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Participation in School Physical Education and Selected Dietary Patterns Among High School Students — United States, 1991

Inadequate physical activity and unhealthy dietary patterns (particularly diets high in fat and low in fruits, vegetables, and grains) established during youth may extend into adulthood and may increase risk for chronic diseases, such as coronary heart disease and cancer (*1–5*). This report examines the prevalence of self-reported enrollment, attendance, and participation in school physical education (PE) and examines selected dietary patterns among students in grades 9–12 from two school-based components of CDC's Youth Risk Behavior Surveillance System (*6*): 1) the national Youth Risk Behavior Survey (conducted during April–May 1991) and 2) individual state and local Youth Risk Behavior Surveys (conducted by departments of education in 23 states and 10 cities during the same time).

The national survey used a three-stage sample design to obtain a sample of 12,272 students representative of students in grades 9–12 in the 50 states and the District of Columbia. The 33 state and local sites drew probability samples from well-defined sampling frames of schools and students. Seventeen sites had adequate school- and student-response rates, which allowed computation of weighted results of known precision; 16 sites had overall response rates below 60% or unavailable documentation, which precluded making estimates of known precision.

The school-response rate for the national survey was 75%, and the student-response rate was 90% (Table 1). For the state and local surveys, school-response rates ranged from 48% to 100%; student-response rates ranged from 44% to 96%. State and local sample sizes ranged from 369 to 5834 students. Students in most samples were distributed evenly across grades and between sexes. The racial/ethnic characteristics of the samples varied.

Students were asked "In an average week when you are in school, on how many days do you go to physical education (PE) classes?" and "During an average physical education (PE) class, how many minutes do you spend actually exercising or playing sports?" Enrollment in PE class was defined as attending PE class at least one day in an average week. Students also were asked about foods they had consumed the day preceding the survey, including fruit; fruit juice; green salad; cooked vegetables; hamburger, hot dogs, or sausage; french fries or potato chips; and cookies, dough-

TABLE 1. Size, response rates, and demographic characteristics of samples — United States and selected U.S. sites, Youth Risk Behavior Surveys, 1991

Site	Sample size	Response rate (%)			Demographic characteristic									
					Sex (%)		Grade (%)				Race/Ethnicity (%)			
		School	Student	Overall	Female	Male	9	10	11	12	White*	Black*	Hispanic	Other
WEIGHTED DATA														
National survey	12,272	75	90	**68**	49	51	25	25	23	26	70	14	9	7
State surveys														
Alabama	2,480	100	83	**83**	50	50	29	26	23	22	72	24	1	2
Georgia	2,272	93	84	**78**	50	50	31	26	22	20	65	29	1	5
Idaho	4,218	92	84	**77**	46	54	28	26	24	22	88	1	4	7
Nebraska	2,459	81	NA†	**NA**	50	50	26	26	24	23	87	5	2	5
New Mexico	3,155	73	89	**65**	48	52	28	28	22	19	26	2	34	38
New York§	3,433	72	86	**62**	50	50	27	26	24	24	81	8	4	7
Puerto Rico¶	2,233	100	96	**96**	52	48	29	28	24	20	12	5	69	14
South Carolina	5,834	71	87	**62**	49	51	31	26	22	21	60	36	1	3
South Dakota	1,377	96	91	**87**	49	51	28	26	24	23	85	1	1	14
Utah	4,580	100	81	**81**	50	50	28	26	24	22	86	1	5	7
Local surveys														
Chicago	1,558	92	72	**66**	51	49	33	30	20	16	7	58	27	8
Dallas	3,343	100	80	**80**	51	49	26	48	17	9	14	51	30	6
Ft. Lauderdale, Fla.	1,308	100	80	**80**	55	45	30	28	22	20	56	26	11	8
Jersey City, N.J.	369	100	74	**74**	51	49	37	25	18	19	5	44	40	11
Miami	2,155	100	85	**85**	50	50	28	27	23	22	12	28	53	6
Philadelphia	1,573	100	NA	**NA**	54	46	37	26	20	18	23	57	10	10
San Diego	658	100	62	**62**	49	51	28	27	25	20	47	12	17	24
UNWEIGHTED DATA														
State surveys														
Colorado§	1,170	65	83	**54**	48	52	27	26	23	24	80	2	12	6
District of Columbia¶	1,525	94	60	**56**	50	50	5	33	35	26	4	84	7	6
Hawaii	4,822	95	81	**77**	50	50	30	26	24	21	16	2	4	78
Iowa	1,773	64	89	**57**	50	50	27	29	24	19	94	1	1	4
Montana	2,549	63	80	**50**	52	48	35	22	20	21	85	1	2	13
New Hampshire	1,928	67	66	**44**	49	51	27	26	26	21	94	1	1	4
New Jersey§	2,092	54	91	**49**	52	48	26	28	26	20	63	15	14	8
Oregon	2,005	60	80	**48**	48	52	25	26	25	24	86	3	3	8
Pennsylvania§	2,217	52	86	**45**	47	53	26	25	24	24	91	4	2	3
Tennessee	2,469	48	84	**40**	51	49	24	33	23	20	89	8	1	3
Virgin Islands¶	1,506	89	65	**58**	52	48	26	17	22	13	2	82	6	9
Wisconsin	1,440	59	90	**53**	50	50	26	33	23	18	85	8	3	4
Wyoming	3,513	70	82	**57**	47	53	28	26	25	20	86	2	6	6
Local surveys														
Boston	2,108	100	52	**52**	55	45	26	24	25	24	15	48	11	26
New York City	1,033	100	65	**65**	51	49	13	27	29	30	30	22	31	18
San Francisco	1,984	100	44	**44**	52	48	24	33	25	17	12	12	17	59

*Non-Hispanic.
†Not available because of lack of documentation.
§Surveys did not include students from the largest city.
¶Categorized as a state for funding purposes.

Physical Education and Dietary Patterns — Continued

nuts, pie, or cake. These foods were selected as typical of the diets of adolescents and were not intended to represent complete dietary histories. The total number of servings* of fruit, fruit juice, green salad, and cooked vegetables was estimated by adding the number of servings of fruits and vegetables consumed during the day preceding the survey. Similarly, the total number of servings of foods typically high in fat was estimated by adding the number of servings of hamburger, hot dogs, or sausage; french fries or potato chips; and cookies, doughnuts, pie, or cake eaten during the day preceding the survey.

