CENTERS FOR DISEASE CONTROL

October 5, 1984 / Vol. 33 / No. 39

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

Epidemiologic Notes and Reports

Measles — New Hampshire

Between April 9, and June 1, 1984, 37 cases of measles occurring over five generations were reported from the Hanover, New Hampshire, area to the New Hampshire Division of Public Health Services (DPHS) (Figures 1 and 2). Twenty-one cases were serologically confirmed.

Twenty-nine infections occurred among Dartmouth College students and their family contacts; one, in a bookstore employee; and one, in a resident of a nearby town. The six remaining cases occurred in four employees, one outpatient, and one neurosurgical inpatient at the Mary Hitchcock Memorial Hospital, a teaching facility of Dartmouth Medical School, the only hospital serving Hanover (population 9,376 [1983 census]). The ill hospital personnel included one nurse, one laboratory technician, and two house officers. Patients' ages ranged from 1 year to 43 years (median 21 years).

The overall attack rate among Dartmouth students was 0.7%, varying from a high of 3.2% among students at Dartmouth's Tuck School of Business Administration, the only graduate school involved, to a low of 0.6% in undergraduate students. Attack rates among nurses and physicians at the hospital were 0.3% and 0.7%, respectively, with an overall attack rate among hospital personnel of 0.2%.

The index patient, a 27-year-old male graduate student, had onset of rash April 3. The source of his infection was not known. He had traveled to Michigan, Massachusetts, New Jersey, and North Carolina for job interviews during the likely period of exposure. Indigenous measles had not been reported in New Hampshire during the previous 22 months. The second generation occurred from April 13 to April 16, when measles was diagnosed in the unimmunized 2½-year-old son of the index patient and in six additional graduate students. The third generation of measles (four cases) began April 20. One was the 14-month-old son of a noninfected graduate student and a playground contact of the son of the index patient. Two were graduate students; the fourth, an undergraduate student. The fourth generation, which began May 8, included 15 undergraduates; a 43-year-old individual from a nearby town; and four personnel, one outpatient, and one neurosurgical inpatient at the hospital. The fifth and last generation consisted of two undergraduate students and a medical center bookstore employee who became ill during the last week of May.

The Dartmouth College Student Health Services, assisted by DPHS, instituted outbreak-control measures following the report of the index patient on April 9. These measures included determining the immune status of students at the Tuck graduate school and vaccinating susceptible Tuck graduate students and susceptible family members and neighbors exposed

Measles – Continued

to the index patient on a voluntary basis. On April 13, DPHS recommended that the entire student body (4,903 persons) be notified that measles had occurred on campus and that all student health immunization records be reviewed to identify susceptible individuals. Seventy student health aides assisted in surveillance and education. Steps were taken to identify and immunize susceptible athletes, to prohibit them from participating in off-campus events, and to advise teams from other colleges due to compete at Dartmouth that measles had occurred on campus.

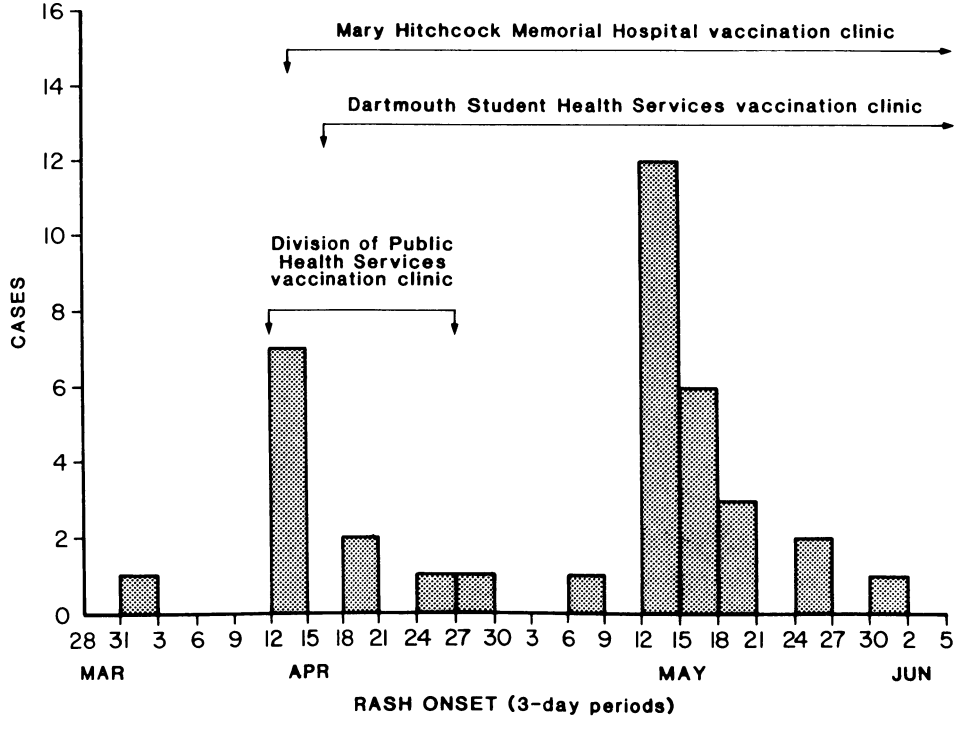
An audit of the 4,903 student health records revealed that 2,923 (59.6%) did not have adequate documentation of measles immunity.* In most cases, dates of vaccination were lacking. Letters were sent to each of these possibly susceptible students explaining that they should be vaccinated unless they could provide documentation of immunity. The 375 employees of the college under 28 years of age received similar letters.

Vaccination clinics staffed by DPHS were opened on campus April 13 and maintained through April 27. The Student Health Services also established a walk-in vaccination clinic from April 16 throughout the course of the outbreak and operated other clinics at various congregation points on campus (Figure 1).

Because of these efforts, over 3,500 college employees, students, and their families were

*Live measles vaccine on or after the first birthday, physician-diagnosed measles, or laboratory evidence of measles immunity.

FIGURE 1. Measles cases, Dartmouth College and Mary Hitchcock Memorial Hospital — Hanover, New Hampshire, April 3-June 4, 1984



