3	15	1	–	4	–	–	23	311	290	–	4	–	24
Idaho	–	5	1	–	–	–	–	16	315	389	–	2	4	–
Wyo.	–	2	–	–	–	–	–	11	179	226	–	2	4	1
Colo.	1	9	2	–	1	–	–	183	2,166	1,940	NA	40	36	–
N. Mex.	2	36	–	–	–	–	–	64	943	1,090	7	37	23	–
Ariz.	5	57	–	–	–	–	–	189	2,711	2,061	–	33	40	–
Utah	–	6	1	–	–	–	–	38	390	370	1	3	4	–
Nev.	–	16	–	–	–	–	–	156	1,257	1,280	–	41	12	–
PACIFIC	133	1,092	1	2	36	–	–	3,550	28,362	33,877	144	966	1,051	135
Wash.	3	76	–	–	–	–	–	190	2,488	2,785	NA	23	63	–
Oreg.	5	39	–	–	2	–	–	198	2,212	2,308	6	23	24	1
Calif.	120	947	1	2	32	–	–	3,030	22,235	27,274	131	894	948	122
Alaska	–	12	–	–	–	–	–	89	784	783	3	4	1	12
Hawaii	5	18	–	–	2	–	–	43	643	727	4	22	15	–
Guam	NA	–	–	NA	–	NA	–	NA	–	27	NA	–	–	–
P.R.	–	4	–	–	2	–	–	79	715	503	8	152	115	10
V.I.	NA	–	–	NA	1	NA	–	NA	7	39	NA	–	6	–
Pac. Trust Terr.	NA	8	–	NA	–	NA	–	NA	46	79	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 March 21, 1981 (11th week)

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	>65	45-64	25-44	<1	
NEW ENGLAND	693	447	158	42	18	62
Boston, Mass.	203	114	56	18	5	32
Bridgeport, Conn.	36	24	8	2	1	1
Cambridge, Mass.	26	19	5	2	–	2
Fall River, Mass.	24	19	4	–	–	–
Hartford, Conn.	63	34	20	3	3	3
Lowell, Mass.	30	19	8	–	–	2
Lynn, Mass.	28	20	6	1	–	–
New Bedford, Mass.	31	20	5	1	–	–
New Haven, Conn.	38	24	6	5	2	3
Providence, R.I.	60	37	15	1	5	4
Somerville, Mass.	8	7	1	–	–	2
Springfield, Mass.	47	35	7	3	1	3
Waterbury, Conn.	32	23	7	2	–	2
Worcester, Mass.	67	52	10	4	1	8
MID. ATLANTIC	2,414	1,550	593	161	56	106
Albany, N.Y.	42	23	15	2	1	1
Allentown, Pa.	22	17	5	–	–	–
Buffalo, N.Y.	120	75	37	4	2	7
Camden, N.J.	34	22	10	2	–	–
Elizabeth, N.J.	17	12	4	1	–	4
Erie, Pa.†	55	37	16	2	–	2
Jersey City, N.J.	67	45	11	5	4	–
Newark, N.J.	70	35	17	11	3	6
N.Y. City, N.Y.	1,370	870	324	107	34	49
Paterson, N.J.	12	7	2	2	–	1
Philadelphia, Pa.†	196	129	52	11	2	12
Pittsburgh, Pa.†	59	31	23	3	1	4
Reading, Pa.	23	20	3	–	–	3
Rochester, N.Y.	123	86	30	2	2	8
Schenectady, N.Y.	22	17	5	–	–	1
Scranton, Pa.†	28	23	3	1	1	–
Syracuse, N.Y.	82	50	20	4	6	2
Trenton, N.J.	36	21	10	4	–	1
Utica, N.Y.	15	13	2	–	–	2
Yonkers, N.Y.	21	17	4	–	–	3
E.N. CENTRAL	2,268	1,377	558	163	111	78
Akron, Ohio	59	44	12	2	–	–
Canton, Ohio	37	27	7	1	1	1
Chicago, Ill.	566	323	138	50	38	14
Cincinnati, Ohio	163	102	35	12	9	20
Cleveland, Ohio	135	79	31	8	12	2
Columbus, Ohio	134	77	43	9	3	3
Dayton, Ohio	115	57	41	8	1	3
Detroit, Mich.	268	151	78	23	10	8
Evansville, Ind.	41	30	9	1	–	–
Fort Wayne, Ind.	48	32	10	2	3	6
Gary, Ind.	20	9	7	2	1	1
Grand Rapids, Mich.	35	28	5	1	1	1
Indianapolis, Ind.	162	101	35	11	11	1
Madison, Wis.	52	34	11	2	4	10
Milwaukee, Wis.	134	77	36	11	8	–
Peoria, Ill.	38	26	8	1	3	3
Rockford, Ill.	40	26	7	5	2	1
South Bend, Ind.	41	30	8	2	1	–
Toledo, Ohio	127	85	26	10	3	4
Youngstown, Ohio	53	39	11	2	–	–
W.N. CENTRAL	735	475	168	32	27	45
Des Moines, Iowa	53	36	14	1	1	1
Duluth, Minn.	23	17	3	1	2	2
Kansas City, Kans.	31	18	6	2	2	3
Kansas City, Mo.	118	82	22	6	4	6
Lincoln, Nebr.	39	25	13	1	–	4
Minneapolis, Minn.	86	50	21	5	5	1
Omaha, Nebr.	100	65	22	5	1	2
St. Louis, Mo.	145	84	42	8	8	14
St. Paul, Minn.	74	57	9	2	1	7
Wichita, Kans.	66	41	16	1	3	5