Among the state and local surveys, the percentage of students in grades 9–12 who participated in PE classes varied considerably (Table 2): 24%–96% of students (median: 52%) reported being enrolled in PE classes; 2%–74% (median: 35%) reported attending PE classes daily; and among students enrolled in PE class, 52%–90% (median: 75%) reported spending more than 20 minutes exercising or playing sports during an average class. In most sites, more male than female students were enrolled in PE class, attended such classes daily, and spent more than 20 minutes exercising or playing sports during the average class. The national prevalence estimates were similar to the median prevalence estimates from the state and local surveys.

Students' dietary patterns (Table 3) varied less among the state and local surveys than did participation in PE classes: 8%–18% of students (median: 13%) reported consuming five or more (range: 0–8) servings of fruits and vegetables during the day preceding the survey; and 57%–83% (median: 69%) reported eating two or fewer (range: 0–6) servings of foods typically high in fat. In all sites, male students were more likely than female students to consume five or more servings of fruits and vegetables, but female students were more likely than male students to eat two or fewer servings of foods typically high in fat. The national prevalence estimates were similar to the median prevalence estimates from the state and local surveys.

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*Students who replied that they had not consumed a particular type of food were assigned a frequency of 0; students who replied that they had consumed a particular type of food "once only" were assigned a frequency of 1; and students who replied that they had consumed a particular type of food "twice or more" were assigned a frequency of 2.

Physical Education and Dietary Patterns — Continued

Editorial Note: The findings in this report are consistent with results from other recent national surveys that measured participation in school PE and selected dietary patterns among youth (*7,8*). Because the quality of the samples varied among the state and local surveys, data across sites may not be comparable. Nonetheless, these results can be useful in planning and evaluating broad national, state, and local interventions and in monitoring progress toward achieving the national health objectives for the year 2000 (*5*).

TABLE 2. Percentage of high school students enrolled in physical education (PE) classes, who attended such a class daily, and who exercised or played sports more than 20 minutes during the average class, by sex — United States and selected U.S. sites, Youth Risk Behavior Surveys, 1991

Site	Enrolled in PE			Attended daily			Exercised >20 minutes per class		
	Females	Males	Total	Females	Males	Total	Females	Males	Total
WEIGHTED DATA									
National survey	45	53	**49**	37	46	**42**	75	85	**81**
State surveys									
Alabama	40	63	**52**	36	55	**46**	71	84	**79**
Georgia	31	50	**40**	28	43	**35**	74	85	**81**
Idaho	38	52	**46**	35	45	**40**	85	89	**87**
Nebraska	38	55	**47**	28	41	**34**	70	81	**76**
NewMexico	43	53	**48**	39	47	**43**	76	84	**80**
New York*	96	96	**96**	4	4	**4**	62	76	**69**
Puerto Rico†	24	30	**27**	18	21	**20**	49	66	**58**
South Carolina	34	43	**38**	32	37	**34**	72	79	**76**
South Dakota	22	26	**24**	14	17	**15**	76	90	**84**
Utah	56	66	**61**	34	41	**37**	80	87	**83**
Local surveys									
Chicago	89	87	**88**	77	70	**74**	65	70	**67**
Dallas	32	47	**39**	28	38	**33**	61	73	**68**
Ft. Lauderdale, Fla.	32	51	**40**	25	41	**32**	72	81	**77**
Jersey City, N.J.	80	76	**78**	68	56	**62**	44	61	**52**
Miami	47	55	**51**	40	49	**45**	63	75	**70**
Philadelphia	70	73	**72**	34	52	**41**	59	62	**60**
San Diego	59	76	**67**	49	62	**55**	88	92	**90**
UNWEIGHTED DATA									
State surveys									
Colorado*	41	53	**47**	31	40	**36**	80	88	**84**
District of Columbia†	33	43	**38**	14	17	**15**	64	62	**63**
Hawaii	37	50	**44**	9	14	**12**	76	79	**78**
Iowa	94	96	**95**	1	2	**2**	70	78	**74**
Montana	58	65	**62**	44	51	**47**	80	85	**82**
New Hampshire	46	51	**48**	13	17	**15**	73	78	**75**
New Jersey*	NA§	NA	**NA**	NA	NA	**NA**	NA	NA	**NA**
Oregon	41	55	**48**	36	49	**43**	81	86	**84**
Pennsylvania*	95	95	**95**	8	11	**9**	69	78	**74**
Tennessee	31	40	**35**	27	35	**31**	72	81	**77**
Virgin Islands†	76	77	**76**	50	50	**50**	70	71	**70**
Wisconsin	69	73	**71**	27	28	**28**	70	79	**74**
Wyoming	52	63	**58**	48	57	**53**	81	87	**84**
Local surveys									
Boston	76	84	**79**	5	9	**7**	41	63	**52**
New York City	82	84	**83**	55	58	**57**	63	74	**68**
San Francisco	50	60	**54**	44	51	**47**	67	80	**74**

*Surveys did not include students from the largest city.
†Categorized as a state for funding purposes.
§Not available; survey did not include these questions.