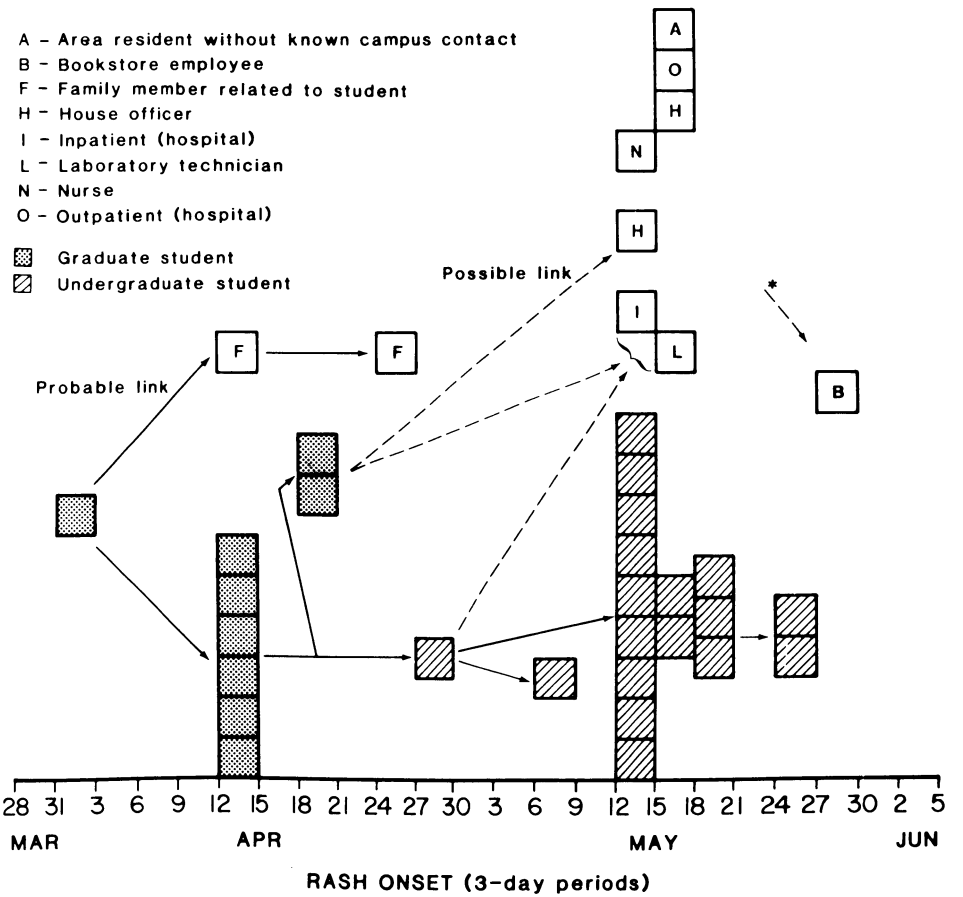
Measles — Continued

vaccinated. The Student Health Services and DPHS Immunization Program staff vaccinated or obtained proof of immunity for 2,528 (86.5%) of the 2,923 students identified as possibly susceptible. By the end of May, 4,508 (91.9%) of the 4,903 total students had documented proof of measles immunity in their health records.

All schools, day-care centers, colleges, and universities in New Hampshire were notified early in the outbreak of the possibility of indigenous measles, with a recommendation that the immune status of children, students, and employees in these facilities born after 1956 be reviewed. DPHS also informed other health-care providers, hospitals, and town health officers in the state, as well as public health officials in states bordering New Hampshire and in the Province of Quebec, Canada, that measles had occurred in the state.

This fall, Dartmouth College began routinely notifying new students who did not provide adequate documentation of measles immunity on enrollment health forms that the college

FIGURE 2. Chain of transmission, measles outbreak, Dartmouth College and Mary Hitchcock Memorial Hospital — Hanover, New Hampshire, April 3, to June 4, 1984



*Possible transmission from hospital employee.

Measles — Continued

strongly recommended vaccination. In addition, those students enrolled in the 1983-1984 academic year who still lacked documentation of measles immunity in June were recontacted on return to campus regarding their need for vaccination.

Although it is unclear how measles spread to the hospital, several routes of transmission are possible. A surgical house officer who developed measles shared an apartment with a noninfected Tuck graduate student. He continued to work after the onset of prodromal symptoms and was subsequently hospitalized for 6 days, during which he developed viral pneumonia and corneal ulcerations. The laboratory technician, believing himself immune because of age (27 years old), had drawn blood samples from individuals suspected of having measles at the Student Health Services clinic. The neurosurgical patient had onset of rash 11 days after admission. She was either exposed during her hospitalization or before admission, when she had been on campus and in the hospital for preadmission tests. Five of the 37 individuals who developed measles visited the hospital emergency room.

Because of the risks arising from nosocomial measles at the hospital, DPHS recommended that: (1) all professional staff, other employees, and hospitalized patients under 35 years of age either provide proof of immunity or be vaccinated, unless contraindicated; (2) all susceptible patients exposed to a known measles patient be vaccinated or given immune globulin, as medically indicated; and (3) susceptible persons in the community born after 1949 or vaccinated before 1968 be advised not to visit the hospital. The hospital conducted its own vaccination clinic starting April 13 (Figure 1). Eighty-six individuals voluntarily received vaccinations through May 17. On May 18, the day after the first hospital case was publicized, an additional 400 persons received vaccine. By June 1, the hospital had vaccinated 876 persons, most of whom were among the hospital's 2,200 personnel. Hospital policy now requires serologic testing of all new employees for evidence of immunity to measles and rubella and vaccination of those found to be seronegative.

Reported by JH Turco, MD, DN MacKay, MD, R Smith, MD, B Conant-Sloane, PhD, NM Watkins, Dartmouth College, Dartmouth Medical School, Mary Hitchcock Memorial Hospital, Immunization and Epidemiology Programs, Bureau of Communicable Disease Control, E Schwartz, MD, State Epidemiologist, New Hampshire Div of Public Health Svcs; Div of Immunization, Center for Prevention Svcs, Div of Field Svcs, Epidemiology Program Office, CDC.

Editorial Note: Since the measles elimination campaign began in 1978, indigenous measles has been eliminated from most of the United States. In 1983, a record low 1,497 measles cases were reported. From 1980-1983, however, an increasing proportion of measles cases have occurred on college campuses (Table 1).

Of the 1,497 measles cases reported in 1983, 570 (38.1%) were college or college-associated cases: 296 (19.8%) occurred on college campuses; 274 cases off campus were epidemiologically linked to those on campus (within two generations). Most of the college-

TABLE 1. Reported measles cases on college and university campuses — United States, 1980-1984.

Year	Colleges	Campus cases	Total U.S. cases	Campus cases (%)
1980	36	200	13,506	1.5
1981	19	101	3,124	3.2
1982	14	115	1,714	6.7
1983	19	296	1,497	19.8
1984*	15	63	2,298	2.7

*Provisional data, first 37 weeks.

Measles — Continued

associated cases (92.1%) were related to four campus outbreaks: Indiana University (IU)—385 cases (180 on campus, 205 spread); Miami University of Ohio—82 cases (20 on campus, 62 spread); University of Houston—32 cases (29 on campus, three spread); and Louisiana State University—26 cases (25 on campus, one spread) (*1*).

In the first 37 weeks of 1984, the number of reported measles cases on campuses has declined substantially, compared to the same period in 1983. Nevertheless, the college outbreak cited here is one of the larger reported campus outbreaks. Measles outbreaks on college campuses are of particular concern because measles is a more serious disease among adults than among schoolchildren (*2*).

Measles transmission among college students may be sustained by several factors (*3*): (1) many children growing up in the mid-1960s may have missed measles vaccination in the first years following the licensure of measles vaccine; (2) many students may not have been immunized under comprehensive school laws now in effect in many states involving students in kindergarten through grade 12; (3) many colleges and universities lack immunization requirements; (4) many students may have escaped natural measles infection because of decreasing transmission; (5) some students may have been vaccinated with the ineffective formalin-inactivated ("killed") measles vaccine, which was administered to 600,000-900,000 individuals from 1963 to 1967; (6) many students may have been vaccinated with live virus vaccine before their first birthday, when measles vaccine is known to be less effective (immunization of infants 6-11 months of age was previously recommended when prevalence of measles made exposure of these infants likely); and (7) the tendency of college students to congregate in large numbers (e.g., dormitories, fraternities and sororities, and social and sporting events).† Approximately 5%-15% of college-aged individuals are estimated to be susceptible to measles, according to serologic studies (*1*).

