CENTERS FOR DISEASE CONTROL

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

May 26, 1989 / Vol. 38 / No. 20

Current Trends

HIV Epidemic and AIDS: Trends in Knowledge – United States, 1987 and 1988

Education and information can play an important role in preventing human immunodeficiency virus (HIV) transmission by reducing high-risk behaviors and encouraging safe practices. To collect information for developing and targeting new education programs, the National Health Interview Survey (NHIS) began in August 1987 to include specific questions to assess the public's knowledge about the transmission, prevention, and consequences of HIV infection; attitudes toward persons already infected; and awareness and utilization of the HIV-antibody test.

NHIS is a continuous, cross-sectional household interview survey conducted by CDC's National Center for Health Statistics (NCHS). Each week, a national probability sample of the civilian, noninstitutionalized population is interviewed by Bureau of the Census personnel to obtain information on health, demographic, and other characteristics of each household member. Supplemental information is collected for all or a sample of household members. The 1987 and 1988 NHIS acquired immunodeficiency syndrome (AIDS) knowledge and attitudes questionnaires were administered to one randomly chosen adult $\geq$18 years of age in each household. The estimates in this report are based on the approximately 3500 interviews completed each month.

The first NHIS AIDS Knowledge and Attitudes Survey was implemented from August to December 1987, and provisional survey results were published monthly (*1–5*). From January to April 1988, the NHIS AIDS questionnaire was revised to include questions about the brochure, "Understanding AIDS," which was mailed to every U.S. household in May and June. The revised AIDS Knowledge and Attitudes Survey was implemented in May 1988, and provisional results are being published periodically (*6–9*).

The current questionnaire contains items on self-assessed knowledge about AIDS, HIV transmission, perceived effectiveness of various preventive measures, experience with blood donation and testing, and self-assessed likelihood of being seropositive. In the survey, the term "AIDS virus" was used in place of HIV, and that wording has been maintained in this report. All estimates in this report are provisional. Unless otherwise indicated, all changes and differences cited in the text are statistically significant ($p<0.05$).

HIV and AIDS — Continued

BASELINE FINDINGS

In August 1987, the proportions of U.S. adults who responded that they knew "a lot" and "some" about AIDS were 20% and 40%, respectively (Table 1). Sixty-seven percent of adults had discussed AIDS with a friend or relative; of those adults who had children 10–17 years of age, 60% had discussed AIDS with their children; 36% reported that their children had received AIDS education in school (Table 1).

Most adults answered that they had "no" chance (60%) or a "low" chance (30%) of acquiring the AIDS virus (Table 1). Although 70% of adults had heard of the blood test to detect the presence of HIV antibody, only 15% had had their blood tested, including 7% who reported having had their blood tested and 8% who reported having donated blood since 1985, when routine testing of donation began.

Thirty-four percent of adults considered use of a condom as "very effective" in preventing HIV infection, and 84% answered that having a monogamous relationship with an uninfected partner is a "very effective" preventive measure (Table 1). Two percent of adults responded that use of a diaphragm or spermicidal jelly, foam, or cream are "very effective" preventive techniques.

Most adults knew that AIDS is a fatal disease and that no cure for AIDS exists (89% and 83%, respectively) (Figure 1). Seventy-five percent answered that it was "definitely true" that the AIDS virus can be transmitted during sexual intercourse; 69%, that it was "definitely true" that a pregnant woman can pass the AIDS virus to her baby; 91%, that it was "very likely" that a person would acquire the AIDS virus from sharing needles for drug use with a person who has AIDS (not shown in the figure). The proportions of adults who responded that it was either "probably true" or "somewhat likely" that HIV could be transmitted in these three ways were 18%, 22%, and 5%, respectively.

Sixty-five percent of the adults responded that the following were "definitely false": a vaccine is available to the public that protects against the AIDS virus; AIDS is especially common in older persons; and it is possible to tell by looking at someone if he or she has the AIDS virus.

Seventy-four percent of respondents answered that it is "very unlikely" or "definitely not possible" to transmit the AIDS virus by living near a hospital or home for AIDS patients; 58%, by attending school with a child who has the AIDS virus; 53%, by working near someone with the AIDS virus; 40%, by using public toilets; and 27%, by sharing eating utensils with someone who has the AIDS virus (Figure 2).

CHANGES BETWEEN AUGUST 1987 AND AUGUST 1988

Between August 1987 and August 1988, both objective and self-assessed measures of knowledge increased (Figure 1). Over this period, the proportion of adults who answered that it was "definitely true" that AIDS is an infectious disease caused by a virus increased from 44% to 64%. The proportion responding that it was "definitely true" that a pregnant woman can transmit HIV to her baby increased from 69% to 80%. The proportion answering that it was "definitely false" that a vaccine exists that protects against HIV infection increased from 65% to 76%. The proportion of adults responding that they knew "a lot" about AIDS increased from 20% to 22%; adults answering that they knew "some" about AIDS increased from 40% to 44% (Table 1).

A substantial increase occurred in the proportion of adults who answered that the AIDS virus could *not* be transmitted through casual contact with infected persons (Figure 2). In August 1987, 35% of adults responded it was "very unlikely" that a person could become infected with the AIDS virus by working near someone with it,

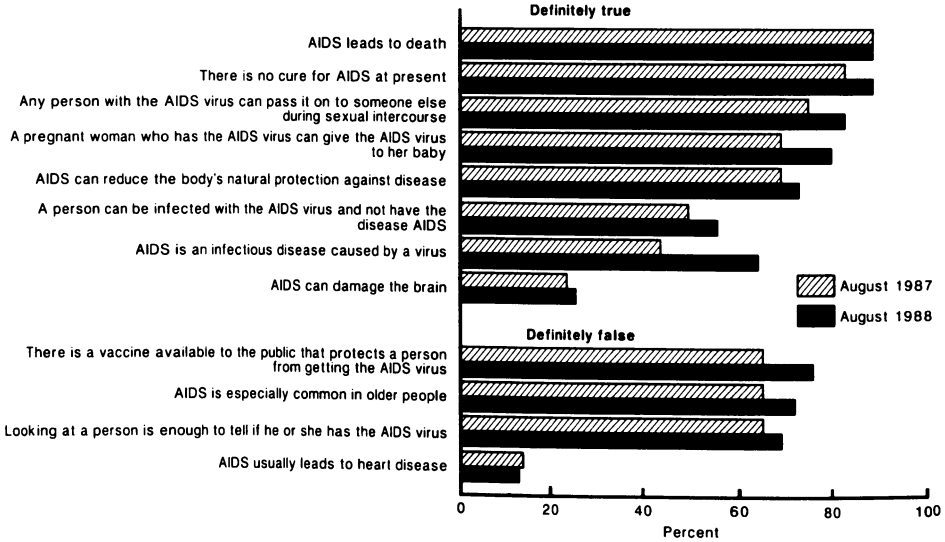
HIV and AIDS — Continued

TABLE 1. Measures of knowledge, attitudes, and behaviors among adults surveyed about HIV and AIDS — United States, August 1987 and August 1988