Physical Education and Dietary Patterns — Continued

TABLE 3. Percentage of high school students who consumed five or more servings of fruits and vegetables and no more than two servings of foods typically high in fat* the day preceding the survey, by sex — United States and selected U.S. sites, Youth Risk Behavior Surveys, 1991

Site	Fruits and vegetables†			Foods typically high in fat§		
	Females	Males	Total	Females	Males	Total
WEIGHTED DATA						
National survey	10	15	**13**	73	57	**65**
State surveys						
Alabama	6	12	**9**	69	56	**63**
Georgia	13	17	**15**	72	60	**66**
Idaho	10	17	**14**	76	60	**67**
Nebraska	11	17	**14**	66	50	**58**
New Mexico	9	13	**11**	76	62	**68**
New York¶	12	17	**15**	77	61	**69**
Puerto Rico**	8	15	**11**	79	76	**78**
South Carolina	8	13	**10**	66	52	**59**
South Dakota	11	16	**14**	66	51	**58**
Utah	14	18	**16**	78	62	**70**
Local surveys						
Chicago	7	10	**9**	63	53	**58**
Dallas	7	10	**8**	70	58	**64**
Ft. Lauderdale, Fla.	10	18	**14**	79	67	**74**
Jersey City, N.J.	8	11	**9**	72	70	**71**
Miami	7	12	**9**	76	68	**72**
Philadelphia	11	10	**10**	72	62	**68**
San Diego	12	16	**14**	76	65	**70**
UNWEIGHTED DATA						
State surveys						
Colorado¶	15	16	**16**	72	57	**64**
District of Columbia**	11	12	**11**	75	62	**69**
Hawaii	14	22	**18**	74	63	**69**
Iowa	10	20	**15**	70	45	**57**
Montana	13	19	**16**	74	57	**66**
New Hampshire	16	18	**17**	80	60	**70**
New Jersey¶	NA††	NA	**NA**	80	71	**76**
Oregon	NA	NA	**NA**	NA	NA	**NA**
Pennsylvania¶	15	21	**18**	76	63	**69**
Tennessee	10	14	**12**	67	51	**59**
Virgin Islands**	10	13	**12**	83	82	**83**
Wisconsin	10	12	**11**	70	53	**62**
Wyoming	11	16	**14**	71	52	**61**
Local surveys						
Boston	11	13	**13**	80	73	**77**
New York City	12	16	**14**	82	70	**76**
San Francisco	17	19	**18**	80	73	**77**

*Students who replied that they did not consume a particular type of food were assigned a frequency of 0; students who replied that they consumed a particular type of food "once only" were assigned a frequency of 1; and students who replied that they consumed a particular type of food "twice or more" were assigned a frequency of 2. The number of servings of fruits and vegetables ranged from 0 through 8. The number of servings of foods typically high in fat ranged from 0 through 6.

†Fruit, fruit juice, green salad, and cooked vegetables.

§Hamburger, hot dogs, or sausage; french fries or potato chips; and cookies, doughnuts, pie, or cake.

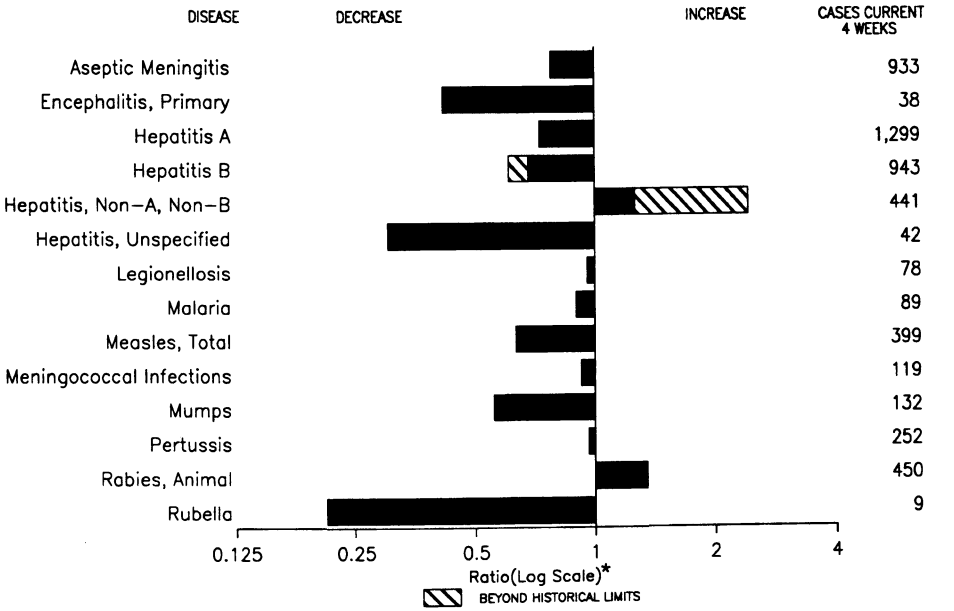
¶Surveys did not include students from the largest city.

**Categorized as a state for funding purposes.

††Not available; survey did not include these questions.

(Continued on page 607)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending August 15, 1992, with historical data — United States



*Ratio of current 4-week total to the mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending August 15, 1992 (33rd Week)

	Cum. 1992		Cum. 1992
AIDS*	27,377	Measles: imported	103
Anthrax	-	indigenous	1,661
Botulism: Foodborne	10	Plague	3
Infant	35	Poliomyelitis, Paralytic[§]	-
Other	2	Psittacosis	55
Brucellosis	45	Rabies, human	-
Cholera[†]	92	Syphilis, primary & secondary	21,320
Congenital rubella syndrome	8	Syphilis, congenital, age < 1 year[¶]	697
Diphtheria	3	Tetanus	12
Encephalitis, post-infectious	89	Toxic shock syndrome	156
Gonorrhea	305,099	Trichinosis	17
Haemophilus influenzae (invasive disease)	936	Tuberculosis	13,823
Hansen Disease	117	Tularemia	97
Leptospirosis	20	Typhoid fever	213
Lyme Disease	4,057	Typhus fever, tickborne (RMSF)	249

*Updated monthly; last update August 1, 1992.
†Delayed reports from California.
§Two cases of suspected poliomyelitis have been reported in 1992; six of the nine suspected cases with onset in 1991 were confirmed and 5 of the 8 suspected cases with onset in 1990 were confirmed, and all were vaccine associated.
¶Updates for first quarter 1992.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending August 15, 1992, and August 17, 1991 (33rd Week)