In May 1983, the American College Health Association adopted a Pre-admission Immunization Policy. It recommends that, by September 1985, colleges and universities require all students born after 1956 to present documentation of immunity to measles and other vaccine-preventable diseases as a prerequisite to matriculation or registration. The Immunization Practices Advisory Committee has likewise recommended since 1980 that college and university administrations strongly consider establishing such requirements (*5*). A strategy for planning, implementing, and evaluating college-based immunization programs has been developed (*6*).

Measles outbreaks on college campuses are costly, disruptive to college routine, and difficult to control. The Dartmouth outbreak required disease control and prevention activities that cost over $30,000. The known direct costs of control activities in the IU outbreak exceeded $225,000. It is more cost-effective to prevent measles outbreaks than to attempt to control them (*4*).

Transmission of measles to teaching hospitals and other medical settings is of particular concern because of possible spread among unvaccinated pediatric patients (especially infants under the age of routine vaccination), pregnant patients, and patients with immune deficiencies. Teaching hospitals may be at greater risk for measles transmission, since they typically have younger personnel, including many in training programs, who are less likely to have natural immunity. In addition, nosocomial spread may have more serious consequences in teaching facilities, since, as referral centers, they often treat patients with more serious illnesses.

†Attack rates in the Indiana University outbreak were four to five times higher for students living in dormitories and fraternity or sorority houses than for those living off campus, where student congregation is generally much less (*4*).

Measles — Continued

Health-care personnel are at risk of measles exposure, because patients with measles frequently seek medical attention and are occasionally hospitalized. Although the risk of acquiring measles in medical settings is probably low, CDC received reports in 1980 from 16 states of 32 episodes in which measles had probably been transmitted in medical settings (*7*). These episodes included a total of 57 cases—31 among medical staff and 26 among patients and visitors. Only one of the 32 episodes included both patients and staff. CDC has continued to receive reports of measles transmission in medical settings each year since 1980. One 1982 outbreak involved airborne transmission in a pediatrician's office up to 75 minutes after an infectious patient had left (*8*).

To minimize the risk of nosocomial spread of measles, all hospital personnel who are considered to be at increased risk of contact with patients infected with measles should be protected (*9*). Normally, persons born before 1957 can be considered protected because of likely exposure to natural measles (*10*). The vaccination of persons born after 1949 was recommended in this outbreak because several of the measles patients were born between 1949 and 1957. Hospitals should follow appropriate guidelines for the care and isolation of patients with suspected or confirmed measles (*11*).

(Continued on page 559)

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

Disease	39th Week Ending			Cumulative, 39th Week Ending		
	Sept. 29, 1984	Oct. 1, 1983	Median 1979-1983	Sept. 29, 1984	Oct. 1, 1983	Median 1979-1983
Acquired Immunodeficiency Syndrome (AIDS)*	130	34	N	3,104	1,426	N
Aseptic meningitis	301	587	369	5,464	8,907	6,445
Encephalitis: Primary (arthropod-borne & unspec.)	33	65	65	769	1,346	1,099
Post-infectious	1	-	-	76	75	75
Gonorrhea: Civilian	19,029	17,888	20,102	621,977	672,604	743,234
Military	459	436	436	16,119	18,263	20,491
Hepatitis: Type A	492	440	489	15,646	15,566	18,772
Type B	571	482	407	19,085	17,834	15,128
Non A, Non B	71	68	N	2,727	2,544	N
Unspecified	156	162	235	4,168	5,399	7,635
Legionellosis	18	15	N	480	534	N
Leprosy	8	2	11	175	189	156
Malaria	16	39	29	700	628	838
Measles: Total**	14	23	23	2,322	1,260	2,645
Indigenous	10	15	N	2,060	1,040	N
Imported	4	8	N	262	220	N
Meningococcal infections: Total	34	33	34	2,095	2,108	2,108
Civilian	34	33	34	2,090	2,093	2,093
Military	-	-	-	5	15	15
Mumps	32	49	49	2,281	2,532	4,332
Pertussis	87	84	40	1,727	1,823	1,153
Rubella (German measles)	7	7	17	622	793	2,032
Syphilis (Primary & Secondary): Civilian	711	561	607	20,946	24,208	22,891
Military	2	8	8	234	307	286
Toxic Shock syndrome	11	14	N	365	336	N
Tuberculosis	434	500	582	15,993	17,507	20,144
Tularemia	7	5	5	247	231	196
Typhoid fever	9	13	16	241	325	373
Typhus fever, tick-borne (RMSF)	14	16	24	737	1,018	1,018
Rabies, animal	109	180	119	3,981	4,819	4,838

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1984		Cum. 1984
Anthrax	1	Plague (Ariz. 1)	23
Botulism: Foodborne	10	Poliomyelitis: Total	3
Infant (Iowa 1, Calif. 1)	69	Paralytic	3
Other	6	Psittacosis (Conn. 1, Iowa 1, Fla. 1, Tex. 1, Colo. 1)	67
Brucellosis (Ga. 1, Fla. 1, Colo. 1)	88	Rabies, human	1
Cholera	-	Tetanus	47
Congenital rubella syndrome	3	Trichinosis	61
Diphtheria	1	Typhus fever, flea-borne (endemic, murine) (Tex. 1)	22
Leptospirosis	23		

*The 1983 reports which appear in this table were collected before AIDS became a notifiable condition.