Measure of knowledge	August 1987 (%)	August 1988 (%)
Self-perceived level of knowledge about AIDS:		
A lot	20	22
Some	40	44
A little	30	26
None	10	7
Percentage of adults who:		
Have ever heard of a blood test that can detect the AIDS virus infection	70	75
Have ever had their blood tested for the AIDS virus infection	15	17
Expect to have a blood test for the AIDS virus infection in the next 12 months	3	4
Have ever discussed AIDS with a friend or relative	67	65
Have ever discussed AIDS with their children aged 10-17	60	60
Report that their children aged 10-17 have received AIDS education in school	36	59
Self-perceived risk of getting the AIDS virus:		
High	1	0
Medium	4	2
Low	30	20
None	60	75
Don't know	5	3
Perceived effectiveness of selected methods of preventing AIDS virus transmission through sexual activity:		
Using a diaphragm—		
Very effective	2	2
Somewhat effective	11	12
Not at all effective	56	57
Don't know	31	29
Using a condom—		
Very effective	34	29
Somewhat effective	48	54
Not at all effective	6	4
Don't know	12	12
Using a spermicidal jelly, foam, or cream—		
Very effective	2	1
Somewhat effective	13	14
Not at all effective	54	55
Don't know	31	30
Two people who do not have the AIDS virus having sex *only* with each other—		
Very effective	84	84
Somewhat effective	9	7
Not at all effective	1	2
Don't know	6	8

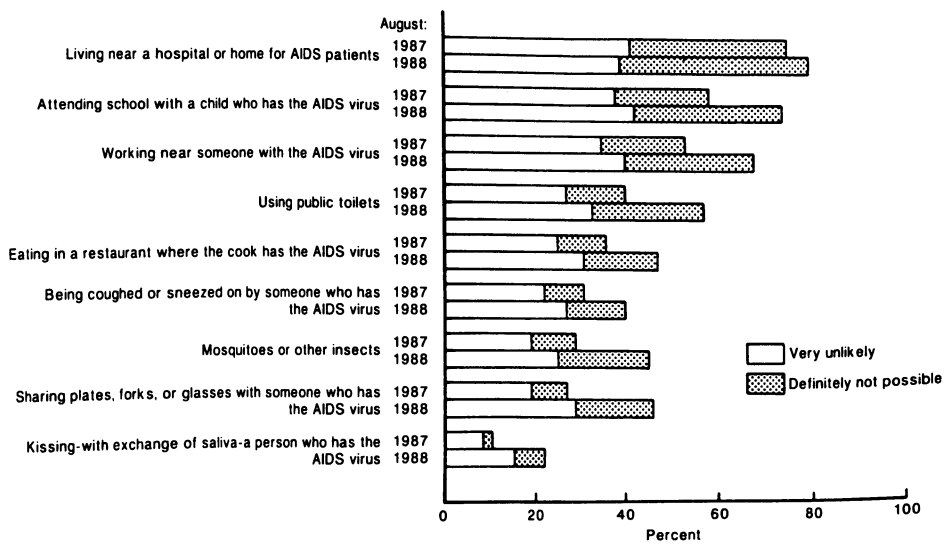
HIV and AIDS — Continued

FIGURE 1. Provisional estimates of percentage of adults responding correctly to selected AIDS knowledge items — United States, August 1987 and August 1988



SOURCE: National Center for Health Statistics, Division of Health Interview Statistics, National Health Interview Survey.

FIGURE 2. Provisional estimates of percentage of adults who think it very unlikely or definitely not possible to transmit the AIDS virus in selected ways — United States, August 1987 and August 1988



SOURCE: National Center for Health Statistics, Division of Health Interview Statistics, National Health Interview Survey.

HIV and AIDS — Continued

and 18% responded that it was "impossible." In August 1988, these proportions had increased to 40% and 27%, respectively.

The perceived effectiveness of condoms ("very effective" or "somewhat effective") in preventing HIV transmission remained essentially the same (Table 1), as did attitudes about the other forms of contraception and the perceived "effectiveness" of a mutually monogamous relationship with an uninfected partner.

The proportion of adults who had heard of the blood test for early diagnosis increased from 70% to 75%. In August 1988, 17% of adults had been tested, including 9% who reported having had their blood tested and 8% who reported having donated blood since 1985.

The proportion of adults reporting their chances of becoming infected with HIV as "high" or "medium" showed limited change (1% to <1% [nonsignificant], 4%–2%, respectively), but a large proportion shifted from the low-risk to no-risk category, the latter increasing from 60% to 75%.

Three percent of adults reported that they belonged to one or more of the groups associated with increased risk for HIV transmission. Among these persons, perceived risk for HIV transmission varied: 5% reported that their chances of already having been or of becoming infected with HIV were "high," 7% reported a "medium" chance, and 42% reported a "low" chance of infection.

The proportion of adults who reported discussing AIDS with their children aged 10–17 years remained at 60%; in contrast, the proportion who reported that their children had received AIDS education in school increased from 36% to 59%. Little change occurred in the proportion who reported having discussed AIDS with friends or relatives.

Reported by: Div of Health Interview Statistics, National Center for Health Statistics; National AIDS Information and Education Program, Office of the Deputy Director (HIV), CDC.

Editorial Note: In comparing August 1987 to August 1988, the most substantial increase in knowledge was related to transmission of HIV. The increases in the percentages of adults who considered it "very unlikely" or "definitely not possible" to transmit HIV through various forms of casual contact represent important gains in knowledge.

The overall gain in levels of knowledge about HIV and AIDS coincided with the national multimedia public awareness campaign. Analysis of the NHIS data is under way to assess the impact of one element of this campaign, the mailing of the brochure entitled "Understanding AIDS" to every U.S. household during May and June 1988. Evaluation of this and other public education efforts will help guide future campaigns so that progress can continue.

References

1. NCHS, Dawson DA, Cynamon M, Fitti JE. AIDS knowledge and attitudes: provisional data from the National Health Interview Survey—United States, August 1987. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1987; DHHS publication no. (PHS)88-1250. (Advance data from vital and health statistics; no. 146).
2. NCHS, Dawson DA, Cynamon M, Fitti JE. AIDS knowledge and attitudes for September 1987: provisional data from the National Health Interview Survey. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1987; DHHS publication no. (PHS)88-1250. (Advance data from vital and health statistics; no. 148).
3. NCHS, Dawson DA, Cynamon M, Fitti JE. AIDS knowledge and attitudes for October 1987: provisional data from the National Health Interview Survey. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988; DHHS publication no. (PHS)88-1250. (Advance data from vital and health statistics; no. 150).

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4. NCHS, Dawson DA, Thornberry OT. AIDS knowledge and attitudes for November 1987: provisional data from the National Health Interview Survey. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988; DHHS publication no. (PHS)88-1250. (Advance data from vital and health statistics; no. 151).
5. NCHS, Dawson DA, Thornberry OT. AIDS knowledge and attitudes for December 1987: provisional data from the National Health Interview Survey. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988; DHHS publication no. (PHS)88-1250. (Advance data from vital and health statistics; no. 153).
6. NCHS, Dawson DA. AIDS knowledge and attitudes for May and June 1988: provisional data from the National Health Interview Survey. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988; DHHS publication no. (PHS)88-1250. (Advance data from vital and health statistics; no. 160).
7. NCHS, Dawson DA. AIDS knowledge and attitudes for July 1988: provisional data from the National Health Interview Survey. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988; DHHS publication no. (PHS)88-1250. (Advance data from vital and health statistics; no. 161).