Reporting Area	AIDS*	Aseptic Meningitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionellosis	Lyme Disease
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992
UNITED STATES	27,377	4,366	346	89	305,099	369,190	12,350	9,797	4,634	431	790	4,057
NEW ENGLAND	906	178	20	-	6,462	9,067	365	362	54	17	40	987
Maine	35	17	2	-	52	111	24	19	5	-	1	4
N.H.	30	9	2	-	91	154	25	24	12	1	3	23
Vt.	13	9	3	-	16	36	5	10	9	-	2	3
Mass.	492	81	10	-	2,351	3,971	179	279	25	16	24	97
R.I.	67	62	3	-	457	731	94	17	3	-	10	168
Conn.	269	-	-	-	3,495	4,064	38	13	-	-	-	692
MID. ATLANTIC	6,806	446	17	8	32,528	44,754	923	1,262	237	15	227	2,215
Upstate N.Y.	752	208	-	-	6,269	7,893	223	313	142	7	88	1,331
N.Y. City	3,901	91	4	1	11,169	17,303	356	226	4	-	3	8
N.J.	1,362	-	-	-	4,584	7,370	148	311	67	-	27	358
Pa.	791	147	13	7	10,506	12,188	196	412	24	8	109	518
E.N. CENTRAL	2,520	618	93	26	57,586	67,699	1,768	1,466	825	24	184	86
Ohio	454	175	28	2	17,507	20,885	281	147	63	4	83	36
Ind.	262	94	9	11	5,486	6,944	526	496	390	8	21	24
Ill.	1,155	135	34	6	18,679	20,008	341	171	51	4	12	6
Mich.	500	205	20	7	13,526	14,989	90	380	273	8	44	20
Wis.	149	9	2	-	2,388	4,873	530	272	48	-	24	-
W.N. CENTRAL	762	239	20	6	13,703	18,135	1,463	407	171	23	51	179
Minn.	138	27	3	-	1,778	1,835	435	49	13	2	3	71
Iowa	54	30	-	3	973	1,253	23	25	5	2	14	14
Mo.	387	107	8	-	7,562	11,124	528	269	132	17	18	71
N. Dak.	8	1	2	-	46	47	75	1	3	1	2	1
S. Dak.	6	8	-	1	111	219	189	3	-	-	-	1
Nebr.	34	10	2	2	8	1,151	114	15	7	1	12	10
Kans.	135	56	5	-	3,225	2,506	99	45	11	-	2	11
S. ATLANTIC	6,452	811	69	36	95,304	112,388	767	1,617	623	65	113	303
Del.	79	31	6	-	1,102	1,681	26	151	132	1	16	122
Md.	757	97	11	-	9,775	11,357	145	245	24	5	20	63
D.C.	423	15	1	-	4,266	6,092	13	52	233	-	7	2
Va.	392	128	21	9	10,543	10,805	61	109	25	23	11	68
W. Va.	34	14	6	-	589	771	5	38	1	15	-	4
N.C.	436	104	20	-	15,811	22,827	66	279	61	-	21	22
S.C.	221	7	-	-	7,097	9,048	19	38	-	1	16	1
Ga.	842	98	2	-	28,700	26,994	107	179	58	-	5	2
Fla.	3,268	317	2	27	17,421	22,813	325	526	89	20	17	19
E.S. CENTRAL	860	250	12	-	28,976	36,289	186	821	1,442	2	42	45
Ky.	128	81	7	-	3,036	3,798	50	47	3	-	18	14
Tenn.	265	56	2	-	8,990	12,963	84	686	1,427	-	18	24
Ala.	313	68	2	-	9,695	10,512	29	85	11	1	6	7
Miss.	154	45	1	-	7,255	9,016	23	3	1	1	-	-
W.S. CENTRAL	2,566	570	36	5	34,102	40,955	1,242	1,271	86	98	14	87
Ark.	127	7	7	-	4,717	5,175	61	51	7	4	-	10
La.	466	41	4	1	9,888	9,765	154	120	39	2	2	5
Okla.	147	-	3	2	3,407	4,349	128	130	23	3	7	21
Tex.	1,826	522	22	2	16,090	21,666	899	970	17	89	5	51
MOUNTAIN	788	157	14	4	7,689	7,882	1,814	455	167	37	59	8
Mont.	14	4	1	1	67	68	57	26	26	-	9	-
Idaho	19	19	-	-	67	93	40	56	-	1	4	2
Wyo.	2	1	1	-	33	59	7	4	14	-	1	1
Colo.	264	54	7	1	2,868	2,313	513	74	59	19	10	-
N. Mex.	66	12	3	1	562	703	185	127	15	7	2	4
Ariz.	254	45	1	-	2,660	2,922	745	92	20	5	19	-
Utah	54	2	1	1	196	206	208	10	20	5	2	1
Nev.	115	20	-	-	1,236	1,518	59	66	13	-	12	-
PACIFIC	5,717	1,097	65	4	28,749	32,021	3,822	2,136	1,029	150	60	147
Wash.	314	-	1	-	2,364	2,895	479	218	89	7	8	7
Oreg.	161	-	-	-	1,090	1,297	233	184	50	8	-	-
Calif.	5,146	1,030	60	3	24,545	26,846	2,937	1,712	724	127	51	139
Alaska	11	9	4	-	449	497	35	10	2	1	-	-
Hawaii	85	58	-	1	301	486	138	12	164	7	1	1
Guam	-	2	-	-	48	12	5	1	-	6	-	1
P.R.	877	121	1	-	129	390	30	285	128	16	1	-
V.I.	2	-	-	-	67	267	2	6	-	-	-	-
Amer. Samoa	-	-	-	-	27	31	1	1	-	-	-	-
C.N.M.I.	-	-	-	-	51	48	1	-	-	-	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands
*Updated monthly; last update August 1, 1992.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending August 15, 1992, and August 17, 1991 (33rd Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1992	1992	Cum. 1992	1992	Cum. 1992	Cum. 1991	Cum. 1992	1992	Cum. 1992	1992	Cum. 1992	Cum. 1991	1992	Cum. 1992	Cum. 1991
UNITED STATES	564	87	1,661	4	103	8,259	1,470	17	1,779	62	1,218	1,524	1	126	1,079
NEW ENGLAND	31	-	51	1	8	66	91	1	12	1	102	214	-	6	4
Maine	-	-	2	1†	1	2	8	-	-	-	4	46	-	1	-
N.H.	3	-	15	-	-	-	5	-	3	1	28	17	-	-	1
Vt.	-	-	-	-	-	5	4	1	1	-	2	4	-	-	-
Mass.	17	-	11	-	3	32	38	-	2	-	45	127	-	-	2
R.I.	4	-	23	-	-	2	1	-	-	-	-	-	-	4	-
Conn.	7	-	-	-	4	25	35	-	6	-	23	20	-	1	1
MID. ATLANTIC	153	-	175	1	13	4,524	166	2	122	-	102	143	-	16	563
Upstate N.Y.	23	-	79	1§	4	397	81	2	52	-	30	81	-	11	537
N.Y. City	85	-	42	-	8	1,650	14	-	21	-	15	19	-	-	2
N.J.	24	-	49	-	1	1,021	25	-	9	-	17	11	-	2	2
Pa.	21	-	5	-	-	1,456	46	-	40	-	40	32	-	3	22
E.N. CENTRAL	35	-	23	-	14	79	225	7	237	17	116	299	-	7	176
Ohio	6	-	-	-	6	3	58	7	89	15	47	78	-	-	147
Ind.	9	-	20	-	-	2	35	-	7	2	19	50	-	-	2
Ill.	9	-	1	-	4	26	59	-	76	-	14	57	-	7	6
Mich.	9	-	2	-	2	39	57	-	57	-	8	24	-	-	20
Wis.	2	-	-	-	2	9	16	-	8	-	28	90	-	-	1
