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Progress in Chronic Disease Prevention

Diabetes in Pregnancy Project — Maine, 1986-1987

Approximately 15,000 infants are born to women with established diabetes (diabetes known to exist prior to conception) each year in the United States (*1*). These infants are at increased risk for a number of medical problems including large size for gestational age, low blood sugar, immature lungs, and congenital malformations. Other biochemical abnormalities have also been noted.

To address the problems associated with diabetes during pregnancy, the state of Maine initiated the Maine Diabetes in Pregnancy Project (MDPP), a special program that operates within the Maine Diabetes Control Project. MDPP's goal is to improve pregnancy outcomes of women with established diabetes. Participants receive preconception counseling and are cautioned to undergo a period of metabolic adjustment to establish normoglycemia before conception. MDPP has developed guidelines for management of these high-risk pregnancies, including a schedule of tests for the patient and instructions for both the patient and her health-care provider. In addition, a network of providers who are knowledgeable in the management of pregnancies complicated by diabetes and available to take referrals has been established. All blood specimens for monitoring glucose control during gestation are analyzed at a central laboratory. To evaluate the MDPP, data are collected using a standardized questionnaire that solicits demographic information, previous obstetric history, current pregnancy information, and neonatal outcome variables.

Participation in MDPP is voluntary. Initially, project coordinators sent information on MDPP to all providers who are on the mailing list maintained by the state health department and who might care for women with diabetes during pregnancy and asked them to participate. Those electing to become part of the project then asked their eligible patients to enroll. An estimated 90% of the providers responded positively. The proportion of their patients who are enrolled in MDPP is not known. A central registry is kept of all participating women 15-44 years of age, regardless of pregnancy status.

Diabetes — Continued

Active registration of participants began in January 1986. One hundred twenty-four women (representing 35 providers) have registered with MDPP. All have been provided with educational materials about diabetes during pregnancy. From January 1, 1987, to August 31, 1987, 52* pregnancies were identified among these 124 women. Sixty percent of these pregnant women received preconception counseling through MDPP.

Outcomes have occurred in 41 of the 52 pregnancies. Data on maternal age were available for 38 (93%) of the women. Twenty-five (66%) of them were 30 years of age or under, and 13 (34%) were over 30. Twelve (29%) of the 41 women had had no previous conceptions, and the remainder had had two or more. Seven (17%) of the women had previously had spontaneous abortions. There were two previous stillbirths and one previous neonatal death. Gestational age at delivery was available for 40 of the 41 newborns. Sixty-eight percent were delivered at 37 weeks or more.

Control of diabetes during pregnancy (measured by percentage of glycosylated hemoglobin) was considered good to excellent for all participants. The group's glycosylated hemoglobin values were averaged for each trimester. Mean glycosylated hemoglobin values declined (indicating improved glucose control) from 8.8% during the first trimester to 7.1% during the second trimester and, finally, to 6.5% during the third trimester.†

Pregnancy outcomes were available for 37 of the participants. Thirty-three (89%) of the pregnancies resulted in live births. There were three spontaneous abortions and one neonatal death. The neonatal death was due to multiple congenital malformations; the mother involved had not sought prenatal care until late in her pregnancy. Neonatal morbidity involved conditions that primarily were not life-threatening. They included macrosomia, mild hypoglycemia, and respiratory distress. The frequency of neonatal complications in this population is lower than expected among infants born to women with established diabetes who do not receive appropriate preconception and gestational management (Table 1).

*An estimated 40 to 50 pregnancies occur among women with diabetes in Maine each year (4-5 per 100,000 population).

†The range of mean glycosylated hemoglobin for persons without diabetes mellitus is 4%-8%. The range for persons with diabetes whose condition is under "good control" is 9%-12%; for those whose diabetes is under "poor control," it is 12%-20%.

TABLE 1. Neonatal complications — Maine Diabetes in Pregnancy Project (MDPP), 1986-1987

	Neonates			
	Born to MDPP Participants (N=37)		Born to General Population of Diabetic Women	Born to General U.S. Population of Women
Complications*	Number	Percent	Percent	Percent
Macrosomia (birthweight ≥4,000 g)	7	18.9	27.0 (*2*)	11.1 (*3*)
Hypoglycemia	3	8.1	47.0 (*4*)	~2.0 (*4*)
Respiratory Distress Syndrome	3	8.1	20.6 (*5*)	3.1 (*5*)
Congenital Anomaly	1	2.7	11.0 (*5*)	2.0 (*5*)
Other Morbidity	8	21.6		

*Categories not mutually exclusive.

Diabetes — Continued

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Editorial Note: The ability to improve the outcome of pregnancies complicated by diabetes has resulted from two recent advances: the establishment of comprehensive team care of pregnant women with diabetes and the recognition of the role of strict glycemic control prior to and during gestation. Prior to the use of insulin, maternal mortality among women with diabetes was as high as 40%, and 50% of pregnancies complicated by diabetes did not result in live births (*4*). More intensive management of pregnancies complicated by diabetes, including better identification of women at risk, improved glycemic control, early hospital admission, and coordinated team approaches using practitioners of varying disciplines, have markedly decreased the rates of maternal and infant mortality. The majority of perinatal morbidity and mortality currently noted in pregnancies complicated by diabetes is due to congenital malformations (*6*).

No single factor has been shown to account for the entire spectrum of perinatal morbidity and mortality associated with pregnancies complicated by diabetes. Although differences in immunologic status, amino acid metabolism, and other biochemical and physiologic differences have been shown to exist in such pregnancies (*7*), many of the complications may be consequences of the increased concentrations of glucose received by the fetus. This increased glucose flux between mother and fetus causes fetal hyperinsulinism, which contributes to fetal and neonatal morbidity and mortality.

Before organogenesis (approximately the first 7 weeks of gestation), an increased glucose load and an altered fetal environment are thought to be teratogenic. After 7 weeks gestation, these alterations create an aberrant fetal physiology that can cause macrosomia and other pathology affecting organ systems including the liver, pancreas, heart, and lungs.

Although notable decreases in rates of adverse outcomes of pregnancies among women with diabetes have occurred, the prevalence of congenital malformations in children born to these women remains elevated above that expected in the general population of women (*6*). Preconception counseling regarding the value of planned pregnancies and strict glycemic control before conception and throughout gestation have been shown to reduce the risk of congenital malformations in this group (*1*). Preconception counseling coupled with team management and careful monitoring of maternal and fetal well-being throughout pregnancy are now considered optimal care for the delivery of a healthy newborn.