**Four of the 14 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending September 29, 1984 and October 1, 1983 (39th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1984	1984	Cum. 1984	Cum. 1984	Cum. 1984	Cum. 1983	1984	1984	1984	1984	1984	Cum. 1984
UNITED STATES	3,104	301	769	76	621,977	672,604	492	571	71	156	18	175
NEW ENGLAND	99	11	34	1	17,641	17,023	6	41	-	19	-	9
Maine	-	1	-	-	731	837	-	-	-	-	-	-
N.H.	1	2	6	-	516	554	-	1	-	-	-	-
Vt.	-	-	4	-	286	335	-	-	-	-	-	-
Mass.	55	5	15	-	7,310	7,326	5	24	-	19	-	6
R.I.	6	1	-	-	1,274	959	-	4	-	-	-	3
Conn.	37	2	9	1	7,524	7,012	1	12	-	-	-	-
MID ATLANTIC	1,369	71	98	10	84,269	85,543	57	106	5	8	-	33
Upstate N.Y.	126	44	35	7	13,215	13,944	11	13	2	2	-	2
N.Y. City	993	15	9	-	34,297	33,980	19	61	-	4	-	30
N.J.	179	-	25	-	14,117	15,836	22	22	-	2	-	-
Pa.	71	12	29	3	22,640	21,783	5	10	3	-	-	1
E.N. CENTRAL	139	49	209	18	87,244	97,801	20	33	3	6	5	6
Ohio	16	11	63	9	22,801	25,196	9	6	-	1	4	2
Ind.	22	3	53	-	9,820	10,120	-	4	-	2	-	-
Ill.	71	1	24	6	19,707	28,070	1	2	-	-	-	2
Mich.	20	33	43	-	25,392	25,863	9	21	3	3	1	2
Wis.	10	1	26	3	9,524	8,552	1	-	-	-	-	-
W.N. CENTRAL	31	13	63	3	30,493	31,922	14	12	2	-	2	2
Minn.	7	1	25	-	4,623	4,457	1	5	-	-	-	-
Iowa	2	4	24	-	3,338	3,475	1	1	-	-	-	1
Mo.	17	5	8	-	14,623	15,709	11	5	2	-	1	1
N. Dak.	-	-	-	-	289	333	-	-	-	-	-	-
S. Dak.	-	-	1	1	702	822	-	-	-	-	-	-
Nebr.	2	-	1	-	2,173	2,003	1	1	-	-	-	-
Kans.	3	3	4	2	4,745	5,123	-	-	-	-	1	-
S. ATLANTIC	417	46	117	15	158,118	173,400	20	91	12	5	6	7
Del.	5	2	1	-	2,933	3,143	-	1	-	-	3	-
Md.	34	11	24	-	18,319	22,412	1	7	2	-	1	1
D.C.	67	1	-	-	11,278	11,872	-	2	-	-	-	1
Va.	25	9	25	5	14,973	15,812	1	12	4	2	2	4
W. Va.	4	1	21	-	1,965	1,912	-	1	-	-	-	-
N.C.	9	5	21	7	25,860	26,876	2	16	3	2	-	-
S.C.	7	-	4	-	16,068	16,306	-	9	-	-	-	-
Ga.	43	4	2	1	28,722	34,202	3	14	-	-	-	-
Fla.	223	13	19	2	38,000	40,865	13	29	3	1	-	1
E.S. CENTRAL	22	22	42	7	55,106	56,024	8	32	-	3	-	-
Ky.	9	2	8	-	6,653	6,627	-	1	-	-	-	-
Tenn.	6	10	14	1	22,669	23,399	4	18	-	1	-	-
Ala.	5	7	18	5	17,191	16,782	2	10	-	2	-	-
Miss.	2	3	2	1	8,593	9,216	2	3	-	-	-	-
W.S. CENTRAL	225	21	62	4	84,733	94,882	66	25	7	45	4	17
Ark.	1	4	-	2	7,453	7,602	5	-	1	12	-	1
La.	31	1	6	-	18,955	17,727	15	4	1	1	-	1
Okla.	7	2	19	1	9,278	10,995	9	6	3	1	1	-
Tex.	186	14	37	1	49,047	58,558	37	15	2	31	3	15
MOUNTAIN	48	13	21	10	20,449	21,458	63	22	2	9	1	8
Mont.	-	4	-	-	835	889	3	-	-	-	1	-
Idaho	-	1	-	-	982	948	2	2	-	-	-	-
Wyo.	1	1	-	-	567	558	-	-	-	-	-	-
Colo.	25	4	7	-	5,828	6,003	8	4	1	2	-	-
N. Mex.	-	-	-	-	2,419	2,628	12	-	-	-	-	-
Ariz.	11	1	9	3	5,582	6,119	22	9	1	1	-	6
Utah	6	1	5	7	986	1,023	6	1	-	1	-	1
Nev.	5	1	-	-	3,250	3,290	10	6	-	5	-	1
PACIFIC	754	55	123	8	83,924	94,551	238	209	40	61	-	93
Wash.	38	6	7	-	6,128	7,380	12	18	3	1	-	3
Oreg.	7	-	-	-	4,931	5,063	25	8	6	-	-	1
Calif.	696	46	113	8	69,301	77,788	200	182	31	60	-	74
Alaska	1	2	-	-	2,112	2,463	1	1	-	-	-	-
Hawaii	12	1	3	-	1,452	1,857	-	-	-	-	-	15
Guam	-	U	-	-	95	114	U	U	U	U	U	-
P.R.	33	1	3	1	2,605	2,146	-	14	20	8	-	2
V.I.	-	U	-	-	356	214	U	U	U	U	U	-
Pac. Trust Terr.	-	U	-	-	-	-	U	U	U	U	U	-

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 29, 1984 and October 1, 1983 (39th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1984	1984	Cum. 1984	1984	Cum. 1984	Cum. 1983	Cum. 1984	1984	Cum. 1984	1984	Cum. 1984	Cum. 1983	1984	Cum. 1984	Cum. 1983
UNITED STATES	700	10	2,060	4	262	1,260	2,095	32	2,281	87	1,727	1,823	7	622	793
NEW ENGLAND	41	-	93	1	12	16	140	1	70	4	47	57	1	20	15
Maine	-	-	-	-	-	-	1	-	22	-	2	4	-	1	-
N.H.	-	-	33	-	3	3	7	-	15	-	7	8	-	1	4
Vt.	5	-	2	-	5	-	26	-	5	1	20	8	-	-	5
Mass.	23	-	48	-	-	5	61	-	10	1	12	31	1	18	6
R.I.	4	-	-	-	-	-	12	1	9	-	2	5	-	-	-
Conn.	9	-	10	1†	4	8	33	-	9	2	4	1	-	-	-
MID ATLANTIC	112	1	117	2	36	103	350	3	268	4	149	324	1	218	134
Upstate N.Y.	23	1	24	-	12	12	117	3	74	4	84	99	-	99	25
N.Y. City	32	-	89	-	15	61	77	-	23	-	7	54	1	99	86
N.J.	34	-	4	-	2	27	69	-	130	-	11	19	-	16	3
Pa.	23	-	-	2†	7	3	87	-	41	-	47	152	-	4	20
E.N. CENTRAL	67	-	612	-	71	656	332	9	903	6	396	420	1	84	118
Ohio	15	-	3	-	6	85	111	6	442	4	68	127	-	2	2
Ind.	2	-	2	-	1	400	42	-	53	-	225	48	-	5	23
Ill.	23	-	177	-	1	163	73	3	171	-	22	143	-	49	49
Mich.	15	-	408	-	54	7	65	-	161	2	28	33	1	20	16
Wis.	12	-	22	-	9	1	41	-	76	-	53	69	-	8	28
W.N. CENTRAL	20	-	38	-	8	8	127	-	94	-	111	113	1	35	39
Minn.	6	-	35	-	3	1	26	-	6	-	12	40	-	4	8
Iowa	2	-	-	-	-	-	21	-	22	-	10	6	-	1	-
Mo.	6	-	3	-	-	1	38	-	9	-	18	22	-	-	-
N. Dak.	1	-	-	-	-	-	1	-	2	-	-	2	-	3	-
S. Dak.	1	-	-	-	-	-	6	-	-	-	8	7	-	-	-
Nebr.	2	-	-	-	-	-	11	-	4	-	11	-	-	-	-
Kans.	2	-	-	-	5	6	24	-	51	-	52	36	1	27	31
S. ATLANTIC	104	-	16	-	29	202	440	1	167	11	131	225	1	22	93
Del.	4	-	-	-	-	-	4	-	2	-	2	3	-	-	-
Md.	26	-	6	-	14	10	34	-	33	-	11	29	-	1	3
D.C.	1	-	-	-	5	-	8	-	-	-	-	-	-	-	-
Va.	27	-	1	-	2	23	48	1	17	1	15	46	-	-	2
W. Va.	1	-	-	-	-	-	5	-	36	-	11	9	-	-	-
N.C.	8	-	-	-	-	1	72	-	17	8	32	26	-	-	10
S.C.	2	-	-	-	-	4	47	-	4	-	1	13	-	-	1
Ga.	11	-	-	-	1	8	84	-	17	-	10	64	-	2	12
Fla.	24	-	9	-	7	156	138	-	41	2	49	35	1	19	65
E.S. CENTRAL	8	-	1	-	2	6	120	-	45	-	12	26	-	9	14
Ky.	1	-	1	-	-	1	48	-	9	-	1	11	-	3	13
Tenn.	2	-	-	-	2	-	30	-	15	-	7	5	-	-	-
Ala.	5	-	-	-	-	5	29	-	6	-	-	5	-	3	1
Miss.	-	-	-	-	-	-	13	-	15	-	4	5	-	3	-
W.S. CENTRAL	63	-	508	-	25	74	222	5	127	-	281	349	-	61	103
Ark.	-	-	8	-	-	13	31	-	7	-	15	19	-	3	-
La.	9	-	8	-	-	25	47	-	-	-	6	6	-	-	9
Okla.	8	-	-	-	8	1	23	N	N	-	234	256	-	-	-
Tex.	46	-	492	-	17	35	121	5	120	-	26	68	-	58	94
MOUNTAIN	23	-	113	-	31	4	72	3	218	3	105	198	1	20	30
Mont.	1	-	-	-	-	-	2	-	7	-	19	1	-	-	3
Idaho	2	-	-	-	23	-	9	-	9	-	7	15	-	1	8
Wyo.	-	-	-	-	-	1	2	-	2	-	6	6	-	2	4
Colo.	5	-	-	-	6	2	25	1	18	-	34	119	-	2	1
N. Mex.	1	-	88	-	-	-	7	N	N	1	8	11	-	-	-
Ariz.	9	-	-	-	1	1	15	1	167	2	22	22	1	4	6
Utah	5	-	25	-	1	-	7	-	11	-	7	24	-	7	7
Nev.	-	-	-	-	-	-	5	1	4	-	2	-	-	4	1
PACIFIC	262	9	562	1	48	191	292	10	389	59	495	111	1	153	247
Wash.	8	-	125	1†	14	5	44	1	40	42	281	16	-	1	9
Oreg.	10	-	-	-	-	9	42	N	N	14	28	7	-	2	13
Calif.	240	3	278	-	30	174	198	7	320	3	114	81	1	145	223
Alaska	-	-	-	-	-	2	7	-	8	-	-	4	-	1	1
Hawaii	4	6	159	-	4	1	1	2	21	-	72	3	-	4	1
Guam	1	U	83	U	2	2	1	U	5	U	-	-	U	2	-
P.R.	4	-	1	-	-	94	3	6	142	1	1	11	1	9	4
V.I.	-	U	-	U	-	5	-	U	5	U	-	-	U	-	2
Pac. Trust Terr.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