W.N. CENTRAL	29	-	6	-	8	40	68	-	60	5	107	114	-	4	16
Minn.	13	-	5	-	5	10	9	-	19	-	32	47	-	-	6
Iowa	2	-	-	-	3	15	7	-	10	-	3	13	-	-	5
Mo.	10	-	-	-	-	1	22	-	23	5	42	38	-	-	5
N. Dak.	-	-	-	-	-	-	1	-	2	-	11	2	-	-	-
S. Dak.	1	-	-	-	-	-	1	-	-	-	5	3	-	-	-
Nebr.	-	-	-	-	-	1	14	-	4	-	8	5	-	-	-
Kans.	3	-	1	-	-	13	14	-	2	-	6	6	-	4	-
S. ATLANTIC	108	-	118	-	11	446	272	2	681	1	97	154	-	15	7
Del.	5	-	3	-	-	21	2	-	4	-	3	-	-	-	-
Md.	28	-	9	-	7	174	26	-	60	-	16	38	-	6	1
D.C.	7	-	-	-	-	-	3	-	5	-	1	-	-	1	1
Va.	27	-	10	-	4	28	41	-	38	-	6	16	-	-	-
W. Va.	1	-	-	-	-	-	14	-	22	1	7	8	-	1	-
N.C.	8	-	25	-	-	39	62	-	181	-	21	22	-	-	2
S.C.	-	-	29	-	-	13	18	-	48	-	11	10	-	2	-
Ga.	5	-	-	-	-	14	40	-	56	-	8	28	-	-	-
Fla.	27	-	42	-	-	157	66	2	267	-	24	32	-	5	3
E.S. CENTRAL	13	-	445	1	18	2	92	1	45	1	20	47	-	1	100
Ky.	1	-	444	1†	2	1	28	-	-	-	-	-	-	-	-
Tenn.	8	-	-	-	-	1	28	-	14	-	5	16	-	1	100
Ala.	4	-	-	-	-	-	27	-	10	1	14	27	-	-	-
Miss.	-	-	1	-	16	-	9	1	21	-	1	4	-	-	-
W.S. CENTRAL	18	83	729	-	-	162	105	2	298	4	42	42	-	-	5
Ark.	-	-	-	-	-	5	10	-	6	1	11	4	-	-	1
La.	1	-	-	-	-	-	24	2	19	2	4	11	-	-	-
Okla.	5	-	11	-	-	-	13	-	15	1	27	21	-	-	-
Tex.	12	83	718	-	-	157	58	-	258	-	-	6	-	-	4
MOUNTAIN	20	1	13	-	8	968	74	-	102	4	226	163	-	5	7
Mont.	-	-	-	-	-	-	14	-	2	-	3	2	-	-	-
Idaho	1	-	-	-	-	401	8	-	3	3	27	23	-	1	-
Wyo.	-	-	1	-	-	3	2	-	-	-	-	3	-	-	-
Colo.	5	-	9	-	7	6	13	-	14	-	26	85	-	-	2
N. Mex.	3	1	1	-	1	98	8	N	N	1	54	17	-	-	1
Ariz.	8	-	2	-	-	312	16	-	58	-	91	8	-	2	-
Utah	2	-	-	-	-	129	4	-	18	-	24	23	-	1	-
Nev.	1	-	-	-	-	19	9	-	7	-	1	2	-	1	4
PACIFIC	157	3	101	1	23	1,972	377	2	222	29	406	348	1	72	201
Wash.	10	-	-	-	10	61	60	-	9	17	123	85	-	6	8
Oreg.	11	-	4	-	1	68	53	N	N	1	23	47	-	2	2
Calif.	128	2	56	-	3	1,818	253	2	194	11	241	163	1	43	182
Alaska	1	-	8	-	1	3	6	-	1	-	5	12	-	-	1
Hawaii	7	1	33	1†	8	22	5	-	18	-	14	41	-	21	8
Guam	1	U	10	U	-	-	-	U	8	U	-	-	U	1	-
P.R.	-	-	293	-	-	94	3	-	1	-	8	32	-	-	1
V.I.	-	-	-	-	-	2	-	-	17	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	24	-	-	-	-	6	-	-	-	-
C.N.M.I.	-	U	1	U	1	-	-	U	-	U	1	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.
N: Not notifiable U: Unavailable †International §Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending August 15, 1992, and August 17, 1991 (33rd Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992
UNITED STATES	21,320	26,347	156	13,823	13,994	97	213	249	5,067
NEW ENGLAND	426	695	10	253	366	1	22	7	464
Maine	2	-	-	17	27	-	-	-	-
N.H.	38	12	6	3	5	-	1	-	1
Vt.	1	1	-	4	4	-	-	-	18
Mass.	203	334	3	106	179	1	13	3	6
R.I.	21	37	1	34	33	-	-	2	-
Conn.	161	311	-	89	118	-	8	2	439
MID. ATLANTIC	3,211	4,698	19	3,211	3,270	-	55	18	1,543
Upstate N.Y.	207	427	8	231	319	-	7	6	847
N.Y. City	1,745	2,354	-	2,003	1,984	-	24	3	-
N.J.	408	802	-	577	536	-	16	4	485
Pa.	851	1,115	11	400	431	-	8	5	211
E.N. CENTRAL	3,142	3,025	41	1,392	1,419	1	22	22	87
Ohio	506	400	13	215	208	-	3	12	9
Ind.	170	102	9	104	118	-	1	4	12
Ill.	1,419	1,399	5	709	756	1	15	2	13
Mich.	629	770	14	309	271	-	2	1	9
Wis.	418	354	-	55	66	-	1	3	44
W.N. CENTRAL	770	459	26	328	331	40	5	19	818
Minn.	52	46	5	86	62	-	2	-	130
Iowa	32	40	5	23	49	-	1	-	138
Mo.	591	325	5	155	143	30	1	17	10
N. Dak.	1	1	1	2	6	-	-	-	111
S. Dak.	-	1	-	15	25	8	-	1	95
Nebr.	1	11	3	14	11	1	1	-	8
Kans.	93	35	7	33	35	1	-	1	326
S. ATLANTIC	5,918	7,868	17	2,553	2,676	4	15	68	1,130
Del.	137	98	3	25	17	-	-	4	137
Md.	428	626	2	194	249	1	3	11	333
D.C.	268	494	-	84	123	-	1	1	13
Va.	435	612	2	169	222	2	1	6	199
W. Va.	11	20	1	62	44	-	1	3	24
N.C.	1,530	1,237	3	324	357	1	-	30	18
S.C.	823	980	1	253	256	-	1	5	101
Ga.	1,195	1,929	3	565	531	-	-	6	235
Fla.	1,091	1,872	2	877	877	-	8	2	70
E.S. CENTRAL	2,694	2,931	1	918	933	5	3	41	124
Ky.	94	56	-	252	223	1	-	5	51
Tenn.	709	979	1	245	257	4	-	33	29
Ala.	1,006	1,097	-	252	257	-	-	3	44
Miss.	885	799	-	169	196	-	3	-	-
W.S. CENTRAL	3,826	4,625	2	1,478	1,638	22	7	63	493
Ark.	520	386	-	106	145	14	-	8	28
La.	1,606	1,612	-	108	140	-	1	-	6
Okla.	177	111	1	95	112	8	-	55	233
Tex.	1,523	2,516	1	1,169	1,241	-	6	-	226
MOUNTAIN	240	354	14	362	379	20	2	7	109
Mont.	7	6	1	-	6	12	-	3	14
Idaho	1	3	1	14	4	-	1	1	-
Wyo.	3	5	-	-	3	1	-	1	23
Colo.	34	57	4	30	35	3	1	-	11
N. Mex.	27	21	2	52	49	4	-	1	5
Ariz.	120	226	2	172	207	-	-	-	50
Utah	7	5	4	52	30	-	-	1	1
Nev.	41	31	-	42	45	-	-	-	5
PACIFIC	1,093	1,692	26	3,328	2,982	4	82	4	299
Wash.	49	119	-	194	186	2	4	-	-
Oreg.	27	51	1	82	69	-	-	1	2
Calif.	1,008	1,514	25	2,866	2,550	1	75	3	284
Alaska	4	4	-	34	48	1	-	-	13
Hawaii	5	4	-	152	129	-	3	-	-
Guam	2	1	-	34	6	-	3	-	-
P.R.	203	298	-	135	141	-	1	-	31
V.I.	43	76	-	3	2	-	-	-	-
Amer. Samoa	-	-	-	-	2	-	1	-	-
C.N.M.I.	5	3	-	38	8	-	1	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending August 15, 1992 (33rd Week)