Public health officials may consider including the following major components in programs designed to prevent adverse outcomes in pregnancies complicated by diabetes:

- Identification of women of childbearing age with established diabetes mellitus.
- Patient education on the value of planned pregnancies and strict metabolic control prior to conception and throughout gestation.
- Professional education to ensure that providers are knowledgeable about effective strategies to manage pregnancies complicated by diabetes.
- Interventions to ensure that women of childbearing age with diabetes receive optimal health care and achieve adequate levels of glycemic control.

Diabetes — Continued

Strict control of blood glucose from conception throughout gestation and particularly during the period of organogenesis is essential since congenital malformations now account for most of the perinatal morbidity and mortality among infants born to women with diabetes. Consequently, the most critical component of a prevention program is the identification and education of women with established diabetes prior to conception.

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Epidemiologic Notes and Reports

Hepatitis B in an Extended Family — Alabama

In July 1986, a case of clinical hepatitis B in a 3-year-old boy was reported to the health department in Houston County, Alabama. During the subsequent investigation, the public health nurse found no obvious risk factors for the child's illness and decided to screen other family members for hepatitis B surface antigen (HBsAg), hepatitis B core antibody (anti-HBc), and hepatitis B surface antibody (anti-HBs) in an attempt to determine whether any other household members were infected.

Thirty-two family members or sexual partners of family members were identified; approximately half of these persons lived in or frequently visited the same dwelling. Three were not available for testing. Ten (34%) of the 29 persons tested (including the index patient) showed evidence of hepatitis B virus (HBV) infection, and seven were positive for HBsAg. Nine of the 16 persons who lived in or frequently visited the dwelling were seropositive; one of the 13 who infrequently visited was seropositive ($p<0.01$).

Only the index patient had a history of illness consistent with hepatitis, and none of the persons with HBV infection knew of previous exposure to persons known to have hepatitis. None worked in a medical or dental field or had previously injected illegal drugs. One seropositive 21-year-old female had had a blood transfusion in June 1986. She had lived in the same dwelling as the index patient for the 6 months prior to diagnosis of his illness. Three persons with HBV infection had self-administered tattoos that had been applied 3 years earlier. However, two of the nonfamily members who were tattooed during the same session with the same applicator were seronegative. Four toothbrushes were shared by nine immediate

Hepatitis B — Continued

family members; one toothbrush was used by the index patient and two of his HBsAg-positive uncles. One 16-year-old male HBsAg carrier has muscular dystrophy and requires assistance in motor activities, although he has never been institutionalized. The younger children reportedly have frequent contact with him.

All HBsAg-positive persons, except the index patient and his half-sister, have been retested and confirmed as chronic HBV carriers because they were anti-HBc-IgM negative on initial testing and have remained HBsAg positive for more than 6 months. All HBsAg-positive carriers who were tested were also HBeAg positive. The index patient was positive for anti-HBe when his illness was diagnosed. HB vaccine was given to susceptible family members who continued to reside in the household, and persons found to be seropositive received follow-up care. In addition, health officials counseled the persons involved on the risk factors for HBV infection.

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Editorial Note: In the United States, acute hepatitis B is primarily a disease of adults and often occurs among members of high-risk groups. Less than 3% of acute hepatitis B cases occur among persons under 14 years of age. Fewer than 10% of children infected with HBV have well-described risk factors such as prior blood transfusion, hemophilia, hemodialysis, drug abuse, and institutionalization in facilities for the retarded. In contrast, 28% of these children have had contact with a person with hepatitis B, and 63% indicate no apparent source of infection when interviewed (*1*). In the latter instance, the most likely source of infection is a household member who is an HBV carrier or has an acute case of hepatitis B.

When a child is found to have acute or chronic hepatitis B infection, an investigation of the circumstances surrounding transmission is warranted. In some instances, as in this family, the child may signal a more extensive pattern of HBV transmission. Previous studies have shown that persons living in the same household as an HBV carrier have a 40% or higher likelihood of current or prior HBV infection (*2,3*). Serologic testing of household members may detect other infected persons who require medical evaluation and counseling and will identify susceptible persons who may require prophylaxis.

This investigation illustrates a number of possible modes of HBV transmission that contribute to the intrafamilial spread of this virus. The 21-year-old woman who was a carrier probably transmitted the virus perinatally to her three children. Other potential modes of transmission among the infected persons may include intimate contact in overcrowded settings, sharing of toothbrushes and other toiletry items, sexual contacts, self-administered tattoos, and the presence of a severely handicapped child who was an HBV carrier and who frequently played with the other children.

Since 1982, the Immunization Practices Advisory Committee has recommended that all household contacts of HBV carriers be screened for susceptibility to HBV and that susceptible contacts receive hepatitis B vaccine (*4*). Regular sexual contacts of adults with acute HBV infection are at high risk of infection (approximately 30%) (*5*) and should receive hepatitis B immune globulin (HBIG). Physicians may also choose to add hepatitis B vaccine to this regimen (*4*). Other household contacts usually need not be treated since the infectious period is limited and the attack rate is low among such household members unless they have been exposed to blood from the index

Hepatitis B — Continued

patient (*4,6,7*). Finally, since perinatal transmission of HBV is highly efficient and leads to death from primary liver cancer or cirrhosis in a high proportion of cases, it is imperative that women at high risk for HBV infection be screened for HBsAg and that infants of infected mothers be treated at birth with HBIG and HB vaccine (*4*).

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

Disease	45th Week Ending			Cumulative, 45th Week Ending		
	Nov. 14, 1987	Nov. 8, 1986	Median 1982-1986	Nov. 14, 1987	Nov. 8, 1986	Median 1982-1986
Acquired Immunodeficiency Syndrome (AIDS)	570	253	N	16,891	11,554	N
Aseptic meningitis	189	238	238	9,959	9,370	9,075
Encephalitis: Primary (arthropod-borne & unspec)	15	34	26	1,128	1,072	1,148
Post-infectious	1	1	1	88	93	93
Gonorrhea: Civilian	15,161	16,382	16,382	668,506	770,082	770,375
Military	545	217	498	14,089	14,486	18,630
Hepatitis: Type A	566	475	475	21,176	19,697	19,697
Type B	546	503	494	21,889	22,364	22,364
Non A, Non B	47	67	N	2,541	3,088	N
Unspecified	68	91	124	2,716	3,807	5,010
Legionellosis	23	17	N	749	706	N
Leprosy	1	7	6	174	227	210
Malaria	15	17	15	759	989	892
Measles: Total*	3	83	21	3,519	5,853	2,439
Indigenous	3	82	N	3,101	5,550	N
Imported	-	1	N	418	303	N
Meningococcal infections: Total	55	41	43	2,487	2,167	2,322
Civilian	55	41	43	2,486	2,165	2,318
Military	-	-	-	1	2	7
Mumps	100	124	62	11,268	4,468	2,879
Pertussis	46	91	72	2,171	3,796	2,070
Rubella (German measles)	1	8	8	317	482	670
Syphilis (Primary & Secondary): Civilian	722	629	576	30,659	23,371	24,199
Military	-	1	2	136	143	261
Toxic Shock syndrome	5	7	N	280	310	N
Tuberculosis	463	488	440	18,328	18,952	18,952
Tularemia	4	4	3	178	136	233
Typhoid Fever	8	11	7	283	285	326
Typhus fever, tick-borne (RMSF)	4	6	6	575	718	801
Rabies, animal	55	92	92	4,056	4,836	4,836