REPORTING AREA	ALL CAUSES, BY AGE (YEARS)					P&I** TOTAL
	ALL AGES	>65	45-64	25-44	<1	
S. ATLANTIC	1,553	909	398	126	65	67
Atlanta, Ga.	138	81	39	4	12	11
Baltimore, Md.	527	294	156	50	13	11
Charlotte, N.C.	76	40	21	7	5	4
Jacksonville, Fla.	108	61	29	11	5	–
Miami, Fla.	127	66	34	18	5	5
Norfolk, Va.	56	32	14	4	1	2
Richmond, Va.	82	48	22	7	2	9
Savannah, Ga.	35	23	5	2	1	8
St. Petersburg, Fla.	107	91	8	3	3	6
Tampa, Fla.	72	52	12	3	4	3
Washington, D.C.	192	103	52	10	14	7
Wilmington, Del.	33	18	6	7	–	1
E.S. CENTRAL	766	439	193	45	55	30
Birmingham, Ala.	106	65	29	6	4	2
Chattanooga, Tenn.	54	34	16	2	1	4
Knoxville, Tenn.	55	34	14	4	1	2
Louisville, Ky.	120	70	29	12	4	6
Memphis, Tenn.	184	93	46	4	30	8
Mobile, Ala.	91	57	17	7	4	6
Montgomery, Ala.	38	24	9	–	3	–
Nashville, Tenn.	118	62	33	10	8	2
W.S. CENTRAL	1,388	809	372	100	54	47
Austin, Tex.	55	40	8	6	–	2
Baton Rouge, La.	55	33	14	7	–	2
Corpus Christi, Tex.	32	15	12	2	3	–
Dallas, Tex.	192	100	53	16	12	–
El Paso, Tex.	74	47	13	4	6	8
Fort Worth, Tex.	85	56	25	3	–	7
Houston, Tex.	333	180	97	27	6	5
Little Rock, Ark.	59	33	17	6	3	4
New Orleans, La.	173	110	40	11	8	3
San Antonio, Tex.	170	97	52	11	6	9
Shreveport, La.	71	40	24	2	5	2
Tulsa, Okla.	89	58	17	5	5	5
MOUNTAIN	654	437	124	50	23	32
Albuquerque, N. Mex.	68	51	7	7	2	7
Colo. Springs, Colo.	35	21	12	2	–	6
Denver, Colo.	158	96	35	12	8	10
Las Vegas, Nev.	66	37	15	5	2	2
Ogden, Utah	19	16	1	1	–	1
Phoenix, Ariz.	147	98	33	10	4	2
Pueblo, Colo.	15	13	2	–	–	1
Salt Lake City, Utah	56	40	7	6	3	1
Tucson, Ariz.	90	65	12	7	4	2
PACIFIC	1,744	1,147	349	114	63	84
Berkeley, Calif.	24	16	4	2	1	1
Fresno, Calif.	70	45	11	7	3	7
Glendale, Calif.	28	23	5	–	–	1
Honolulu, Hawaii	56	32	15	2	4	3
Long Beach, Calif.	87	57	21	6	2	2
Los Angeles, Calif.	451	308	79	35	12	19
Oakland, Calif.	73	44	12	8	5	8
Pasadena, Calif.	41	25	9	3	2	5
Portland, Oreg.	149	104	28	7	7	3
Sacramento, Calif.	69	44	15	3	4	6
San Diego, Calif.	124	79	29	6	4	–
San Francisco, Calif.	148	98	31	7	2	2
San Jose, Calif.	167	100	39	14	6	14
Seattle, Wash.	159	105	38	7	3	3
Spokane, Wash.	53	37	7	3	3	6
Tacoma, Wash.	45	30	6	4	5	4
TOTAL	12,215	7,590	2,913	833	472	551

*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.

Current Trends

Health Risk Appraisal — United States

Health-risk-appraisal (HRA) questionnaires completed at a series of health fairs in April 1980 have generated the largest body of such public data yet available. Although the validity and reliability of these questionnaires have not been tested, data reported have focused each participant's attention on the health hazards inherent in his or her lifestyle. Indications are that many deaths could possibly be prevented in the study population in the next 10 years if respondents comply with recommendations for altering their health-related behaviors.