Reporting Area	All Causes, By Age (Years)						P&I†
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	536	365	100	46	12	13	30
Boston, Mass.	163	98	40	16	4	5	12
Bridgeport, Conn.	32	28	3	1	-	-	1
Cambridge, Mass.	15	13	1	1	-	-	-
Fall River, Mass.	25	23	2	-	-	-	-
Hartford, Conn.	48	30	8	6	2	2	3
Lowell, Mass.	14	12	2	-	-	-	-
Lynn, Mass.	9	5	2	-	2	-	1
New Bedford, Mass.	29	19	9	1	-	-	2
New Haven, Conn.	38	22	7	7	-	2	2
Providence, R.I.	38	28	7	3	-	-	-
Somerville, Mass.	3	2	1	-	-	-	-
Springfield, Mass.	35	25	4	4	1	1	3
Waterbury, Conn.	27	19	4	1	3	-	1
Worcester, Mass.	60	41	10	6	-	3	5
MID. ATLANTIC	2,724	1,657	540	360	76	91	127
Albany, N.Y.	37	20	8	7	1	1	1
Allentown, Pa.	16	15	-	1	-	-	-
Buffalo, N.Y.	106	71	18	13	3	1	4
Camden, N.J.	45	23	13	2	4	3	3
Elizabeth, N.J.	U	U	U	U	U	U	U
Erie, Pa.§	29	17	8	1	3	-	-
Jersey City, N.J.	47	26	12	2	1	6	3
New York City, N.Y.	1,542	901	311	256	39	35	60
Newark, N.J.	57	31	12	12	2	-	3
Paterson, N.J.	32	17	9	5	-	1	5
Philadelphia, Pa.	395	225	86	38	14	32	14
Pittsburgh, Pa.§	85	63	10	6	4	2	6
Reading, Pa.	14	10	2	1	-	1	2
Rochester, N.Y.	112	89	14	5	2	2	15
Schenectady, N.Y.	15	12	3	-	-	-	-
Scranton, Pa.§	29	23	5	-	1	-	2
Syracuse, N.Y.	83	59	11	6	1	6	3
Trenton, N.J.	29	15	8	4	1	1	4
Utica, N.Y.	27	24	3	-	-	-	-
Yonkers, N.Y.	24	16	7	1	-	-	2
E.N. CENTRAL	1,812	1,177	336	157	90	52	102
Akron, Ohio	85	63	16	1	4	1	-
Canton, Ohio	29	22	4	2	1	-	2
Chicago, Ill.	265	111	50	48	50	6	13
Cincinnati, Ohio	98	68	20	5	5	-	8
Cleveland, Ohio	138	94	29	6	3	6	1
Columbus, Ohio	91	62	18	6	1	4	9
Dayton, Ohio	113	77	23	7	3	3	5
Detroit, Mich.	234	137	49	31	5	12	8
Evansville, Ind.	34	24	3	1	4	2	4
Fort Wayne, Ind.	50	41	4	3	1	1	5
Gary, Ind.	18	10	5	1	1	1	-
Grand Rapids, Mich.	43	32	7	1	1	2	4
Indianapolis, Ind.	166	111	26	18	3	8	13
Madison, Wis.	40	29	6	4	-	1	2
Milwaukee, Wis.	127	89	26	9	2	1	13
Peoria, Ill.	41	30	6	3	2	-	4
Rockford, Ill.	46	29	13	2	1	1	1
South Bend, Ind.	36	31	3	2	-	-	2
Toledo, Ohio	92	64	18	4	3	3	7
Youngstown, Ohio	66	53	10	3	-	-	1
W.N. CENTRAL	654	447	104	50	30	23	27
Des Moines, Iowa	47	31	5	5	3	3	1
Duluth, Minn.	34	21	9	2	2	-	1
Kansas City, Kans.	22	13	6	3	-	-	-
Kansas City, Mo.	88	56	18	6	5	3	7
Lincoln, Nebr.	U	U	U	U	U	U	U
Minneapolis, Minn.	140	110	16	9	1	4	8
Omaha, Nebr.	68	45	15	5	2	1	5
St. Louis, Mo.	149	102	19	12	7	9	1
St. Paul, Minn.	49	28	9	4	6	2	1
Wichita, Kans.	57	41	7	4	4	1	3