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1987		Cum. 1987
Anthrax	1	Leptospirosis	33
Botulism: Foodborne	10	Plague	9
Infant	44	Poliomyelitis, Paralytic	-
Other	2	Psittacosis	75
Brucellosis	97	Rabies, human	-
Cholera	4	Tetanus	35
Congenital rubella syndrome	5	Trichinosis	33
Congenital syphilis, ages < 1 year	127	Typhus fever, flea-borne (endemic, murine)	32
Diphtheria	3		

*There were no cases of internationally imported measles reported for this week.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending November 14, 1987 and November 8, 1986 (45th Week)

Reporting Area	AIDS	Aseptic Menin-gitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel-losis	Leprosy
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1987	1987	Cum. 1987	Cum. 1987	Cum. 1987	Cum. 1986	1987	1987	1987	1987	1987	Cum. 1987
UNITED STATES	16,891	189	1,128	88	668,506	770,082	566	546	47	68	23	174
NEW ENGLAND	640	10	40	2	20,663	18,655	10	19	1	5	2	12
Maine	26	-	4	-	598	762	1	2	-	-	-	-
N.H.	25	2	2	-	350	495	2	1	-	-	-	2
Vt.	9	-	5	-	198	237	-	1	-	-	-	-
Mass.	355	2	17	1	7,225	7,488	6	8	1	5	2	9
R.I.	53	5	3	1	1,877	1,579	1	1	-	-	-	-
Conn.	172	1	9	-	10,415	8,094	-	6	-	-	-	1
MID. ATLANTIC	4,727	20	127	7	104,604	132,634	19	83	3	5	-	19
Upstate N.Y.	572	7	46	3	14,517	15,799	15	15	2	-	-	-
N.Y. City	2,644	1	12	-	56,172	76,949	1	47	-	1	-	19
N.J.	1,060	9	8	-	14,062	16,972	3	9	1	3	-	-
Pa.	451	3	61	4	19,853	22,914	-	12	-	1	-	-
E.N. CENTRAL	1,073	27	328	12	101,882	104,284	33	64	4	4	7	8
Ohio	235	10	150	5	22,966	25,405	2	5	1	-	3	3
Ind.	88	7	47	-	8,187	11,046	10	17	2	-	3	-
Ill.	522	4	25	7	29,653	24,295	16	30	-	2	-	1
Mich.	146	6	71	-	32,655	32,365	5	12	1	2	1	3
Wis.	82	-	35	-	8,421	10,921	-	-	-	-	-	1
W.N. CENTRAL	374	9	83	-	27,150	33,208	73	33	2	1	2	-
Minn.	110	-	50	-	4,095	4,741	4	4	1	-	-	-
Iowa	24	4	13	-	2,632	3,394	1	-	-	-	-	-
Mo.	176	3	1	-	14,259	16,412	61	22	1	1	1	-
N. Dak.	2	-	1	-	248	280	-	-	-	-	-	-
S. Dak.	2	-	-	-	543	689	-	-	-	-	-	-
Nebr.	18	-	10	-	1,802	2,494	-	1	-	-	-	-
Kans.	42	2	8	-	3,571	5,198	7	6	-	-	1	-
S. ATLANTIC	2,835	28	154	31	175,879	199,270	37	98	3	2	2	6
Del.	21	2	5	1	2,995	3,302	-	1	-	-	-	-
Md.	353	6	19	5	20,064	23,277	4	14	-	-	-	2
D.C.	392	2	-	-	11,703	14,864	-	1	-	-	-	-
Va.	189	7	34	2	12,855	16,266	5	19	-	-	-	-
W. Va.	20	2	54	-	1,256	1,917	1	-	-	1	-	-
N.C.	142	-	26	-	25,887	31,177	6	19	2	-	-	-
S.C.	68	-	1	-	13,866	16,993	-	5	1	-	1	1
Ga.	435	3	1	-	31,416	32,997	5	18	-	-	1	-
Fla.	1,215	6	14	23	55,837	58,477	16	21	-	1	-	3
E.S. CENTRAL	254	30	55	7	50,619	61,747	7	28	2	-	1	-
Ky.	42	20	26	1	5,067	6,810	4	7	-	-	1	-
Tenn.	58	1	12	-	17,810	23,452	1	10	-	-	-	-
Ala.	130	5	17	1	15,939	18,040	1	5	2	-	-	-
Miss.	24	4	-	5	11,803	13,445	1	6	-	-	-	-
W.S. CENTRAL	1,745	26	136	4	75,774	89,186	72	55	7	16	7	4
Ark.	48	-	2	2	8,559	8,449	9	5	-	-	2	-
La.	287	2	23	-	12,976	15,490	3	-	2	-	1	-
Okla.	87	4	24	1	8,177	10,278	6	6	1	1	-	-
Tex.	1,323	20	87	1	46,062	54,969	54	44	4	15	4	4
MOUNTAIN	526	10	70	4	17,537	22,703	53	27	5	4	1	2
Mont.	4	1	1	-	494	596	2	-	-	-	-	-
Idaho	9	-	-	-	618	780	4	1	-	-	-	1
Wyo.	3	-	1	-	384	484	-	-	-	-	-	-
Colo.	205	2	39	-	3,947	5,838	5	5	-	-	-	-
N. Mex.	45	1	5	-	1,930	2,400	2	3	-	-	-	-
Ariz.	168	6	18	1	5,906	7,425	37	13	2	2	1	-
Utah	37	-	1	3	538	969	3	1	3	2	-	-
Nev.	55	-	5	-	3,720	4,211	-	4	-	-	-	1
PACIFIC	4,717	29	135	21	94,398	108,395	262	139	20	31	1	123
Wash.	256	-	11	4	7,477	8,196	46	26	8	-	1	6
Oreg.	147	-	-	-	3,512	4,659	19	6	-	-	-	-
Calif.	4,228	27	119	17	81,154	92,346	193	105	12	31	-	94
Alaska	13	2	2	-	1,525	2,341	4	1	-	-	-	-
Hawaii	73	-	3	-	730	1,105	-	1	-	-	-	23
Guam	3	-	-	-	177	180	-	-	-	-	-	-
P.R.	84	-	1	1	1,720	2,111	2	3	-	4	-	5
V.I.	-	-	-	-	246	247	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	344	419	-	-	-	-	-	47
Amer. Samoa	-	-	-	-	71	46	-	-	-	-	-	1