The HRA method, based on an actuarial technique designed in the United States in the 1960s (*1,2*), uses participant-provided information related to the 12 leading causes of death for each age/race/sex group to estimate an individual's probability of dying in the next 10 years. This so-called appraised risk is a numerical calculation based on both the risk factors and the actuarial estimates of the mean 10-year probability of death for that person's age/race/sex group. An estimate is also provided of the achievable risk, or the degree to which the person's probability of surviving the next 10 years, can be increased by modifying his or her lifestyle according to the recommendations.

Designated Health Fair '80, the fairs using the HRA were held at 300 sites in 11 major metropolitan areas and were sponsored by the National Health Screening Council for Volunteer Organizations (NHSCVO), the National Red Cross, local television affiliates of the National Broadcasting Company, and various local groups. Approximately 31,000 participants filled out the 43-item HRA form.* Collective data were analyzed from the 23,000 questionnaires judged to be complete (Table 3). Questions on the form covered the following areas: personal characteristics (age, race, sex, height, weight), medical data (blood pressure, cholesterol level, history of chronic bronchitis or emphysema), family

*Adapted from Evalu*vie, produced by Health and Welfare, Ottawa, Canada.

TABLE 3. Participants in health risk appraisal at Health Fair '80, by age, race, and sex

Age group (years)	Males		Females		Total
	Whites and all other races but black	Blacks	Whites and all other races but black	Blacks	
15 - 19	231	62	451	114	858
20 - 24	776	179	1,194	275	2,424
25 - 29	1,115	171	1,331	306	2,923
30 - 34	1,105	190	1,417	244	2,956
35 - 39	954	136	1,170	206	2,466
40 - 44	757	121	866	141	1,885
45 - 49	764	83	850	137	1,834
50 - 54	771	75	1,005	106	1,957
55 - 59	829	67	1,073	120	2,089
60 - 64	807	52	1,001	101	1,961
65 - 69	508	32	502	60	1,102
70 - 74	244	12	251	23	530
TOTAL	8,861	1,180	11,111	1,833	22,985

Health Risk Appraisal – Continued

history (suicide, diabetes, breast cancer), lifestyle (smoking, drinking, seat-belt usage, exercise habits), and other demographic and evaluative information.

At the request of NHSCVO, CDC's Center for Health Promotion and Education provided computer support for processing and analyzing HRA data for Health Fair '80. Each participant received a 2-page computer printout indicating personal appraised risk-age based on his or her probability of dying during the next 10 years. The printout also contained specific recommendations for improving health habits and estimated the person's achievable age if he or she complies with recommendations. To assure anonymity, computer results were claimed via a number assigned randomly when the questionnaire was issued.

Besides providing health information to individuals, HRA has supplied collective data that may help health educators target high-risk groups. For example, these data will be used to pinpoint the study-population groups at highest risk from such correctable hazards as smoking, overweight, and driving without a seat belt. Additionally, the age/race/sex groups with the most potential for reducing their risk of dying over the next 10 years can be determined (Table 4).

TABLE 4. Mean preventable deaths in the next 10 years/100,000 population, by age, race, and sex, according to health-risk-appraisal data

	Preventable deaths /100,000 population			
	Males		Females	
Age group (years)*	Whites and all other races but black	Blacks	Whites and all other races but black	Blacks
15 - 19	400	300	100	100
20 - 24	500	500	100	100
25 - 29	400	800	100	300
30 - 34	600	1,100	200	500
35 - 39	1,100	2,000	300	1,100
40 - 44	2,300	3,100	600	1,900
45 - 49	3,700	5,400	1,000	3,100
50 - 54	5,100	6,900	1,800	5,100
55 - 59	7,400	9,200	3,000	6,600
60 - 64	9,700	11,800	4,800	11,200
65 - 69	11,600	15,900	7,500	10,900
70 - 74	14,300	14,200	9,500	13,300

*Benefits for participants beyond age 60 are probably exaggerated due to the effects of competing risks and the inadequate relative risk data for these age groups.

Reported by the Special Projects Activity, Office of the Director, Center for Health Promotion and Education, CDC.

Editorial Note: HRA has become a popular approach to help people identify the risks associated with their personal health status and habits. Also, public-health information on the prevalence of known risk factors can be obtained from such a large-scale analysis. However, the limitations of these data must be emphasized; among these are the inherent limitations of self-selected participation, lack of established reliability and validity of the questionnaire itself, and the unknown causal and synergistic relationships of various risks and disease.

Health Risk Appraisal – Continued

Extensive research is needed to ascertain the worth of HRAs as health indicators, predictors, and educational tools. Such work is under way or being funded by numerous groups, including the Public Health Service; the Human Population Laboratory, California Department of Health Services; and the Kellogg Foundation.

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1. Robbins LC, Hall J. How to practice prospective medicine. Indianapolis: Methodist Hospital of Indianapolis, 1970.
2. Kramer DG, Wiley JA, Camacho, TC. Predictive validity of the health hazard appraisal. In: Program of APHA Conference, 1980 Oct 19-23, Detroit:APHA, 1980. Abstract.

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