(Continued on page 363)

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

Disease	20th Week Ending			Cumulative, 20th Week Ending		
	May 20, 1989	May 21, 1988	Median 1984-1988	May 20, 1989	May 21, 1988	Median 1984-1988
Acquired Immunodeficiency Syndrome (AIDS)	585	U*	210	12,916	11,807	4,805
Aseptic meningitis	85	90	90	1,546	1,572	1,572
Encephalitis: Primary (arthropod-borne & unspec)	9	12	13	231	263	315
Post-infectious	1	2	2	32	40	40
Gonorrhea: Civilian	10,604	12,602	15,248	243,088	254,062	307,025
Military	159	188	316	4,182	4,779	6,572
Hepatitis: Type A	592	442	423	12,801	9,453	8,490
Type B	390	464	475	8,150	8,281	9,512
Non A, Non B	39	54	72	874	1,012	1,333
Unspecified	46	31	87	977	812	1,850
Legionellosis	8	22	11	306	344	237
Leprosy	5	3	3	55	73	84
Malaria	14	17	21	390	260	281
Measles: Total†	244	145	145	4,340	1,166	1,332
Indigenous	237	141	124	4,096	1,043	1,193
Imported	7	4	9	244	123	139
Meningococcal infections	40	68	62	1,342	1,449	1,370
Mumps	93	100	100	2,170	2,330	1,585
Pertussis	22	72	54	728	859	822
Rubella (German measles)	6	6	16	124	82	196
Syphilis (Primary & Secondary): Civilian	511	714	524	14,844	14,346	10,803
Military	1	2	2	105	74	78
Toxic Shock syndrome	7	4	7	140	125	138
Tuberculosis	356	467	459	7,315	7,273	7,658
Tularemia	4	6	2	23	38	38
Typhoid Fever	8	1	3	157	137	112
Typhus fever, tick-borne (RMSF)	7	20	20	52	55	68
Rabies, animal	82	71	123	1,739	1,516	1,929