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending November 14, 1987 and November 8, 1986 (45th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1987	1987	Cum. 1987	1987	Cum. 1987	Cum. 1986	Cum. 1987	1987	Cum. 1987	1987	Cum. 1987	Cum. 1986	1987	Cum. 1987	Cum. 1986
UNITED STATES	759	3	3,101	-	418	5,853	2,487	100	11,268	46	2,171	3,796	1	317	482
NEW ENGLAND	51	-	119	-	162	102	212	-	58	1	150	157	-	1	9
Maine	2	-	3	-	-	13	13	-	1	-	28	2	-	1	-
N.H.	2	-	61	-	102	43	19	-	10	1	38	81	-	-	1
Vt.	-	-	11	-	15	-	18	-	7	-	4	3	-	-	1
Mass.	20	-	27	-	38	36	103	-	22	-	51	41	-	-	4
R.I.	8	-	1	-	1	2	14	-	2	-	3	6	-	-	2
Conn.	19	-	16	-	6	8	45	-	16	-	26	24	-	-	1
MID. ATLANTIC	101	-	525	-	57	1,763	315	8	239	3	257	192	-	12	36
Upstate N.Y.	33	-	26	-	14	101	109	-	102	-	151	121	-	10	27
N.Y. City	19	-	444	-	19	727	32	-	10	-	8	10	-	1	5
N.J.	24	-	32	-	7	909	57	3	64	1	16	18	-	1	4
Pa.	25	-	23	-	17	26	117	5	63	2	82	43	-	-	-
E.N. CENTRAL	50	-	345	-	26	1,068	372	55	6,270	4	220	370	-	36	75
Ohio	12	-	1	-	4	10	124	12	105	4	72	158	-	-	1
Ind.	7	-	-	-	-	38	38	-	929	-	16	29	-	-	-
Ill.	7	-	171	-	18	675	89	20	2,575	-	14	37	-	26	65
Mich.	18	-	29	-	-	59	97	23	1,001	-	48	35	-	9	8
Wis.	6	-	144	-	4	286	24	-	1,660	-	70	108	-	1	1
W.N. CENTRAL	25	-	208	-	22	339	103	4	1,374	1	130	1,332	-	2	13
Minn.	8	-	19	-	20	49	28	-	774	-	13	47	-	-	1
Iowa	5	-	-	-	-	134	5	2	416	1	56	19	-	1	1
Mo.	6	-	188	-	1	31	31	2	30	-	31	21	-	-	1
N. Dak.	-	-	1	-	-	25	1	-	6	-	12	5	-	-	1
S. Dak.	-	-	-	-	-	-	2	-	90	-	3	14	-	-	-
Nebr.	5	-	-	-	-	1	6	-	4	-	1	7	-	-	-
Kans.	1	-	-	-	1	99	30	-	54	-	14	1,219	-	1	9
S. ATLANTIC	129	-	149	-	12	818	409	7	285	6	305	738	-	18	9
Del.	2	-	32	-	-	1	5	-	-	-	5	227	-	2	-
Md.	29	-	6	-	2	35	40	2	28	-	17	163	-	3	-
D.C.	17	-	-	-	1	2	9	-	1	-	-	-	-	1	-
Va.	25	-	1	-	-	60	64	1	74	-	50	39	-	1	-
W. Va.	2	-	-	-	-	2	3	-	39	-	50	23	-	-	-
N.C.	12	-	2	-	3	4	47	2	27	2	119	74	-	1	-
S.C.	6	-	2	-	-	301	38	1	19	-	-	18	-	-	-
Ga.	5	-	8	-	1	93	83	-	40	-	23	132	-	2	-
Fla.	31	-	98	-	5	320	120	1	57	4	41	62	-	8	9
E.S. CENTRAL	13	-	3	-	3	70	129	4	1,274	4	47	49	-	3	4
Ky.	1	-	-	-	-	6	22	-	223	-	2	5	-	2	4
Tenn.	1	-	-	-	-	56	56	3	989	2	15	18	-	1	-
Ala.	5	-	1	-	3	2	43	1	61	2	24	25	-	-	-
Miss.	6	-	2	-	-	6	8	N	N	-	6	1	-	-	-
W.S. CENTRAL	52	-	444	-	4	723	176	4	1,129	9	269	237	-	11	70
Ark.	1	-	-	-	-	283	21	-	291	-	12	20	-	2	-
La.	1	-	-	-	-	4	22	1	569	-	48	15	-	-	-
Okla.	5	-	3	-	1	39	24	N	N	9	158	119	-	5	-
Tex.	45	-	441	-	3	397	109	3	268	-	51	83	-	4	70
MOUNTAIN	41	-	479	-	19	330	85	1	221	6	186	265	1	25	24
Mont.	-	-	127	-	1	8	4	-	6	-	6	19	-	8	2
Idaho	3	-	-	-	-	1	6	-	5	-	56	42	-	1	-
Wyo.	2	-	-	-	2	-	-	-	-	-	5	4	-	1	1
Colo.	13	-	5	-	4	10	30	-	29	4	64	66	-	-	1
N. Mex.	2	-	310	-	9	38	6	N	N	-	12	24	-	-	-
Ariz.	17	-	35	-	1	258	26	1	164	-	33	65	1	5	2
Utah	1	-	-	-	1	13	9	-	12	2	10	41	-	10	15
Nev.	3	-	2	-	1	2	4	-	5	-	-	4	-	-	3
PACIFIC	297	3	829	-	113	640	686	17	418	12	607	456	-	209	242
Wash.	24	-	34	-	10	167	73	3	57	-	92	145	-	2	17
Oreg.	6	3	19	-	81	12	27	N	N	-	70	12	-	2	4
Calif.	262	-	776	-	17	432	571	14	339	9	218	285	-	133	215
Alaska	3	-	-	-	1	-	5	-	7	-	5	3	-	2	-
Hawaii	2	-	-	-	4	29	10	-	15	3	222	14	-	70	6
Guam	-	-	2	-	-	5	5	-	5	-	-	-	-	1	4
P.R.	1	-	763	-	-	36	5	-	12	2	18	19	-	3	62
V.I.	-	-	-	-	-	-	-	1	16	-	-	-	-	1	-
Pac. Trust Terr.	-	-	1	-	-	-	1	-	5	-	1	-	-	1	2
Amer. Samoa	-	-	1	-	-	2	-	1	7	-	-	-	-	-	1