Reporting Area	All Causes, By Age (Years)						P&I†
	All Ages	≥65	45-64	25-44	1-24	<1	Total
S. ATLANTIC	1,200	726	246	146	55	25	51
Atlanta, Ga.	153	87	34	29	2	1	6
Baltimore, Md.	121	65	28	18	6	4	12
Charlotte, N.C.	90	61	17	7	5	-	2
Jacksonville, Fla.	122	80	21	14	4	3	2
Miami, Fla.	118	56	28	24	8	2	-
Norfolk, Va.	59	36	8	7	2	6	3
Richmond, Va.	81	47	18	9	6	1	2
Savannah, Ga.	45	32	9	1	3	-	4
St. Petersburg, Fla.	58	38	13	5	-	2	3
Tampa, Fla.	152	105	29	10	4	2	12
Washington, D.C.	183	106	37	22	15	3	5
Wilmington, Del.	18	13	4	-	-	1	-
E.S. CENTRAL	664	446	127	58	18	15	33
Birmingham, Ala.	123	72	20	20	4	7	3
Chattanooga, Tenn.	40	28	7	1	3	1	1
Knoxville, Tenn.	94	70	16	5	3	-	8
Lexington, Ky.	61	38	15	4	2	2	3
Memphis, Tenn.	144	104	26	11	3	-	10
Mobile, Ala.	37	27	7	1	1	1	4
Montgomery, Ala.	54	35	11	5	-	3	-
Nashville, Tenn.	111	72	25	11	2	1	4
W.S. CENTRAL	1,402	843	310	147	58	44	73
Austin, Tex.	69	39	13	13	3	1	3
Baton Rouge, La.	32	22	6	4	-	-	2
Corpus Christi, Tex.	41	30	8	1	1	1	1
Dallas, Tex.	171	100	39	21	8	3	2
El Paso, Tex.	123	71	32	12	4	4	6
Ft. Worth, Tex.	88	55	17	9	4	3	3
Houston, Tex.	341	166	85	47	19	24	30
Little Rock, Ark.	53	33	12	4	4	-	1
New Orleans, La.	149	101	28	14	4	2	-
San Antonio, Tex.	188	128	32	15	9	4	10
Shreveport, La.	51	32	13	4	2	-	5
Tulsa, Okla.	96	66	25	3	-	2	10
MOUNTAIN	735	455	151	77	32	20	48
Albuquerque, N.M.	75	49	17	8	-	1	3
Colo. Springs, Colo.	48	31	9	3	5	-	5
Denver, Colo.	105	55	28	16	5	1	11
Las Vegas, Nev.	98	57	27	10	4	-	8
Ogden, Utah	20	15	2	3	-	-	2
Phoenix, Ariz.	164	103	21	19	9	12	12
Pueblo, Colo.	25	18	5	-	2	-	2
Salt Lake City, Utah	86	50	19	8	7	2	5
Tucson, Ariz.	114	77	23	10	-	4	-
PACIFIC	1,789	1,147	338	189	70	37	97
Berkeley, Calif.	14	8	3	3	-	-	-
Fresno, Calif.	73	46	10	7	7	3	6
Glendale, Calif.	23	16	5	-	1	1	-
Honolulu, Hawaii	73	52	16	4	-	1	9
Long Beach, Calif.	76	47	16	9	1	3	4
Los Angeles, Calif.	530	328	88	74	21	12	19
Pasadena, Calif.	20	17	1	-	1	1	3
Portland, Oreg.	136	98	21	7	9	1	8
Sacramento, Calif.	149	100	29	11	5	4	9
San Diego, Calif.	120	73	28	11	5	2	17
San Francisco, Calif.	154	87	28	30	6	3	-
San Jose, Calif.	125	77	35	8	3	2	14
Santa Cruz, Calif.	22	16	4	2	-	-	2
Seattle, Wash.	137	92	24	14	6	1	2
Spokane, Wash.	59	40	13	2	3	1	3
Tacoma, Wash.	78	50	17	7	2	2	1
TOTAL	11,516¶	7,263	2,252	1,230	441	320	588