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1989		Cum. 1989
Anthrax	-	Leptospirosis (Oreg. 1)	51
Botulism: Foodborne	6	Plague	-
Infant	3	Poliomyelitis, Paralytic	-
Other (Ohio 1)	4	Psittacosis	32
Brucellosis (Va. 1, Calif. 1)	22	Rabies, human	-
Cholera	-	Tetanus	17
Congenital rubella syndrome	1	Trichinosis	12
Congenital syphilis, ages < 1 year	-		
Diphtheria	-		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Two of the 244 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 May 20, 1989 and May 21, 1988 (20th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	12,916	1,546	231	32	243,088	254,062	12,801	8,150	874	977	306	55
NEW ENGLAND	514	67	7	2	7,277	7,715	281	432	39	39	22	4
Maine	30	3	3	-	109	170	4	17	3	1	3	-
N.H.	15	2	-	-	64	117	27	24	7	3	-	-
Vt.	7	1	-	-	24	60	14	37	4	-	-	-
Mass.	262	29	2	2	2,750	2,766	93	265	17	28	13	3
R.I.	28	23	-	-	537	711	16	38	3	3	6	-
Conn.	172	9	2	-	3,793	3,891	127	51	5	4	-	1
MID. ATLANTIC	3,601	207	42	3	33,752	40,113	1,660	1,243	81	137	80	7
Upstate N.Y.	493	90	11	2	6,007	4,703	415	285	35	5	27	1
N.Y. City	1,691	32	2	1	14,869	18,443	146	450	14	116	8	4
N.J.	931	-	29	-	5,359	5,740	165	213	11	5	12	1
Pa.	486	85	-	-	7,517	11,227	934	295	21	11	33	1
E.N. CENTRAL	1,023	233	70	1	42,685	40,875	704	1,004	90	36	83	1
Ohio	179	52	15	-	11,310	9,539	158	227	15	4	47	-
Ind.	185	53	19	-	3,057	3,166	44	162	14	13	17	1
Ill.	424	46	12	1	13,683	11,593	322	257	21	11	-	-
Mich.	187	72	19	-	12,136	13,113	133	264	28	8	15	-
Wis.	48	10	5	-	2,499	3,464	47	94	12	-	4	-
W.N. CENTRAL	298	61	7	2	11,346	10,105	392	335	34	7	8	1
Minn.	61	5	-	1	1,191	1,412	37	41	6	2	2	-
Iowa	26	12	2	-	980	772	31	18	9	-	2	-
Mo.	151	20	-	-	6,675	5,675	219	230	12	3	2	-
N. Dak.	3	3	1	-	42	75	3	9	3	-	-	-
S. Dak.	4	4	1	-	101	199	3	5	3	-	-	-
Nebr.	11	5	2	-	671	578	50	13	-	-	2	1
Kans.	42	12	1	1	1,686	1,394	49	19	1	2	-	-
S. ATLANTIC	2,627	334	31	7	69,367	70,767	1,070	1,625	123	128	39	-
Del.	41	10	1	-	1,089	1,029	18	59	1	1	3	-
Md.	282	37	7	1	7,715	7,563	252	310	14	15	10	-
D.C.	233	5	-	-	4,309	4,940	2	12	1	-	-	-
Va.	226	62	14	-	5,747	4,946	108	111	20	75	2	-
W. Va.	19	3	5	-	506	554	10	33	2	2	-	-
N.C.	157	44	-	1	10,236	10,572	193	408	40	-	12	-
S.C.	121	10	-	-	6,420	5,223	17	187	3	5	2	-
Ga.	390	23	1	-	13,723	14,162	132	157	9	5	4	-
Fla.	1,158	140	3	5	19,622	21,778	338	348	33	25	6	-
E.S. CENTRAL	332	140	13	1	20,550	19,541	134	585	64	1	11	-
Ky.	48	34	4	1	1,947	1,642	51	166	22	-	3	-
Tenn.	113	19	-	-	6,641	6,462	32	286	16	-	5	-
Ala.	94	69	9	-	6,662	6,541	30	88	23	1	3	-
Miss.	77	18	-	-	5,300	4,896	21	45	3	-	-	-
W.S. CENTRAL	1,227	125	25	2	26,728	28,608	1,499	768	59	223	18	12
Ark.	33	3	-	-	2,767	2,635	83	28	2	2	1	-
La.	161	14	5	-	5,709	5,801	113	142	5	1	4	-
Okla.	67	19	7	-	2,280	2,587	154	72	13	8	10	-
Tex.	966	89	13	2	15,972	17,585	1,149	526	39	212	3	12
MOUNTAIN	440	57	7	1	4,965	5,496	1,892	519	94	78	18	1
Mont.	4	2	-	-	81	165	16	17	1	1	2	1
Idaho	10	-	-	-	81	156	79	39	5	2	-	-
Wyo.	8	-	-	-	47	91	15	1	-	-	-	-
Colo.	169	18	2	1	1,077	1,305	273	78	32	37	2	-
N. Mex.	31	6	-	-	543	524	224	82	22	1	-	-
Ariz.	109	24	2	-	1,743	1,867	1,008	185	18	33	8	-
Utah	26	5	1	-	171	236	118	38	10	3	3	-
Nev.	83	2	2	-	1,222	1,152	159	79	6	1	3	-
PACIFIC	2,854	322	29	13	26,418	30,842	5,169	1,639	290	328	27	29
Wash.	270	-	-	1	2,353	2,569	1,068	309	81	18	5	2
Oreg.	100	-	-	-	1,111	1,157	897	163	33	6	1	1
Calif.	2,434	299	25	12	22,416	26,429	2,761	1,144	171	300	19	22
Alaska	5	2	3	-	349	417	382	21	5	2	1	-
Hawaii	45	21	1	-	189	270	61	2	-	2	1	4
Guam	-	-	-	-	-	56	-	-	-	-	-	-
P.R.	615	38	1	-	409	587	40	76	5	7	-	7
V.I.	16	-	-	-	244	152	-	4	-	-	-	-
Amer. Samoa	-	-	-	-	-	25	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	20	-	-	-	-	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending May 20, 1989 and May 21, 1988 (20th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	1989	Cum. 1989	Cum. 1988
UNITED STATES	390	237	4,096	7	244	1,166	1,342	93	2,170	22	728	859	6	124	82
NEW ENGLAND	23	6	48	-	14	64	97	-	19	-	102	78	2	4	1
Maine	-	-	-	-	-	-	13	-	-	-	4	11	-	-	-
N.H.	1	-	1	-	-	56	11	-	10	-	5	22	2	2	-
Vt.	-	-	1	-	-	-	6	-	-	-	5	2	-	1	-
Mass.	14	-	9	-	12	1	44	-	8	-	83	33	-	1	-
R.I.	5	6	35	-	2	-	1	-	-	-	2	1	-	-	1
Conn.	3	-	2	-	-	7	22	-	1	-	3	9	-	-	-
MID. ATLANTIC	63	13	292	4	111	344	175	2	101	-	45	36	2	7	8
Upstate N.Y.	13	8	23	4†§	81	6	55	-	47	-	25	21	-	1	1
N.Y. City	20	5	30	-	13	25	25	2	10	-	2	1	2	6	5
N.J.	13	-	180	-	-	15	40	-	11	-	14	4	-	-	1
Pa.	17	-	59	-	17	298	55	-	33	-	4	10	-	-	1
E.N. CENTRAL	19	-	688	3	41	88	164	6	209	-	35	106	-	16	21
Ohio	6	-	400	-	35	6	68	-	8	-	1	21	-	3	-
Ind.	3	-	17	-	-	19	19	-	18	-	8	47	-	-	-
Ill.	4	-	271	-	-	46	44	-	95	-	-	6	-	12	17
Mich.	4	-	-	3§	4	17	26	6	75	-	19	16	-	-	4
Wis.	2	-	-	-	2	-	7	-	13	-	7	16	-	1	-
W.N. CENTRAL	11	11	286	-	2	10	37	2	276	2	19	36	-	2	-
Minn.	5	-	-	-	-	10	10	-	-	-	-	6	-	-	-
Iowa	1	-	-	-	1	-	-	2	15	2	8	14	-	-	-
Mo.	4	-	205	-	-	-	9	-	42	-	9	5	-	1	-
N. Dak.	1	-	-	-	-	-	-	-	-	-	-	6	-	-	-
S. Dak.	-	-	-	-	-	-	4	-	-	-	1	2	-	-	-
Nebr.	-	-	6	-	-	-	10	-	2	-	-	-	-	-	-
Kans.	-	11	75	-	1	-	4	-	217	-	1	3	-	1	-
S. ATLANTIC	69	2	247	-	15	219	219	6	327	3	63	88	-	4	3
Del.	1	1	35	-	1	-	2	-	-	-	-	3	-	-	-
Md.	14	-	6	-	6	4	32	-	151	-	6	17	-	2	-
D.C.	3	-	5	-	3	-	10	4	62	-	-	-	-	-	-
Va.	9	1	1	-	2	116	27	-	57	-	4	11	-	-	-
W. Va.	1	-	-	-	-	6	8	-	9	-	9	-	-	-	-
N.C.	10	-	159	-	-	1	31	-	12	1	16	25	-	1	-
S.C.	3	-	-	-	-	-	14	-	15	-	-	-	-	-	-
Ga.	4	-	-	-	-	-	38	2	5	1	9	17	-	-	-
Fla.	24	-	41	-	3	92	57	-	16	1	19	15	-	1	3
E.S. CENTRAL	4	30	52	-	-	53	37	2	84	-	30	13	-	1	-
Ky.	-	-	2	-	-	32	21	-	9	-	1	-	-	-	-
Tenn.	-	20	21	-	-	-	2	1	25	-	8	8	-	1	-
Ala.	2	10	29	-	-	-	11	-	6	-	21	3	-	-	-
Miss.	2	-	-	-	-	21	3	N	N	-	-	2	-	-	-
W.S. CENTRAL	18	169	2,081	-	23	9	112	63	873	1	23	63	1	12	6
Ark.	-	-	-	-	-	-	4	8	85	-	10	5	1	1	2
La.	1	-	6	-	-	-	21	25	311	-	4	7	-	5	-
Okla.	1	-	23	-	-	8	8	5	151	1	9	24	-	1	1
Tex.	16	169	2,052	-	23	1	79	25	326	-	-	27	-	5	3
MOUNTAIN	14	6	68	-	17	115	34	9	97	14	302	301	1	3	3
Mont.	-	-	12	-	1	-	1	-	2	-	-	1	-	1	-
Idaho	2	-	-	-	1	1	-	-	6	6	37	237	1	1	-
Wyo.	1	-	-	-	-	-	-	-	6	-	-	1	-	-	-
Colo.	1	2	30	-	1	114	13	4	11	-	18	7	-	-	1
N. Mex.	1	1	12	-	14	-	-	N	N	-	4	2	-	-	-
Ariz.	6	3	14	-	-	-	18	5	65	8	236	31	-	-	-
Utah	-	-	-	-	-	-	2	-	3	-	6	21	-	-	1
Nev.	3	-	-	-	-	-	-	-	4	-	1	1	-	1	1
PACIFIC	169	-	334	-	21	264	467	3	184	2	109	138	-	75	40
Wash.	10	-	6	-	10	1	44	2	17	-	23	30	-	-	-
Oreg.	8	-	-	-	4	3	32	N	N	-	4	4	-	1	-
Calif.	147	-	322	-	3	256	387	-	158	2	80	81	-	57	34
Alaska	2	-	-	-	-	-	3	-	-	-	-	3	-	-	-
Hawaii	2	-	6	-	4	4	1	1	9	-	2	20	-	17	6
Guam	-	U	-	U	-	1	-	U	-	U	-	-	U	-	1
P.R.	-	-	303	-	-	158	3	-	1	-	2	6	-	4	1
V.I.	-	-	2	-	-	-	-	1	8	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
C.N.M.I.	-	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 May 20, 1989 and May 21, 1988 (20th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	14,844	14,346	140	7,315	7,273	23	157	52	1,739