*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 November 14, 1987 and November 8, 1986 (45th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1987	Cum. 1986	1987	Cum. 1987	Cum. 1986	Cum. 1987	Cum. 1987	Cum. 1987	Cum. 1987
UNITED STATES	30,659	23,371	5	18,328	18,952	178	283	575	4,056
NEW ENGLAND	549	427	1	555	620	1	28	8	7
Maine	1	19	-	22	34	-	1	-	3
N.H.	3	10	-	18	29	-	-	-	-
Vt.	2	9	-	14	16	-	1	-	-
Mass.	259	225	-	304	338	1	16	4	-
R.I.	11	19	1	58	42	-	3	-	1
Conn.	273	145	-	139	161	-	7	4	3
MID. ATLANTIC	5,678	3,283	-	3,313	3,753	1	29	25	355
Upstate N.Y.	215	172	-	441	532	1	8	11	54
N.Y. City	4,259	1,841	-	1,615	1,972	-	3	5	-
N.J.	578	578	-	578	635	-	18	1	15
Pa.	626	692	-	679	614	-	-	8	286
E.N. CENTRAL	775	771	1	2,074	2,221	3	31	43	147
Ohio	92	110	1	375	392	1	10	27	14
Ind.	53	100	-	201	247	-	4	1	17
Ill.	401	363	-	919	953	-	9	7	45
Mich.	173	160	-	492	530	-	5	5	27
Wis.	56	38	-	87	99	2	3	3	44
W.N. CENTRAL	158	190	1	520	556	62	11	53	859
Minn.	18	31	1	101	130	-	5	-	203
Iowa	26	8	-	35	44	4	2	1	251
Mo.	72	98	-	285	272	39	3	18	53
N. Dak.	-	6	-	8	10	1	-	-	96
S. Dak.	11	9	-	24	26	9	-	1	202
Nebr.	11	12	-	24	13	2	-	3	16
Kans.	20	26	-	43	61	7	1	30	38
S. ATLANTIC	10,551	7,008	-	3,924	3,780	5	31	220	1,130
Del.	64	52	-	36	40	1	-	2	-
Md.	540	399	-	340	277	-	4	46	380
D.C.	352	268	-	139	136	-	2	-	41
Va.	290	308	-	381	312	2	8	21	301
W. Va.	12	20	-	88	110	-	1	7	62
N.C.	629	452	-	456	521	2	3	79	8
S.C.	657	607	-	401	490	-	-	33	50
Ga.	1,466	1,304	-	691	636	-	-	29	189
Fla.	6,541	3,598	-	1,392	1,258	-	13	3	99
E.S. CENTRAL	1,645	1,553	-	1,644	1,683	8	4	94	293
Ky.	20	63	-	371	374	3	2	11	130
Tenn.	639	549	-	495	503	1	1	58	81
Ala.	432	455	-	479	527	1	1	15	75
Miss.	554	486	-	299	279	3	-	10	7
W.S. CENTRAL	3,813	4,589	-	2,179	2,398	70	27	116	544
Ark.	225	221	-	263	329	37	2	12	114
La.	732	790	-	272	376	3	-	-	13
Okla.	139	122	-	208	222	27	5	87	31
Tex.	2,717	3,456	-	1,436	1,471	3	20	17	386
MOUNTAIN	608	532	1	435	465	16	15	12	334
Mont.	9	7	-	13	27	2	-	10	147
Idaho	5	14	-	17	20	1	-	-	9
Wyo.	3	2	-	-	-	-	-	1	71
Colo.	110	119	-	40	55	5	-	-	7
N. Mex.	50	62	1	85	86	1	10	-	3
Ariz.	267	219	-	227	211	3	4	-	76
Utah	22	18	-	24	31	2	-	1	7
Nev.	142	91	-	29	35	2	1	-	14
PACIFIC	6,882	5,018	1	3,684	3,476	12	107	4	387
Wash.	129	156	1	213	176	4	7	-	-
Oreg.	264	101	-	103	110	5	2	1	-
Calif.	6,472	4,730	-	3,138	2,980	2	91	3	384
Alaska	4	-	-	58	55	1	-	-	3
Hawaii	13	31	-	172	155	-	7	-	-
Guam	2	1	-	26	34	-	-	-	-
P.R.	811	777	-	271	288	-	-	-	65
V.I.	9	1	-	2	1	-	-	-	-
Pac. Trust Terr.	222	223	-	144	68	-	20	-	-
Amer. Samoa	2	-	-	1	5	-	1	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending November 14, 1987 (45th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	667	478	123	34	16	16	51
Boston, Mass.	180	121	37	12	5	5	21
Bridgeport, Conn.	39	31	5	3	-	-	-
Cambridge, Mass.	20	16	3	1	-	-	2
Fall River, Mass.	34	30	3	1	-	-	1
Hartford, Conn.	69	45	18	2	1	3	4
Lowell, Mass.	29	24	4	-	1	-	4
Lynn, Mass.	16	9	5	1	1	-	2
New Bedford, Mass.	24	18	3	2	1	-	2
New Haven, Conn.	57	32	14	2	2	7	1
Providence, R.I.	43	36	4	2	1	-	2
Somerville, Mass.	8	7	1	-	-	-	-
Springfield, Mass.	53	36	12	4	1	-	4
Waterbury, Conn.	28	20	5	-	3	-	4
Worcester, Mass.	67	53	9	4	-	1	4
MID. ATLANTIC	2,603	1,669	524	306	56	48	150
Albany, N.Y.	50	41	6	2	-	1	4
Allentown, Pa.	19	15	2	2	-	-	-
Buffalo, N.Y.	106	71	26	4	2	3	7
Camden, N.J.	33	16	10	5	1	1	2
Elizabeth, N.J.	14	9	3	2	-	-	-
Erie, Pa.†	38	31	4	2	-	1	2
Jersey City, N.J.	54	30	14	8	-	2	3
N.Y. City, N.Y.	1,372	851	254	209	35	23	69
Newark, N.J.	86	34	32	17	2	1	7
Paterson, N.J.	29	14	9	3	1	2	-
Philadelphia, Pa.	298	191	70	22	8	7	19
Pittsburgh, Pa.†	69	49	13	5	1	1	2
Reading, Pa.	35	25	8	2	-	-	7
Rochester, N.Y.	137	104	23	7	1	2	13
Schenectady, N.Y.	41	34	7	-	-	-	3
Scranton, Pa.†	27	21	4	2	-	-	1
Syracuse, N.Y.	103	67	21	8	4	3	7
Trenton, N.J.	44	29	11	3	-	1	1
Utica, N.Y.	22	20	1	1	-	-	2
Yonkers, N.Y.	26	17	6	2	1	-	1
E.N. CENTRAL	2,331	1,550	483	159	61	76	112
Akron, Ohio	73	46	17	7	-	3	3
Canton, Ohio	44	34	7	2	1	-	4
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	124	76	36	5	3	4	9
Cleveland, Ohio	129	86	17	12	6	8	4
Columbus, Ohio	173	106	37	12	7	10	4
Dayton, Ohio	119	71	38	4	3	3	5
Detroit, Mich.	243	158	48	20	13	3	8
Evansville, Ind.	51	43	5	2	-	1	5
Fort Wayne, Ind.	42	33	6	2	1	-	6
Gary, Ind.	24	9	8	7	-	-	-
Grand Rapids, Mich.	77	54	19	2	1	1	12
Indianapolis, Ind.	170	122	28	11	4	5	7
Madison, Wis.	49	32	8	4	5	-	2
Milwaukee, Wis.	123	81	28	5	1	8	2
Peoria, Ill.	40	25	8	5	1	1	8
Rockford, Ill.	47	28	11	6	1	1	9
South Bend, Ind.	40	33	5	1	1	-	2
Toledo, Ohio	133	99	23	3	2	6	5
Youngstown, Ohio	66	52	9	4	1	-	1
W.N. CENTRAL	726	527	121	30	16	31	51
Des Moines, Iowa	41	34	3	1	1	2	4
Duluth, Minn.	28	22	4	-	-	2	3
Kansas City, Kans.	46	30	7	3	2	4	-
Kansas City, Mo.	118	83	19	8	3	5	8
Lincoln, Nebr.	34	24	10	-	-	-	10
Minneapolis, Minn.	135	105	19	4	2	5	12
Omaha, Nebr.	76	49	17	5	2	3	5
St. Louis, Mo.	117	80	26	5	2	3	5
St. Paul, Minn.	61	51	8	1	-	1	-
Wichita, Kans.	70	49	8	3	4	6	4