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

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

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 29, 1984 and October 1, 1983 (39th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1984	Cum. 1983	1984	Cum. 1984	Cum 1983	Cum. 1984	Cum. 1984	Cum. 1984	Cum. 1984
UNITED STATES	20,946	24,208	11	15,993	17,507	247	241	737+16	3,981
NEW ENGLAND	384	506	-	475	510	4	15	5	44
Maine	3	17	-	21	26	-	-	-	12
N.H.	12	19	-	25	31	-	-	-	15
Vt.	1	1	-	9	7	-	-	-	-
Mass.	220	313	-	260	269	4	12	4	9
R.I.	16	16	-	37	45	-	-	-	-
Conn.	132	140	-	123	132	-	3	1	8
MID ATLANTIC	2,820	3,161	-	2,901	3,082	1	40	22	342
Upstate N.Y.	223	284	-	466	482	-	12	7	71
N.Y. City	1,752	1,850	-	1,160	1,227	1	12	2	-
N.J.	490	609	-	652	659	-	10	3	28
Pa.	355	418	-	623	714	-	6	10	243
E.N. CENTRAL	980	1,323	1	2,067	2,346	6	36	52	177
Ohio	185	336	-	380	372	-	6	35	21
Ind.	103	92	-	250	264	-	4	5	19
Ill.	327	640	-	839	1,014	6	14	9	62
Mich.	305	188	1	465	574	-	5	3	20
Wis.	60	67	-	133	122	-	7	-	55
W.N. CENTRAL	287	298	1	497	580	75	9	46	604
Minn.	78	114	1	79	112	1	3	1	65
Iowa	11	19	-	50	54	-	-	6	124
Mo.	146	111	-	254	300	38	4	12	54
N. Dak.	10	2	-	10	6	-	-	-	123
S. Dak.	-	11	-	18	33	33	-	5	151
Nebr.	11	12	-	27	20	-	-	4	39
Kans.	31	29	-	59	55	3	2	18	48
S. ATLANTIC	6,176	6,439	2	3,386	3,512	7	31	345	1,137
Del.	23	28	-	49	48	-	-	1	4
Md.	387	397	-	335	281	-	2	28	594
D.C.	245	284	-	140	146	-	6	-	-
Va.	316	439	-	357	361	1	8	52	173
W. Va.	14	21	-	102	106	-	-	6	36
N.C.	626	622	-	480	508	1	1	138	24
S.C.	586	409	-	398	327	-	1	75	47
Ga.	1,059	1,165	1	516	629	4	1	42	152
Fla.	2,920	3,074	1	1,009	1,106	1	12	3	107
E.S. CENTRAL	1,493	1,674	-	1,483	1,548	4	6	77	194
Ky.	80	125	-	349	366	-	2	15	46
Tenn.	402	466	-	449	472	4	2	41	69
Ala.	474	656	-	446	408	-	1	13	79
Miss.	537	427	-	239	302	-	1	8	-
W.S. CENTRAL	5,132	6,250	1	1,865	2,162	108	15	174	804
Ark.	152	151	-	196	252	79	-	29	90
La.	929	1,303	-	261	346	7	1	3	47
Okla.	165	161	1	175	196	17	3	115	88
Tex.	3,886	4,635	-	1,233	1,368	5	11	27	579
MOUNTAIN	474	513	2	427	478	31	11	12	236
Mont.	3	7	-	17	41	3	1	8	102
Idaho	20	7	-	24	24	7	-	1	9
Wyo.	4	10	-	-	12	1	-	3	17
Colo.	125	118	-	52	64	6	3	-	39
N. Mex.	65	145	-	85	89	2	3	-	11
Ariz.	162	123	-	197	182	3	3	-	40
Utah	17	20	2	30	34	4	-	-	3
Nev.	78	83	-	22	32	5	1	-	15
PACIFIC	3,200	4,044	4	2,892	3,289	11	78	4	443
Wash.	106	147	1	145	187	3	2	-	3
Oreg.	82	108	-	116	138	2	1	1	1
Calif.	2,948	3,719	3	2,413	2,726	6	70	2	431
Alaska	6	12	-	52	56	-	1	1	8
Hawaii	58	58	-	166	182	-	4	-	-
Guam	-	-	U	5	5	-	-	-	-
P.R.	615	750	-	285	363	-	3	-	50
V.I.	8	17	U	2	2	-	3	-	-
Pac. Trust Terr.	-	-	U	-	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending September 29, 1984 (39th Week Ending)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	680	471	149	32	16	12	55
Boston, Mass.	184	114	46	12	5	7	21
Bridgeport, Conn.	44	36	4	3	1	-	4
Cambridge, Mass.	23	16	7	-	-	-	5
Fall River, Mass.	34	30	4	-	-	-	-
Hartford, Conn.	46	20	14	7	1	4	-
Lowell, Mass.	28	21	6	-	1	-	2
Lynn, Mass.	24	15	9	-	-	-	-
New Bedford, Mass.	22	15	5	1	1	-	1
New Haven, Conn.	47	32	9	3	3	-	1
Providence, R.I.	73	53	16	2	2	-	5
Somerville, Mass.	8	7	1	-	-	-	-
Springfield, Mass.	39	29	10	-	-	-	7
Waterbury, Conn.	41	32	8	1	-	-	4
Worcester, Mass.	67	51	10	3	2	1	5
MID. ATLANTIC	2,346	1,522	500	182	56	86	79
Albany, N.Y.	55	46	6	2	-	1	-
Allentown, Pa.	10	8	2	-	-	-	-
Buffalo, N.Y.	155	92	40	10	4	9	7
Camden, N.J.	37	28	8	-	-	1	2
Elizabeth, N.J.	28	17	7	4	-	-	-
Erie, Pa.†	29	20	7	2	-	-	3
Jersey City, N.J.	58	44	10	3	1	-	1
N.Y. City, N.Y.	1,318	846	288	131	35	18	44
Newark, N.J.	69	25	21	10	6	7	4