NEW ENGLAND	643	380	4	183	137	-	10	1	2
Maine	5	5	2	3	3	-	-	-	1
N.H.	2	4	-	12	-	-	-	-	-
Vt.	-	-	-	2	1	-	-	-	-
Mass.	194	163	-	95	88	-	5	-	-
R.I.	14	12	-	26	11	-	4	1	-
Conn.	428	196	2	45	34	-	1	-	1
MID. ATLANTIC	2,727	2,945	24	1,472	1,341	1	43	4	221
Upstate N.Y.	305	193	3	111	215	-	5	2	4
N.Y. City	1,251	1,931	2	874	628	-	27	-	-
N.J.	514	320	7	210	237	-	8	-	-
Pa.	657	501	12	277	261	1	3	2	217
E.N. CENTRAL	578	438	17	848	839	2	18	8	33
Ohio	38	44	8	164	155	-	7	7	-
Ind.	25	21	4	69	86	1	1	1	2
Ill.	276	229	-	363	344	-	6	-	3
Mich.	219	128	5	208	204	-	3	-	4
Wis.	20	16	-	44	50	1	1	-	24
W.N. CENTRAL	128	87	23	208	188	4	5	3	232
Minn.	8	8	6	45	31	-	1	-	55
Iowa	16	10	4	29	14	-	2	1	63
Mo.	67	49	4	82	93	3	1	2	20
N. Dak.	1	1	-	7	4	-	-	-	13
S. Dak.	-	-	3	12	17	1	-	-	40
Nebr.	16	13	5	9	7	-	-	-	17
Kans.	20	6	1	24	22	-	1	-	24
S. ATLANTIC	5,700	5,099	13	1,584	1,633	1	11	24	538
Del.	68	53	-	19	17	-	2	-	13
Md.	299	289	-	147	178	-	1	4	140
D.C.	342	223	-	67	73	-	2	-	2
Va.	211	159	3	138	183	1	1	-	109
W. Va.	7	2	-	33	32	-	-	-	27
N.C.	357	295	4	164	119	-	2	14	-
S.C.	298	234	3	169	163	-	-	4	92
Ga.	1,205	825	2	223	247	-	-	2	91
Fla.	2,913	3,019	1	624	621	-	3	-	64
E.S. CENTRAL	997	798	3	616	579	3	1	6	164
Ky.	23	26	1	151	161	1	1	4	79
Tenn.	421	344	1	149	145	1	-	1	46
Ala.	334	229	1	192	184	-	-	1	39
Miss.	219	199	-	124	89	1	-	-	-
W.S. CENTRAL	2,010	1,531	11	853	895	7	7	4	287
Ark.	129	70	1	94	91	3	-	1	39
La.	450	288	-	109	122	-	1	-	4
Okla.	30	63	6	74	82	4	1	2	42
Tex.	1,401	1,110	4	576	600	-	5	1	202
MOUNTAIN	265	256	16	183	180	3	2	1	79
Mont.	-	2	-	5	-	-	-	-	34
Idaho	-	-	1	7	-	-	-	-	-
Wyo.	1	1	-	-	1	-	-	-	23
Colo.	46	38	4	12	28	1	1	1	-
N. Mex.	11	19	2	33	39	-	-	-	11
Ariz.	70	73	8	85	82	-	1	-	10
Utah	9	9	-	19	10	2	-	-	-
Nev.	128	114	1	22	20	-	-	-	1
PACIFIC	1,796	2,812	29	1,368	1,481	2	60	1	183
Wash.	91	91	2	73	83	-	2	-	-
Oreg.	113	114	-	50	48	-	4	1	-
Calif.	1,584	2,586	26	1,165	1,275	2	52	-	129
Alaska	3	6	-	17	14	-	-	-	54
Hawaii	5	15	1	63	61	-	2	-	-
Guam	-	1	-	-	7	-	-	-	-
P.R.	209	257	-	91	86	-	-	-	21
V.I.	1	1	-	3	3	-	-	-	-
Amer. Samoa	-	-	-	-	3	-	-	-	-
C.N.M.I.	-	1	-	-	9	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending May 20, 1989 (20th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	620	440	110	41	9	20	39
Boston, Mass.	164	89	45	16	4	10	12
Bridgeport, Conn.	45	38	5	-	1	1	3
Cambridge, Mass.	21	15	5	1	-	-	1
Fall River, Mass.	29	25	2	2	-	-	-
Hartford, Conn.	68	44	16	6	1	1	4
Lowell, Mass.	24	20	3	1	-	-	-
Lynn, Mass.	15	12	2	1	-	-	-
New Bedford, Mass.	32	28	3	-	-	1	2
New Haven, Conn.	50	35	8	4	1	2	8
Providence, R.I.	46	37	7	1	-	1	2
Somerville, Mass.	8	8	-	-	-	-	-
Springfield, Mass.	43	31	8	-	1	3	1
Waterbury, Conn.	29	25	2	2	-	-	3
Worcester, Mass.	46	33	4	7	1	1	3
MID. ATLANTIC	2,619	1,719	500	278	48	73	152
Albany, N.Y.	52	39	6	2	2	3	2
Allentown, Pa.	17	12	4	-	1	-	-
Buffalo, N.Y.	110	68	30	4	3	5	8
Camden, N.J.	48	29	9	6	-	3	-
Elizabeth, N.J.	23	15	2	6	-	-	3
Erie, Pa.†	35	28	4	1	1	1	7
Jersey City, N.J.	44	24	11	7	-	2	2
N.Y. City, N.Y.	1,365	878	263	162	26	36	68
Newark, N.J.	68	34	15	13	2	4	4
Paterson, N.J.	34	19	10	5	-	-	2
Philadelphia, Pa.	407	261	82	45	9	10	26
Pittsburgh, Pa.†	68	51	9	6	-	2	3
Reading, Pa.	33	23	7	2	-	1	4
Rochester, N.Y.	105	86	16	2	1	-	11
Schenectady, N.Y.	24	21	1	1	1	-	3
Scranton, Pa.†	20	15	3	2	-	-	-
Syracuse, N.Y.	82	53	16	7	2	4	4
Trenton, N.J.	29	21	3	4	-	1	2
Utica, N.Y.	20	14	5	1	-	-	-
Yonkers, N.Y.	35	28	4	2	-	1	3
E.N. CENTRAL	2,341	1,511	475	185	75	95	100
Akron, Ohio	37	22	7	4	1	3	-
Canton, Ohio	44	33	7	1	1	2	4
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	166	105	36	9	9	7	13
Cleveland, Ohio	153	93	28	20	5	7	4
Columbus, Ohio	177	99	35	20	16	7	1
Dayton, Ohio	115	80	23	9	2	1	3
Detroit, Mich.§	239	136	54	26	11	12	6
Evansville, Ind.	47	38	4	3	-	2	4
Fort Wayne, Ind.	67	48	15	2	1	1	6
Gary, Ind.	16	9	4	2	1	-	1
Grand Rapids, Mich.	54	38	9	3	2	2	5
Indianapolis, Ind.	185	116	41	11	7	10	2
Madison, Wis.	22	13	5	1	-	3	-
Milwaukee, Wis.	128	97	22	7	1	1	7
Peoria, Ill.	71	42	15	6	3	5	4
Rockford, Ill.	48	34	8	3	-	3	4
South Bend, Ind.	44	32	8	-	1	3	4
Toledo, Ohio	101	67	20	9	3	2	3
Youngstown, Ohio	63	47	9	4	1	2	13
W.N. CENTRAL	737	510	139	43	24	21	42
Des Moines, Iowa	81	59	16	5	-	1	3
Duluth, Minn.	26	21	3	1	-	1	3
Kansas City, Kans.	30	17	8	2	3	-	1
Kansas City, Mo.	114	72	25	5	9	3	6
Lincoln, Nebr.	27	18	6	2	1	-	2
Minneapolis, Minn.	144	101	26	12	2	3	10
Omaha, Nebr.	81	56	17	2	3	3	7
St. Louis, Mo.	124	84	25	7	2	6	8
St. Paul, Minn.	55	38	9	5	2	1	-
Wichita, Kans.	55	44	4	2	2	3	2
S. ATLANTIC	1,214	694	272	136	51	60	64
Atlanta, Ga.	176	88	50	18	9	11	2
Baltimore, Md.	193	113	41	23	7	9	18
Charlotte, N.C.	75	40	21	9	1	4	6
Jacksonville, Fla.	95	59	21	9	5	1	8
Miami, Fla.	152	73	35	24	8	11	2
Norfolk, Va.	47	25	12	3	2	5	2
Richmond, Va.	74	43	17	8	5	1	11
Savannah, Ga.	51	36	9	3	1	2	4
St. Petersburg, Fla.	66	54	4	3	-	5	2
Tampa, Fla.	73	44	18	6	2	3	3
Washington, D.C.	177	91	38	30	10	8	6
Wilmington, Del.	35	28	6	-	1	-	-
E.S. CENTRAL	750	501	154	54	20	21	49
Birmingham, Ala.	102	62	24	8	5	3	4
Chattanooga, Tenn.	57	43	9	2	2	1	5
Knoxville, Tenn.	60	43	10	3	1	3	6
Louisville, Ky.	99	67	22	6	2	2	5
Memphis, Tenn.	167	111	40	12	4	-	17
Mobile, Ala.	70	49	12	5	1	3	4
Montgomery, Ala.§	47	37	8	1	-	1	2
Nashville, Tenn.	148	89	29	17	5	8	6
W.S. CENTRAL	1,692	1,036	377	169	66	44	62
Austin, Tex.	50	34	11	4	-	1	2
Baton Rouge, La.	29	19	7	2	1	-	-
Corpus Christi, Tex.§	47	36	8	3	-	-	1
Dallas, Tex.	198	106	54	23	11	4	7
El Paso, Tex.	39	24	8	3	2	2	3
Fort Worth, Tex	102	71	14	5	3	9	9
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	53	30	14	4	2	3	4
New Orleans, La.	116	65	23	17	9	2	-
San Antonio, Tex.	194	124	44	11	9	6	5
Shreveport, La.	41	25	11	3	2	-	3
Tulsa, Okla.	89	66	14	5	3	1	10
MOUNTAIN	669	437	145	46	16	24	39
Albuquerque, N. Mex.	89	59	15	8	4	2	8
Colo. Springs, Colo.	33	19	8	3	1	2	3
Denver, Colo.	116	83	18	11	-	4	7
Las Vegas, Nev.	110	62	32	8	4	4	7
Ogden, Utah	14	11	2	1	-	-	2
Phoenix, Ariz.	126	77	33	8	1	7	2
Pueblo, Colo.	30	24	5	-	1	-	3
Salt Lake City, Utah	45	24	12	1	3	5	1
Tucson, Ariz.	106	78	20	6	2	-	6
PACIFIC	2,171	1,406	399	209	74	74	130
Berkeley, Calif.	12	5	4	3	-	-	1
Fresno, Calif.	93	58	13	11	3	8	9
Glendale, Calif.	32	28	4	-	-	-	2
Honolulu, Hawaii	89	59	14	7	2	7	11
Long Beach, Calif.	78	43	17	11	2	5	5
Los Angeles Calif.	711	442	143	79	29	9	30
Oakland, Calif.§	93	62	18	9	2	2	5
Pasadena, Calif.	30	20	4	2	-	4	3
Portland, Oreg.	150	104	26	9	4	7	2
Sacramento, Calif.	158	110	26	11	5	6	17
San Diego, Calif.	170	96	33	20	10	11	17
San Francisco, Calif.	143	86	30	20	3	4	-
San Jose, Calif.	161	108	31	12	6	4	8
Seattle, Wash.	147	108	20	6	7	6	5
Spokane, Wash.	60	47	9	2	1	1	11
Tacoma, Wash.	44	30	7	7	-	-	4
TOTAL	12,813††	8,254	2,571	1,161	383	432	677