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-84	25-44	1-24	<1	Total
S. ATLANTIC	1,109	663	249	120	35	42	40
Atlanta, Ga.	123	78	28	14	3	-	3
Baltimore, Md.	151	93	34	15	6	3	7
Charlotte, N.C.	103	62	22	10	4	5	4
Jacksonville, Fla.	134	86	27	8	6	7	7
Miami, Fla.	106	56	25	18	3	4	1
Norfolk, Va.	44	25	11	5	1	2	3
Richmond, Va.	60	29	18	7	2	4	4
Savannah, Ga.	34	23	4	2	1	4	3
St. Petersburg, Fla.	56	44	8	2	1	1	1
Tampa, Fla.	74	49	18	2	2	3	3
Washington, D.C.	195	98	49	33	6	9	4
Wilmington, Del.	29	20	5	4	-	-	-
E.S. CENTRAL	824	514	181	57	32	40	39
Birmingham, Ala.	128	86	28	9	4	1	2
Chattanooga, Tenn.	36	25	7	-	1	3	1
Knoxville, Tenn.	91	55	27	4	3	2	7
Louisville, Ky.	120	73	32	8	4	3	2
Memphis, Tenn.	207	130	28	15	11	23	14
Mobile, Ala.	52	28	14	6	2	2	5
Montgomery, Ala.	34	26	5	1	1	1	4
Nashville, Tenn.	156	91	40	14	6	5	4
W.S. CENTRAL	1,238	797	235	109	52	42	63
Austin, Tex.	55	37	12	5	-	1	4
Baton Rouge, La.	24	20	2	2	-	-	4
Corpus Christi, Tex.	45	30	11	2	2	-	-
Dallas, Tex.	178	123	26	15	5	9	7
El Paso, Tex.	50	33	10	3	2	2	3
Fort Worth, Tex	74	40	16	3	8	7	5
Houston, Tex.§	308	176	74	34	13	11	7
Little Rock, Ark.	65	42	13	5	1	1	6
New Orleans, La.	144	84	23	22	10	5	-
San Antonio, Tex.	134	95	20	9	8	2	12
Shreveport, La.	78	60	10	5	1	2	8
Tulsa, Okla.	83	57	18	4	2	2	7
MOUNTAIN	692	445	142	56	21	28	35
Albuquerque, N. Mex.	76	40	13	14	6	3	3
Colo. Springs, Colo.	53	41	6	2	2	2	5
Denver, Colo.	116	78	24	9	3	2	3
Las Vegas, Nev.	103	56	35	5	2	5	9
Ogden, Utah	26	20	3	1	2	-	1
Phoenix, Ariz.	153	92	42	8	2	9	6
Pueblo, Colo.	26	22	2	2	-	-	4
Salt Lake City, Utah	40	21	5	6	2	6	-
Tucson, Ariz.	99	75	12	9	2	1	4
PACIFIC	1,734	1,135	318	172	45	57	119
Berkeley, Calif.	31	23	6	1	-	1	-
Fresno, Calif.	80	48	17	9	4	2	5
Glendale, Calif.	27	20	5	1	1	-	2
Honolulu, Hawaii	66	33	18	7	4	4	9
Long Beach, Calif.	60	38	12	6	1	3	3
Los Angeles Calif.	442	277	82	51	17	8	21
Oakland, Calif.	64	43	11	4	2	4	2
Pasadena, Calif.	30	20	7	2	-	1	4
Portland, Oreg.	99	74	9	10	3	3	8
Sacramento, Calif.	149	100	24	14	6	5	11
San Diego, Calif.	139	90	29	12	2	6	11
San Francisco, Calif.	149	84	32	25	2	6	7
San Jose, Calif.	148	113	24	7	2	2	23
Seattle, Wash.	174	119	30	17	-	8	6
Spokane, Wash.	47	32	9	3	-	3	4
Tacoma, Wash.	29	21	3	3	1	1	3
TOTAL	11,924††	7,778	2,376	1,043	334	380	660

*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 3 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.

§Data not available. Figures are estimates based on average of past 4 weeks.