Paterson, N.J.	23	12	9	1	1	-	1
Philadelphia, Pa.†	134	63	19	9	2	41	5
Pittsburgh, Pa.†	58	37	16	1	2	2	-
Reading, Pa.	32	30	2	-	-	-	3
Rochester, N.Y.	102	73	21	4	2	2	5
Schenectady, N.Y.	26	17	9	-	-	-	1
Scranton, Pa.†	28	18	9	-	1	-	-
Syracuse, N.Y.	95	77	10	3	-	5	-
Trenton, N.J.	23	19	3	1	-	-	-
Utica, N.Y.	31	23	7	1	-	-	1
Yonkers, N.Y.	35	27	6	-	2	-	2
E.N. CENTRAL	1,873	1,173	463	126	48	63	68
Akron, Ohio	63	39	18	2	2	2	-
Canton, Ohio	44	32	8	4	-	-	3
Chicago, Ill	327	177	98	33	7	12	4
Cincinnati, Ohio	107	76	23	3	4	1	10
Cleveland, Ohio	154	87	41	14	5	7	2
Columbus, Ohio	129	83	34	6	3	3	4
Dayton, Ohio	114	62	34	10	2	6	-
Detroit, Mich.	233	140	51	23	9	10	2
Evansville, Ind.	28	19	6	2	-	1	-
Fort Wayne, Ind.	39	29	8	1	1	-	1
Gary, Ind.	14	7	3	1	3	-	1
Grand Rapids, Mich.	41	30	7	4	-	-	5
Indianapolis, Ind.	184	116	43	7	5	13	5
Madison, Wis.	30	21	6	2	-	1	7
Milwaukee, Wis.	131	95	26	7	-	3	4
Peoria, Ill.	42	28	13	1	-	-	3
Rockford, Ill.	39	23	12	1	2	1	4
South Bend, Ind.	21	17	2	-	-	2	2
Toledo, Ohio	89	58	20	5	5	1	9
Youngstown, Ohio	44	34	10	-	-	-	2
W.N. CENTRAL	703	475	142	37	28	21	25
Des Moines, Iowa	64	39	18	4	2	1	4
Duluth, Minn.	24	17	6	1	-	-	-
Kansas City, Kans.	44	26	12	4	1	1	-
Kansas City, Mo.	82	51	21	3	4	3	2
Lincoln, Nebr.	19	18	-	1	-	-	2
Minneapolis, Minn	95	66	17	5	5	2	2
Omaha, Nebr.	87	59	17	3	4	4	6
St. Louis, Mo.	143	95	28	8	5	7	3
St. Paul, Minn.	61	47	7	3	2	2	1
Wichita, Kans.	84	57	16	5	5	1	5
S. ATLANTIC	1,214	742	293	108	22	49	37
Atlanta, Ga.	124	68	27	13	5	11	1
Baltimore, Md.	139	91	33	11	1	3	2
Charlotte, N.C.	72	43	16	10	-	3	3
Jacksonville, Fla.	117	69	30	12	2	4	5
Miami, Fla.	117	71	29	11	3	3	1
Norfolk, Va.	59	32	18	3	-	6	2
Richmond, Va.	73	41	20	8	-	4	5
Savannah, Ga.	41	25	9	4	2	1	4
St. Petersburg, Fla.	114	92	16	3	1	2	3
Tampa, Fla.	65	43	14	5	-	3	6
Washington, D.C.	248	138	69	25	7	9	1
Wilmington, Del.	45	29	12	3	1	-	4
E.S. CENTRAL	787	476	210	50	25	26	33
Birmingham, Ala.	123	74	29	5	11	4	2
Chattanooga, Tenn.	87	54	23	5	2	3	7
Knoxville, Tenn.	76	53	16	3	1	3	5
Louisville, Ky.	87	54	23	5	-	5	3
Memphis, Tenn.	147	90	40	10	5	2	6
Mobile, Ala.	91	54	28	6	1	2	2
Montgomery, Ala.	43	21	15	4	1	2	2
Nashville, Tenn.	133	76	36	12	4	5	6
W.S. CENTRAL	1,263	717	326	106	60	53	45
Austin, Tex.	68	38	16	7	5	2	5
Baton Rouge, La.	39	25	9	3	2	-	-
Corpus Christi, Tex.	69	38	13	10	4	4	1
Dallas, Tex.	194	110	51	14	15	4	4
El Paso, Tex.	47	27	14	1	-	5	-
Fort Worth, Tex.	101	58	27	12	2	2	9
Houston, Tex.	256	133	72	24	19	8	8
Little Rock, Ark.	80	52	16	5	1	5	1
New Orleans, La.	124	65	40	8	3	8	1
San Antonio, Tex.	171	107	41	11	5	7	10
Shreveport, La.	47	24	11	5	1	6	3
Tulsa, Okla.	67	40	16	6	3	2	3
MOUNTAIN	612	390	131	43	30	18	34
Albuquerque, N.Mex.	82	48	19	7	6	2	7
Colo. Springs, Colo.	47	26	13	5	2	1	6
Denver, Colo.	87	57	20	6	1	3	2
Las Vegas, Nev.	79	45	23	6	5	-	3
Ogden, Utah	20	16	2	1	1	-	1
Phoenix, Ariz.	147	92	29	10	11	5	4
Pueblo, Colo.	20	14	4	1	1	-	1
Salt Lake City, Utah	46	33	4	2	2	5	3
Tucson, Ariz.	84	59	17	5	1	2	7
PACIFIC	1,833	1,181	370	153	73	54	101
Berkeley, Calif.	23	17	5	1	-	-	-
Fresno, Calif.	40	25	13	1	-	1	6
Glendale, Calif.	20	17	2	1	-	-	3
Honolulu, Hawaii	83	49	19	7	4	4	9
Long Beach, Calif.	80	48	20	5	4	3	2
Los Angeles, Calif.	511	314	112	55	23	6	23
Oakland, Calif.	72	46	14	7	1	4	3
Pasadena, Calif.	21	18	1	-	-	2	1
Portland, Oreg.	116	79	20	8	7	2	6
Sacramento, Calif.	127	81	22	13	3	7	13
San Diego, Calif.	159	108	24	15	7	5	12
San Francisco, Calif.	165	105	31	14	10	5	8
San Jose, Calif.	176	111	40	14	6	5	10
Seattle, Wash.	144	94	31	8	5	6	1
Spokane, Wash.	49	36	5	3	2	3	3
Tacoma, Wash.	47	33	11	1	1	1	1
TOTAL	11,311††	7,147	2,584	837	358	382	477