*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 available 4 weeks.

HIV and AIDS — Continued

8. NCHS, Dawson DA. AIDS knowledge and attitudes: August 1988—provisional data from the National Health Interview Survey. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988; DHHS publication no. (PHS)89-1250. (Advance data from vital and health statistics; no. 163).
9. NCHS, Fitti JE. AIDS knowledge and attitudes for September 1988: provisional data from the National Health Interview Survey. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1989; DHHS publication no. (PHS)89-1250. (Advance data from vital and health statistics; no. 164).

Epidemiologic Notes and Reports

Malaria in Travelers Returning from Kenya: Failure of Self-Treatment with Pyrimethamine/Sulfadoxine

In August 1988, seven (88%) of eight U.S. citizens returning to Pennsylvania from a tour of western Kenya developed symptoms of malaria. Onset of symptoms occurred 10–74 days (median: 12 days) after arrival in the zone endemic for malaria. The travelers stayed 1 month in an area within 100 miles of Lake Victoria. Each took pyrimethamine 12.5 mg/dapsone 100 mg (Maloprim*) orally once a week starting 10 days before arrival at this site. All eight were exposed to mosquitoes at night, and all used insecticide and mosquito netting for protection. None of the eight had had malaria before this trip.

Each of the seven experienced fever, followed by chills, rigors, and diaphoresis. Five of the seven became ill while still in Kenya. In one of these five, symptoms resolved spontaneously within 2 days of onset; the other four took presumptive oral therapy with pyrimethamine 75 mg/sulfadoxine 1.5 g (Fansidar®, 3 tablets) 2 days before returning to the United States. One of these four had symptom resolution after therapy with Fansidar®. One of the three travelers whose symptoms persisted after Fansidar® therapy had a therapeutic level of sulfadoxine (57 ppm) on her return to the United States.

Blood smears were examined for all three travelers who remained symptomatic after Fansidar® therapy, as well as for two additional travelers who became ill after returning to the United States. All five had blood smears diagnostic of *Plasmodium falciparum* malaria. All five were treated successfully with quinine and tetracycline.