Hepatitis B — Continued

5. Redeker AG, Mosley JW, Gocke DJ, McKee AP, Pollack W. Hepatitis B immune globulin as a prophylactic measure for spouses exposed to acute type B hepatitis. N Engl J Med 1975;293:1055-9.
6. Koff RS, Slavin MM, Connelly LJD, Rosen DR. Contagiousness of acute hepatitis B: secondary attack rates in household contacts. Gastroenterology 1977;72:297-300.
7. Aldershvile J, Orholm M, Tage-Jensen U, Hardt F, Nielson O, Copenhagen Hepatitis Acuta Programme. Hepatitis B virus infection among household contacts of patients with acute HBsAg positive hepatitis. Infection 1981;9:164-6.

Epidemiologic Notes and Reports

Influenza A Isolates — United States, 1987

The first isolates of influenza A virus for the 1987-88 season have been reported in the United States. Subtyping of virus isolates is pending.

South Dakota. The first influenza A virus isolate of the season was obtained from a 15-year-old child in Sioux Falls. The specimen was collected on October 19.

California. Two isolates of influenza A have been reported from Los Angeles. Specimens were collected in late October from an 83-year-old woman and a 62-year-old man.

Wyoming. On October 29, a family physician practicing in Jackson, Wyoming, who is a member of the Sentinel Physician Network coordinated by CDC and the American Academy of Family Physicians submitted a positive influenza A specimen from a 6-year-old girl with influenza-like illness.

Reported by: Veteran Administration Medical Center, Sioux Falls, South Dakota. BA Blue, MD, Jackson, Wyoming. Participating State Epidemiologists and State Laboratory Directors. WHO Collaborating Center for Influenza, Influenza Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Serologic evidence of influenza A infection in the United States during August (possibly related to importation of the virus) and sporadic isolation of influenza B virus during the summer and fall of 1987 were previously reported (*1*). The present report documents influenza activity in the United States for the 1987-88 season. U.S. health-care providers should be alert for patients with influenza-like illness, which is characterized by sudden onset of fever and chills accompanied by respiratory symptoms such as sore throat or cough. Early collection and submission of specimens for laboratory isolation will permit detection of further spread.

1. Centers for Disease Control. Outbreak of influenza-like illness in a tour group—Alaska. MMWR 1987;36:697-8, 704.

Progress in Chronic Disease Prevention

Regional Variation in Smoking Prevalence and Cessation: Behavioral Risk Factor Surveillance, 1986

A recent article in the *MMWR* (*1*) reported the lowest prevalences of smoking among adults ever recorded in the United States: 30% for men, 24% for women, and 27% overall. However, state-specific rates of smoking prevalence among participants

Smoking — Continued

in the 1986 Behavioral Risk Factor Surveillance System (BRFSS) varied almost twofold, from a low of 18% to a high of 35% (*2*). An assessment of the geographic variation in rates of current smoking and of smoking cessation using data from the 1986 BRFSS follows.

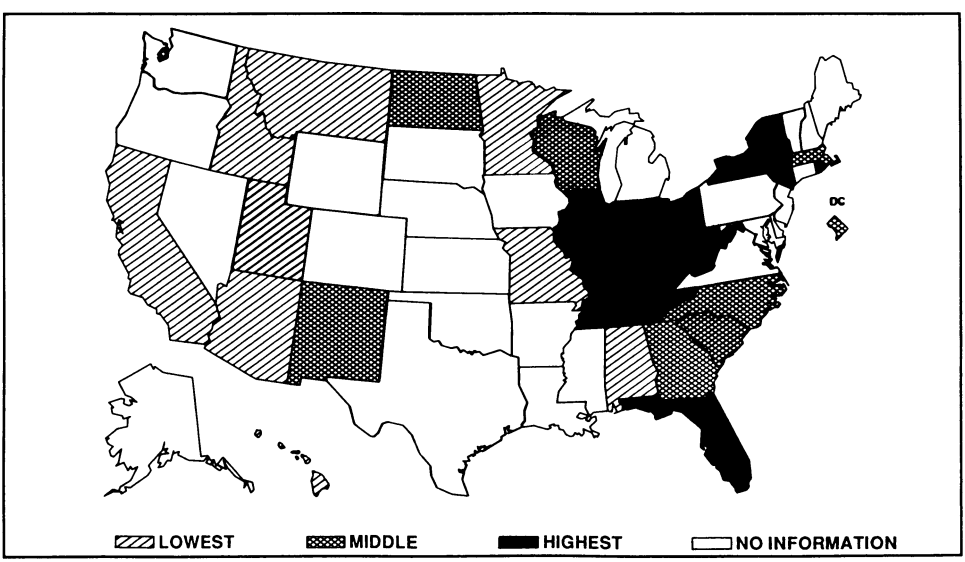
Health departments in 26 states (includes the District of Columbia) collected data by telephone from persons 18 years of age or older who were selected using random-digit dialing techniques. Each state conducted approximately 100 interviews per month, or an average of 1,200 interviews for the entire year (range = 559 to 3,023). For this survey, an "ever smoker" was defined as a respondent who reported smoking 100 or more cigarettes in his or her lifetime. A "current smoker" was defined as a respondent who had smoked 100 or more cigarettes and who was still smoking. A "former smoker" was defined as a respondent who reported having smoked 100 or more cigarettes during his or her lifetime but who was not currently smoking.

State-specific current smoking rates* and quit ratios† were calculated to determine smoking prevalence and cessation for each state. These were adjusted to the age distribution of the 1980 census for the 26 participating states and then ranked from highest to lowest and divided into terciles. To study regional variations, the geographic distributions of the states by tercile of smoking rate and quit ratio were examined.

When ranked according to smoking rates, the states in the highest tercile were all clustered east of the Mississippi River, primarily along the Ohio River Valley. States in the middle and lowest terciles appeared more evenly distributed geographically (Figure 1). The median rate of smoking prevalence for states in the highest tercile was

*The current smoking rate is the percentage of current smokers in the population.
†The quit ratio, which is an index of smoking cessation, is the ratio of former smokers to ever smokers.