* 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.

Measles – Continued

References

1. Amler RW, Kim-Farley RJ, Orenstein WA, Doster SW, Bart KJ. Measles on campus. J Am College Health 1983;32:53-7.
2. CDC. Measles surveillance report No. 11, 1977-1981. September 1982.
3. Bart KJ, Stenhouse DH. Measles and rubella on college campuses: the need to act. J Am College Health 1983;32:58-62.
4. CDC. Measles outbreaks on university campuses—Indiana, Ohio, Texas. MMWR 1983;32:193-5.
5. CDC. Rubella—United States, 1977-1980. MMWR 1980;29:378-80.
6. Barid SJ, Irvin JJ. Planning, implementing and evaluating college-based immunization programs. J Am College Health (in press).
7. CDC. Measles in medical settings—United States. MMWR 1981;30:125-6.
8. CDC. Imported measles with subsequent airborne transmission in a pediatrician's office—Michigan. MMWR 1983;32:401-3.
9. Williams WW. Guideline for infection control in hospital personnel. Infect Control 1983;4(suppl 4):326-49.
10. Advisory Committee on Immunization Practices. Measles prevention. MMWR 1982;31:229-31.
11. Garner JS, Simmons BP. Guideline for isolation precautions in hospitals. Infect Control 1983;4(suppl 4):245-325.

Perspectives in Disease Prevention and Health Promotion

High Blood Pressure Control Project — South Carolina, 1978-1982

With the recognition that efforts to assess high blood pressure were needed at the community level, the National Heart, Lung, and Blood Institute allocated funds for state-based programs to document the prevalence of high blood pressure, to design and implement intervention strategies, and to evaluate the impact of state-level planning and coordination on the control of high blood pressure. South Carolina was one of seven states* selected to participate, and in October 1977, funding was awarded to the South Carolina Department of Health and Environmental Control (DHEC) to establish the High Blood Pressure Control Project (SCHBPCP).

With the University of South Carolina School of Public Health, the Carolina Health Survey was conducted in 1979 and 1982 to determine the prevalence of high blood pressure and the status of awareness, treatment, and control levels among the hypertensive population. The baseline (1979) and follow-up (1982) surveys were statewide household surveys using multistage probability sampling plans (*1-3*) based on U.S. census data. Approximately 5,300 adults (18 years of age or older) were interviewed in the baseline survey, with 5,200 participating in the follow-up survey. To make projections for the entire state, a weighting procedure was used to adjust for sample selection probabilities and nonresponses within age/race/sex subgroups.

Hypertension-related mortality was examined through analysis of annual death certificate data maintained by DHEC's Office of Vital Records and Public Health Statistics. This information provided a baseline assessment of mortality and allowed monitoring of selected causes of death to detect changes during the SCHBPCP. Hypertension-related morbidity was examined through use of hospital discharge data provided by the Office of Cooperative Health

*The other six were: California, Connecticut, Georgia, Maine, Maryland, and Michigan.

High Blood Pressure — Continued

Statistics, Division of Research and Statistical Services, South Carolina Budget and Control Board. These data were also used in baseline needs assessment and for monitoring changes in hospitalizations for selected disease categories.

From the baseline Carolina Health Survey, it is projected that 35% of adult South Carolinians had high blood pressure in 1979. Although this number declined slightly in the 1982 follow-up survey, with a projected 31% of persons identified as having high blood pressure, this difference was not statistically significant. Survey respondents were considered to have high blood pressure if they had a blood pressure reading of 140/90 or higher (average of three readings, taken at 5-minute intervals) or if they reported they were taking antihypertensive medication.

Both baseline and follow-up surveys indicated that 99% of all adults have had their blood pressures taken at some time. Most had their blood pressures taken by doctors or nurses, but this changed from 94% at baseline to 88% at follow-up. This shift may indicate individuals taking greater responsibility for their own blood pressure measurement, as well as an increase in the number of people participating in community blood pressure screenings.

For those reporting histories of high blood pressure at baseline, 59% reported having seen a doctor about their blood pressures within the previous 6 months, compared to 58% at follow-up. Of this group, at baseline, 77% had antihypertensive medication prescribed, and 56% were taking that medication; at follow-up, 74% had medication prescribed, and 74% were currently using it. Among those who had discontinued their antihypertensive medication, the most common reasons in both surveys were: their doctors had advised them to stop; they no longer had high blood pressure; they no longer needed to take medication; they had undesirable side effects; or medication was too expensive.

Between baseline and follow-up, the proportion of hypertensives characterized as unaware of their conditions decreased 23%; this was accompanied by a 57% increase in the proportion of hypertensives characterized as aware, treated, and controlled. There was very little change in the proportion of hypertensives who are aware of their conditions, either treated or untreated, but uncontrolled.

At baseline, approximately 22% of respondents scored 80% or higher on the hypertension knowledge test; this proportion increased to 28% at follow-up. In both surveys, aware and treated hypertensives (whether or not controlled) were consistently more knowledgeable than normotensives, unaware hypertensives, and aware/untreated hypertensives.

Selected causes of hypertension-related deaths were monitored for possible changes during the SCHBPCP. However, because of the time lag in obtaining death certificate data, only 3 years' data (1979-1981) are available for comparison to the baseline period (1970-1978) before the inception of the project. For example, stroke mortality among all race/sex groups has been decreasing since 1970. This decline continued through 1979-1981, although no significant changes in rates were observed.

Changes in stroke mortality or other hypertension-related mortality were not expected to be detected in a brief 3-year time period. It is, however, expected that improvements in high blood pressure control will result in mortality changes that will be evident in later years.

Essential hypertension, cerebrovascular disease, and myocardial infarction were selected as the disease categories to be monitored through the Statewide Hospital Discharge Data System. Hospital discharge rates for all three of these conditions increased from 1978 to 1981. These changes may be related to a variety of contributing factors, such as improvements in medical/surgical procedures, emergency medical care, transportation, disease identification, and coding procedures. There may also be greater numbers of hospitalizations for

High Blood Pressure — Continued

diagnoses of hypertension-related diseases; improved containment of these conditions may prevent mortality but may require hospitalization for treatment.