Reported by: Div of Field Svcs, Epidemiology Program Office; Malaria Br, Div of Parasitic Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Malaria is endemic in large areas of sub-Saharan Africa, New Guinea, Latin America, and Asia. Travelers to areas with endemic malaria in sub-Saharan Africa and New Guinea are at particular risk for malaria even when recommended precautions such as mosquito netting, insecticides, and chemoprophylaxis are used. Approximately 150 U.S. travelers annually are diagnosed with *P. falciparum* malaria on return from abroad; most have visited sub-Saharan Africa (*1*). Resistance of *P. falciparum* to chloroquine extends throughout sub-Saharan Africa, and resistance to sulfa drugs and pyrimethamine has also been reported (*2*).

Prophylactic use of Maloprim and other pyrimethamine/sulfa compounds against malaria is not recommended for U.S. travelers. Rather, adults traveling to sub-

*Use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Malaria — Continued

Saharan locations where malaria is endemic should take chloroquine salt, 500 mg orally once each week (*3*). Travelers to these areas who have no history of sulfonamide intolerance should also take with them three Fansidar® tablets. If symptoms of malaria occur while the traveler is far from medical assistance, these three tablets of Fansidar® should be taken in a single oral dose as therapy for presumed malaria.

P. falciparum malaria can sometimes persist despite the use of appropriate therapy. Because of increased travel by U.S. citizens, primary-care physicians will continue to have a role not only in prevention but also in diagnosis and treatment of malaria in returning travelers.

References

1. Lobel HO, Campbell CC, Schwartz IK, Roberts JM. Recent trends in the importation of malaria caused by *Plasmodium falciparum* into the United States from Africa. J Infect Dis 1985; 152:613–7.
2. Lobel HO, Campbell CC. Malaria prophylaxis and distribution of drug resistance. In: Strickland GT, ed. Clinics in tropical medicine and communicable diseases. Vol 1. London: Saunders, 1986:225–42.
3. CDC. Health information for international travel, 1988. Atlanta: US Department of Health and Human Services, Public Health Service, 1988:15–61,94–103; HHS publication no. (CDC)88-8280.

Progress in Chronic Disease Prevention

Predicting Future Cholesterol Levels for Coronary Heart Disease Risk Assessment

Elevated total serum cholesterol level is a major risk factor for coronary heart disease (*1,2*). The Adult Treatment Panel of the National Cholesterol Education Program (NCEP), National Heart, Lung, and Blood Institute (NHLBI), recommends that total serum cholesterol level be measured in all adults ≥20 years of age at least once every 5 years (*3*). A desirable total serum cholesterol level for adults is <200 mg/dL (5.17 mmol/L). Persons with levels of 200–240 mg/dL (5.17–6.21 mmol/L) are classified as having borderline high blood cholesterol. Persons with levels >240 mg/dL (6.21 mmol/L) are classified as having high blood cholesterol.

Recently developed statistical models (*4*) (based on data from the National Health and Nutrition Examination Survey 1976–1980 [NHANES II] [*5,6*]) describe the relationship between age and cholesterol level for men and women aged 20–57 years. The models incorporate the observed variation in the NHANES II data, the average intraperson biologic variation, and the intralaboratory variation expected when total serum cholesterol is determined. Using these models, future cholesterol levels of persons 20–57 years of age whose total serum cholesterol has been measured can be predicted. Also, based on these models, the age at which they could expect to reach borderline high or high blood cholesterol levels in the absence of a cholesterol-altering intervention can be anticipated.

Nomograms showing cholesterol projections by age have been constructed from the models (Figures 1 and 2). Based on the information in these nomograms, a 30-year-old woman with a measured total cholesterol of 155 mg/dL (4.01 mmol/L) could expect her cholesterol level to increase to 188 mg/dL (4.86 mmol/L) by age 50 and to reach borderline high by age 56 (curve labeled B in Figure 2). Generally, men

Cholesterol Levels — Continued

aged 20–30 can expect an annual increase in total cholesterol of approximately 2 mg/dL (0.05 mmol/L). From ages 30 to 60 years, the average annual increase for men declines to approximately 1 mg/dL (0.025 mmol/L). Annual increases in cholesterol levels for women differ from those for men. For ages 20–40, the average annual increase in total cholesterol for women is approximately 1.5 mg/dL (0.04 mmol/L); for ages 40–60, the average annual increase is approximately 2 mg/dL (0.05 mmol/L).

Reported by: Div of Environmental Health Laboratory Sciences, Center for Environmental Health and Injury Control, CDC.

FIGURE 1. Total cholesterol projections for men, by age

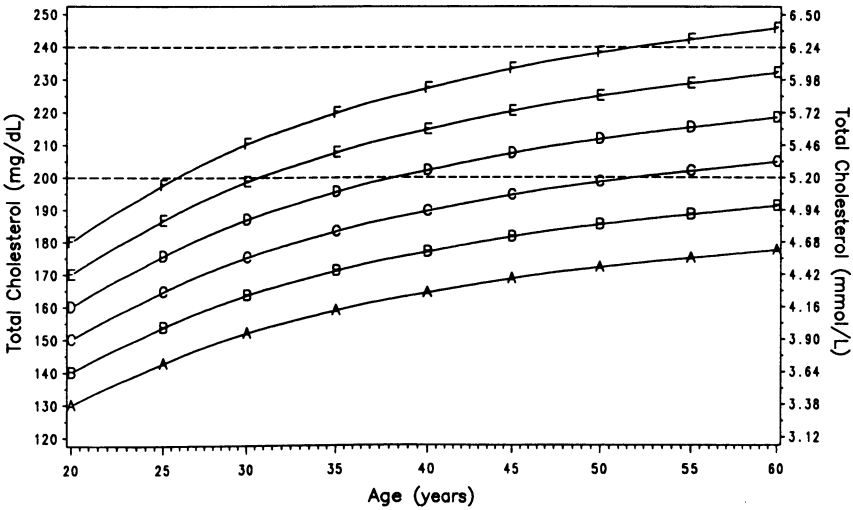
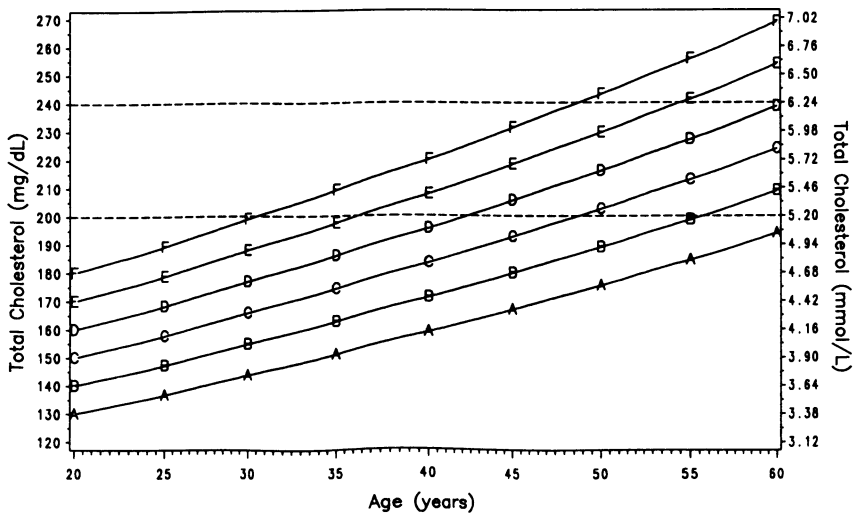


FIGURE 2. Total cholesterol projections for women, by age



Cholesterol Levels — Continued

Editorial Note: Since serum cholesterol levels normally increase 1–2 mg/dL (0.025–0.05 mmol/L) per year beginning in the late teens, young persons, even those with levels <200 mg/dL (5.17 mmol/L), should recognize their potential for future borderline high or high classification (*7–9*). Use of the nomograms can aid efforts to reduce cholesterol levels in young persons (*10*), a population not addressed by the most recent NHLBI-NCEP recommendations (*3*). Through dietary and exercise intervention, teenagers and young adults can begin reducing their cholesterol before it reaches borderline high levels (*11,12*).