FIGURE 1. Geographic distribution of current smoking rates in the United States, by tercile — Behavioral Risk Factor Surveillance System, 1986



Smoking — Continued

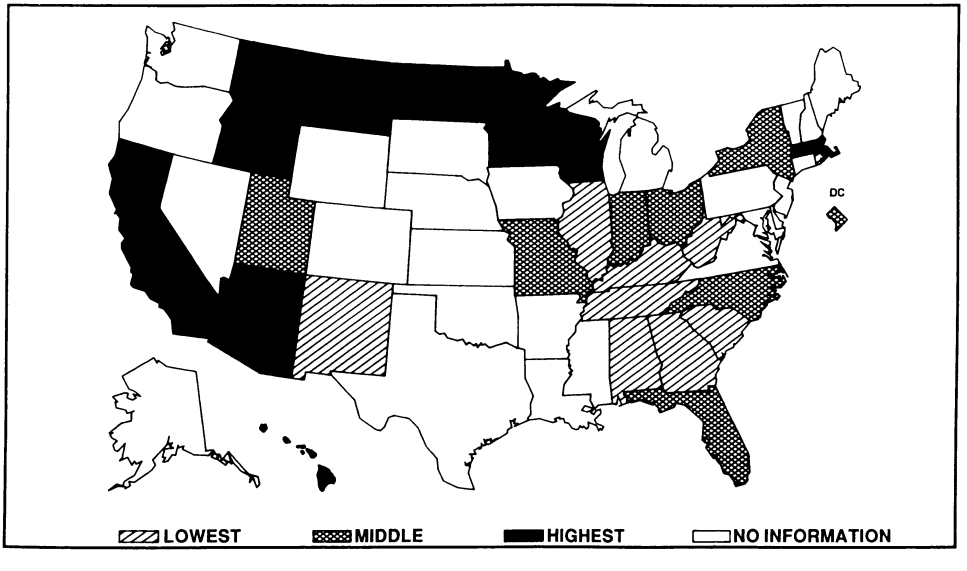
28% (range = 27% to 35%); for states in the middle tercile, it was 26% (range = 26% to 27%); and, for states in the lowest tercile, it was 24% (range = 18% to 26%). Similar geographic patterns were noted when data for men and women were considered separately.

When ranked according to quit ratios, states in the highest and middle terciles were widely distributed geographically. However, most of the states in the lowest tercile (representing the lowest rates of smoking cessation) were clustered east of the Mississippi River (Figure 2). The median quit ratio for states in the highest tercile was 49% (range = 48% to 52%); for states in the middle tercile, it was 46% (range = 43% to 48%); and, for states in the lowest tercile, it was 41% (range = 37% to 42%).

Reported by: J McVay, Alabama Dept of Public Health. T Hughes, Arizona Dept of Health Svcs. LF Folkers, California Dept of Health Svcs. R Conn, EdD, District of Columbia Dept of Human Svcs. WW Mahoney, Florida Dept of Health and Rehabilitative Svcs. JD Smith, Georgia Dept of Human Resources. E Tash, Hawaii Dept of Health. JV Patterson, Idaho Dept of Health and Welfare. S Knoblock, Illinois Dept of Public Health. S Joseph, Indiana State Board of Health. K Bramblett, Kentucky Cabinet for Human Resources. SJ Allison, Massachusetts Dept of Public Health. N Salem, Minnesota Center for Health Statistics. M Van Tuinen, PhD, Missouri Dept of Health. R Moon, Montana State Dept of Health and Environmental Sciences. L Pendley, New Mexico Health and Environment Dept. H Bzduch, New York State Dept of Health. C Washington, North Carolina Dept of Human Resources. B Lee, North Dakota State Dept of Health. E Capwell, Ohio Dept of Health. J Cataldo, Rhode Island Dept of Health. FC Wheeler, PhD, South Carolina Dept of Health and Environmental Control. J Fortune, Tennessee Dept of Health and Environment. G Edwards, Utah Dept of Health. RH Anderson, West Virginia State Dept of Health. DR Murray, Wisconsin Center for Health Statistics. Div of Nutrition; Office on Smoking and Health, Center for Health Promotion and Education, CDC.

Editorial Note: Current smoking rates in a population are determined by both the rates of initiation and cessation of smoking as well as by prior smoking prevalence. Data in this report suggest that smoking prevalence is unevenly distributed across the United States. The regional clustering of higher smoking rates east of the Mississippi

FIGURE 2. Geographic distribution of smoking quit ratios in the United States, by tercile — Behavioral Risk Factor Surveillance System, 1986



Smoking — Continued

River may be partially attributable to the lower rates of smoking cessation in this region, as reflected by the lower quit ratios. State-specific exceptions to this pattern may have resulted from differences in the rates of smoking initiation and prior smoking prevalence, which were not assessed in this report.

Several points need to be considered when interpreting these data. First, the grouping of states into terciles based on single-point prevalence estimates permits visualization of general regional variations. However, comparisons between individual states are not intended. Second, these results are based on data from 25 states and the District of Columbia. Information from the remaining 25 states could alter the observed regional trends. However, data from all states from the 1985 Current Population Surveys (*3*) reveal a similar geographic distribution of current smoking rates (CDC, unpublished data).

This report is being published during the same week as the American Cancer Society's eleventh annual Great American Smokeout. On November 19, the day of the Smokeout, smokers throughout the United States were encouraged to give up the habit for the day. An estimated 24 million smokers participated in last year's Smokeout. Efforts such as this to encourage smokers to quit are critical to ensuring a continued decline in smoking prevalence in the United States.

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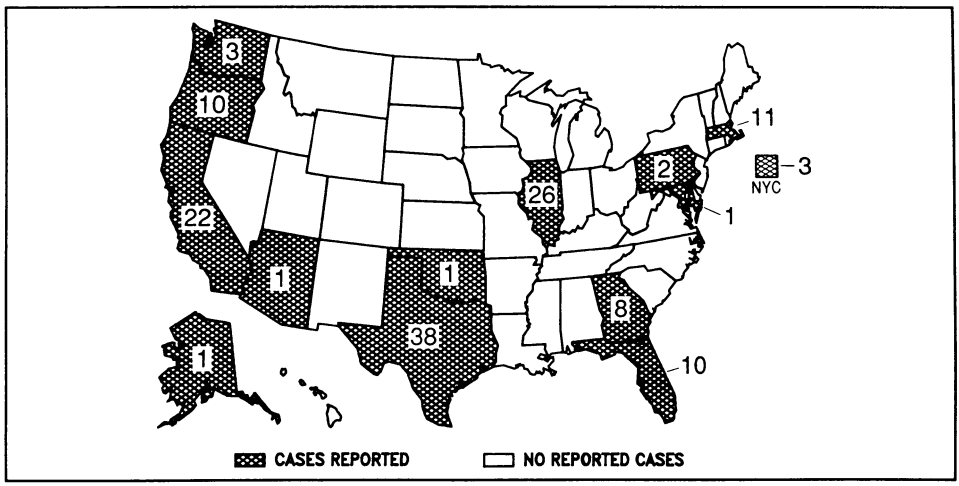
2. Centers for Disease Control. Behavioral risk factor surveillance—selected states, 1986. MMWR 1987;36:252-4.
3. Bureau of the Census. Current population survey, September 1985; United States immunization and smoking survey technical documentation. Washington, DC: US Department of Commerce, Bureau of the Census, 1985.

FIGURE I. Reported measles cases – United States, Weeks 41-44, 1987



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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: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

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