While the increased number of hospitalizations for hypertension-related diseases was unexpected, it was accompanied by parallel increases in the number of total hospital discharges in the state. For example, in 1978, cerebrovascular disease represented 1.3% of the total discharges; in 1981, this proportion had increased by 1.8%. Similar increases were observed for the other related disease categories.

From the data presented, it appears that some positive changes have occurred in the control of high blood pressure in South Carolina since 1978. Although this assessment cannot document the specific causal relationships effecting these changes, it is possible to describe needs, develop intervention-targeted strategies, and assess subsequent change by using a systematic approach through which objective data are collected, analyzed, and evaluated.

Editorial Note: High blood pressure is one of the most prevalent chronic conditions affecting U.S. citizens (*4*). It is a major risk factor for cardiovascular disease (including cerebrovascular disease) and renal disease (*5,6*). In South Carolina, mortality rates for high blood pressure-related diseases are significantly higher than those reported in other states (*7*).

The DHEC has had state funding for high blood pressure screening, education, and follow-up services since 1973. South Carolina was the second state, following Georgia, to designate state funding for high blood pressure control activities. To augment these efforts, in 1976 federal funds became available for expansion of community-based services.

While the SCHBPCP was involved in documenting the status of high blood pressure control in South Carolina since 1978, it must be acknowledged that the control of high blood pressure is a complex process. Positive improvements may have occurred, but direct cause-and-effect relationships cannot be attributed solely to the SCHBPCP. However, the project did establish a comprehensive network of public, private, professional, and voluntary groups involved in blood pressure control activities, including screening and follow-up services, as well as public, patient, and professional education. A complete description of the programmatic aspects of the project is available from the Special Projects Section, Division of Chronic Disease, South Carolina DHEC, 2600 Bull Street, Columbia, South Carolina 29201.

Reported in Preventive Medicine Quarterly *1984;8 (Summer):8-11, by DM Shepard, MAT, South Carolina Dept of Health and Environmental Control, Aiken, FC Wheeler, PhD, Special Projects Section, Div of Chronic Disease, South Carolina Dept of Health and Environmental Control, MC Weinrich, PhD, Dept of Epidemiology, School of Public Health, University of South Carolina, Columbia, E Devlin, project coordinator, staff and members, South Carolina Medical Association, South Carolina Affiliate, American Heart Association.*

References

1. Lam JJ, Weinrich MC. A new sampling plan for the Carolina Health Survey. Proc Survey Research Methods. JASA 1981:81;385-6.
2. McClure G, Weinrich MC, Shepard DM. Carolina Health Survey (1979): a summary report. South Carolina Department of Health and Environmental Control, 1982.
3. McClure G, Weinrich MC, Shepard DM. Carolina Health Survey (1982): a summary report. South Carolina Department of Health and Environmental Control, 1983.
4. Rowland M, Robert J. Blood pressure levels in persons 6-74 years: United States 1976-1980. Vital and Health Statistics, Advance Data No. 84, 1982. National Center for Health Statistics, U.S. Department of Health and Human Services.
5. Kannel WB. Some lessons in cardiovascular epidemiology from Framingham. Am J Cardiol 1976;37:269-82.
6. Hypertension Detection and Follow-up Program Cooperative Group. Five-year findings of the hypertension detection and follow-up program. I. Reduction in mortality of persons with high blood pressure, including mild hypertension. JAMA 1979;242:2562-71.
7. Keil JE, Lackland DT, Hudson MB, et al. Coronary heart disease and stroke mortality in South Carolina geographical and temporal trends. J SC Med Assoc 1983;79:65-9.

Epidemiologic Notes and Reports

Campylobacter Outbreak Associated with Certified Raw Milk Products — California

On May 31, 1984, 28 kindergarten children and seven adults from a private school of 240 students in Whittier, California, visited a certified raw milk (CRM) bottling plant in southern California, where they were given ice cream, kefir, and CRM. Three to 6 days later, several of the group began to experience fever and gastroenteritis. Ultimately, nine children and three adults became ill, and most of them were absent from school. Studies on stools from these 12 individuals for routine bacterial pathogens showed nine positive and three negative for *Campylobacter jejuni*. Stools were obtained from nine non-ill children in another kindergarten class; these stools did not yield *C. jejuni*. The only common foods these children (ill and non-ill) ate were hamburgers, which are provided every Thursday to their school by a fast-food hamburger chain. No one else in the school became sick.

Reported in Public Health Letter *1984;6, Los Angeles County Dept of Human Svcs,* California Morbidity *(June 15, 1984), California Dept of Health Svcs; Enteric Diseases Br, Div of Bacterial Diseases, Center for Infectious Diseases, CDC.*

Editorial Note: Other *Campylobacter* outbreaks have been linked to consumption of raw milk, including CRM (*1*). In June 1984, 17 members of a kindergarten class on Vancouver Island, British Columbia, Canada, visited a raw milk dairy; 13 drank raw milk. Nine persons became ill a median of 4 days after visiting the dairy. Stools from 10 persons were cultured; three yielded *C. jejuni*; four did not; the results of three are still pending (*2*). During 1983, two outbreaks of campylobacteriosis followed consumption of raw milk on school-sponsored outings in Pennsylvania (*3*). Similar outbreaks also occurred in 1981 and 1982 in Michigan, Minnesota, and Vermont. Technology does not presently exist to prevent contamination of raw milk supplies by *Campylobacter*, which is present in the intestinal tracts of about 40% of dairy cattle (*4*). Although infection may be more common than recognized, episodes of illness often are not well documented.

References

1. Potter ME, Blaser MJ, Sikes RK, Kaufmann AF, Wells JG. Human *Campylobacter* infection associated with certified raw milk. Am J Epidemiol 1983;117:475-83.
2. Kindergarten field trip to a farm, June 25, 1984, Vancouver Island. Disease Surveillance, British Columbia 1984;5:201-3.
3. CDC. Campylobacteriosis associated with raw milk consumption—Pennsylvania. MMWR 1983; 32:337-8, 344.
4. Martin WT, Patton CM, Morris GK, Potter ME, Puhr ND. Selective enrichment broth medium for isolation of *Campylobacter jejuni*. J Clin Microbio 1983;17:853-5.

Notice to Readers

Workshop on Occupational Diseases

The National Institute for Occupational Safety and Health (NIOSH) will sponsor a workshop entitled, "State-Based Reporting of Occupational Diseases." It will be held November 7-9, 1984, in Cincinnati, Ohio. For further information, contact Robert J. Mullan, M.D., Robert A. Taft Laboratories, Mail Stop R-21, 4676 Columbia Parkway, Cincinnati, Ohio 45226.

Addendum: Vol. 33, No. 36

p. 506. In the article, "Outbreaks of Respiratory Illness among Employees in Large Office Buildings—Tennessee, District of Columbia," the following persons should be added to the credits on page 507: J Simon, MPH, T Waters, PhD, Health Svcs, Tennessee Valley Authority, Chattanooga, Tennessee.

The *Morbidity and Mortality Weekly Report* is prepared by the Centers for Disease Control, Atlanta, Georgia, and available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238.

The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

☆U.S. Government Printing Office: 1984-746-149/10016 Region IV

HHS Publication No. (CDC) 84-8017