The adequacy of the constructed models was demonstrated using the individual cholesterol determinations of participants in the Framingham Study (*13*). The reliability and applicability of these models for a given person will depend to a great extent on the analytical precision and accuracy of the laboratory that performed the total serum cholesterol measurement(s) (*14*).

Since both biologic (*15*) and laboratory variation (*14*) influence total cholesterol values, a minimum of two blood samples should be drawn and measured approximately 1 month apart (*3*); the average of the two results is used. If the second result differs from the first by >30 mg/dL (0.8 mmol/L), a third test should be obtained and the average of the three values used (*3*).

Implementation of the recent NHLBI-NCEP recommendations should lead to a reduction in coronary heart disease among adults who currently have borderline high or high cholesterol levels (*16*). Physicians and public health programs should be informed about the cholesterol by age projections (Figures 1 and 2). Knowledge and use of the projections could enhance the impact of these recommendations by providing an early warning to persons who could be at high risk in the future.

The reliable use of the cholesterol by age nomograms and the successful clinical application of the NHLBI-NCEP recommendations concerning critical physiologic cut-point levels for total and low-density lipoprotein cholesterol will depend on adequate standardization of the analytical measurement of lipoproteins and their constituents such as total cholesterol (*14*).

References

1. Lipid Research Clinics Program. The Lipid Research Clinics coronary primary prevention trial results. I. Reduction in incidence of coronary heart disease. JAMA 1984;251:351–64.
2. Lipid Research Clinics Program. The Lipid Research Clinics primary prevention trial results. II. The relationship of reduction in incidence of coronary heart disease to cholesterol lowering. JAMA 1984;251:365–74.
3. National Heart, Lung, and Blood Institute. Report of the National Cholesterol Education Program expert panel on detection, evaluation, and treatment of high blood cholesterol in adults. Arch Intern Med 1988;148:36–69.
4. Caudill SP, Smith SJ, Cooper GR. Cholesterol-based personal risk assessment in coronary heart disease. Stat Med 1989;8:295–309.
5. NCHS, McDowell A, Engel A, Massey JT, Maurer K. Plan and operation of the Second National Health and Nutrition Examination Survey, 1976–1980. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, 1981; DHHS publication no. (PHS)81-1317. (Vital and health statistics; series 1, no. 15).
6. NCHS. Total serum cholesterol levels of adults 20–74 years of age: United States, 1976–80. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1986; DHHS publication no. (PHS)86-1686. (Data from the National Health Survey; series 11, no. 236).
7. Freedman DS, Shear CL, Srinivasan SR, Webber LS, Berenson GS. Tracking of serum lipids and lipoproteins in children over an 8-year period: the Bogalusa Heart Study. Prev Med 1985;14:203–16.

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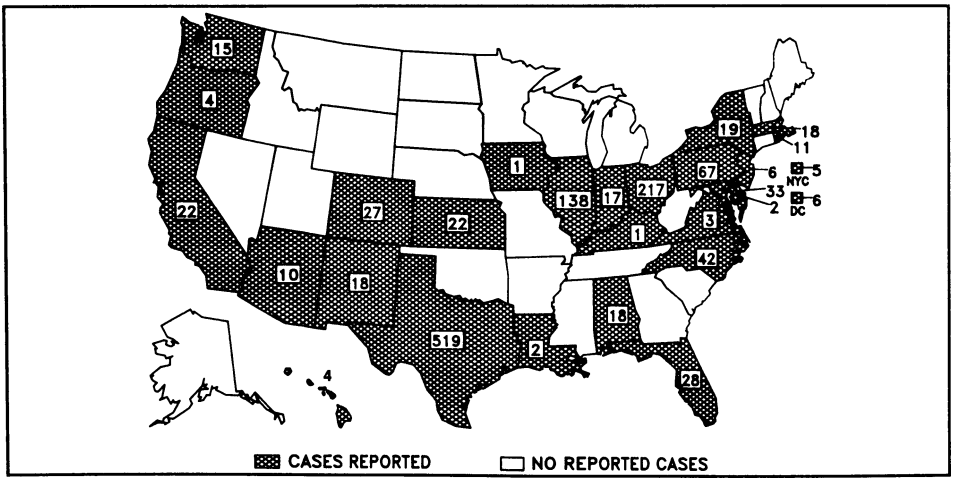
8. Orchard TJ, Donahue RP, Kuller LH, Hodge PN, Drash AL. Cholesterol screening in childhood: does it predict adult hypercholesterolemia? The Beaver County experience. J Pediatr 1983;103:687–91.
9. Lee J, Lauer RM, Clarke WR. Lipoproteins in the progeny of young men with coronary artery disease: children with increased risk. Pediatrics 1986;78:330–37.
10. Gillum RF, Taylor HL, Brozek J, Anderson J, Blackburn H. Blood lipids in young men followed 32 years. J Chronic Dis 1982;35:635–41.
11. Kromhout D. Body weight, diet, and serum cholesterol in 871 middle-aged men during 10 years of follow-up (the Zutphen Study). Am J Clin Nutr 1983;38:591–8.
12. Donahue RP, Orchard TJ, Kuller LH, Drash AL. Lipids and lipoproteins in a young adult population: the Beaver County Lipid Study. Am J Epidemiol 1985;122:458–67.
13. Kannel WB, Gordon T, eds. Some characteristics related to the incidence of cardiovascular disease and death: Framingham study 18-year follow-up. Bethesda, Maryland: US Department of Health, Education, and Welfare, Public Health Service, 1974; DHEW publication no. (NIH)74-599.
14. National Heart, Lung, and Blood Institute. Current status of blood cholesterol measurement in clinical laboratories in the United States: a report from the Laboratory Standardization Panel of the National Cholesterol Education Program. Clin Chem 1988;34:193-201.
15. Costongs GMPJ, Janson PCW, Bas BM. Short-term and long-term intra-individual variations and critical differences of clinical chemical laboratory parameters. J Clin Chem Clin Biochem 1985;23:7-16.
16. Lenfant C. A new challenge for America: the National Cholesterol Education Program. Circulation 1986;73:855-6.

FIGURE I. Reported measles cases – United States, weeks 16-19, 1989



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: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

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HHS Publication No. (CDC) 89-8017