*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.

U: Unavailable

Physical Education and Dietary Patterns — Continued

National health objectives 1.8 and 1.9 are to increase to at least 50% the proportion of children and adolescents in grades 1–12 who participate in daily school PE and to increase to at least 50% the proportion of school PE class time that students spend being physically active (*5*). At every site, among students enrolled in PE class, at least half reported exercising or playing sports for more than 20 minutes during an average PE class. However, at only six of the 33 sites did at least 50% of the students report daily attendance in PE class.

National health objectives 2.5 and 2.6 are to reduce dietary fat intake among persons aged ≥2 years and to increase complex carbohydrate and fiber-containing foods in the diets of adults (*5*). The American Cancer Society (ACS) has developed two similar goals specifically for high school students: to increase to 35% the proportion who daily consume five or more servings of fruits and vegetables and to increase to 80% the proportion who daily eat no more than two servings of selected foods typically high in fat (*9*). None of the sites in this report have achieved the first ACS goal; only one site has achieved the second goal.

Specific strategies to meet the national health objectives and ACS goals include implementing state and school district policies requiring comprehensive school health education programs that include nutrition education and daily attendance in PE classes (*5*). To carry out these and other important strategies, coordinated efforts are needed from federal, state, and local education and health agencies; voluntary health organizations; families; media; community organizations; and youth themselves.

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Availability of Flow Cytometric Immunophenotyping of Lymphocytes to Hospital Patients — United States, 1990

The pathogenesis of disease caused by human immunodeficiency virus (HIV) is largely attributable to the decrease in T-lymphocytes bearing the CD4 cell-surface molecule (CD4+ T-lymphocytes) (*1*). The percentage of CD4+ T-lymphocytes among total lymphocytes and the percentages of other lymphocyte subpopulations (e.g., CD8+ T-lymphocytes) are generally measured by flow cytometric immunophenotyping (FCI) (also called immunophenotyping by flow cytometry [*2*], T-lymphocyte immunophenotyping [*3*], and fluorescence-activated cell sorting). FCI results are frequently used to guide the treatment of HIV-infected persons. To assess the availability of FCI to hospital patients, in 1990, the National Public Health and Hospital Institute (NPHHI), a private, nonprofit research institute, surveyed hospitals about their provision of FCI to patients. This report presents findings from the survey.

Since 1985, NPHHI has studied hospital care for HIV-infected patients by periodically surveying hospitals belonging to several national organizations (*4*).* A total of 1376 hospitals were surveyed regarding patient care provided in 1989, of which 822 (60%) responded. Of these respondents, 550 reported they had treated at least one patient for symptomatic HIV-related illness (HIV disease, including acquired immunodeficiency syndrome [AIDS]) during 1989. From these 550, 100 were randomly selected for the FCI survey. Telephone interviews were conducted with either the laboratory director or technical staff familiar with the hospital's use of FCI during 1990.

Of the 94 responding hospitals, 65 (69%) were private, 22 (23%) were nonfederal public, and seven (7%) were Veterans Affairs hospitals. Thirty-one (33%) were located in the Midwest, 26 (28%) in the South, 21 (22%) in the Northeast, and 16 (17%) in the West. The median number of hospital beds was 376, and a median of 17 (range: 1–1026) inpatients were treated for HIV disease in 1989. Nineteen (20%) of the 94 responding hospitals treated 4721 (80%) of the 5926 inpatients with HIV-related disease admitted to these hospitals.

Of the responding hospitals, 33 (35%) had performed FCI in their own laboratories; 57 (61%) had obtained FCI through outside laboratories. Three did not have requests for FCI, and one reported that FCI service was not available; each of these four treated three or fewer patients with HIV disease. Of the 33 hospitals that performed FCI in their own laboratories in 1990, 32 reported when they began FCI: five (16%) began during 1980–1983; 10 (31%), 1984–1987; and 17 (53%), 1988–1990.

The proportion of responding hospitals that performed FCI in their own laboratories in 1990 increased with the number of patients admitted to these hospitals for treatment of HIV disease in 1989. Of the eight hospitals that treated only one patient with HIV-disease, none performed FCI in their own laboratories. FCI was performed in-house at 12 (23%) of the 52 hospitals that reported treating two to 29 HIV-disease patients, 14 (54%) of the 26 hospitals with 30 to 199 HIV-disease patients, and seven (88%) of the eight hospitals with 200 or more HIV-disease patients. The 33 hospitals

*Hospitals participating in the 1989 U.S. Hospital AIDS/HIV Survey included members of the National Association of Public Hospitals, the Council of Teaching Hospitals of the Association of American Medical Colleges, the National Council of Community Hospitals, the National Rural Health Association, and the Catholic Health Association. NPHHI surveys have been supported by CDC, the Robert Wood Johnson Foundation, the Agency for Health Care Policy Research, and the American Foundation for AIDS Research.

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that performed FCI in-house treated 3794 (64%) of the 5926 total HIV-related disease inpatients in these hospitals.

Of the 57 hospitals that obtained FCI through outside laboratories, 41 (72%) used independent commercial laboratories, nine (16%) used laboratories at other hospitals, and seven (12%) used other (e.g., research, blood bank, or public health) laboratories.

The cost of FCI to the hospital and the amount charged to the patient varied with the number of component tests included in the FCI panel (including tests for cell-surface markers other than CD4 and CD8). Among the 47 hospitals that provided cost data, the median cost for FCI was $110 (range: $20–$297). Among the 39 that provided charge data, the median charge was $134 (range: $46–$570).

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Editorial Note: Enumeration of CD4+ T-lymphocytes by FCI is used in routine management of HIV-infected persons to monitor the severity of immunodeficiency caused by HIV and as a basis for decisions regarding antiretroviral therapy and prophylaxis for *Pneumocystis carinii* pneumonia (*5–7*). In addition, the Social Security Administration uses the CD4+ T-lymphocyte count as part of the criteria for determining disability in persons with HIV-related illness (*8*). A proposed revision of the CDC classification system for HIV infection in adults and adolescents would classify HIV infection on the basis of the CD4+ T-lymphocyte count (or alternatively the percentage of CD4+ T-lymphocytes among total lymphocytes) as well as on clinical conditions (*9*).

This survey indicates that FCI is widely available to hospitals providing care to HIV-infected patients, either through the hospital's own laboratory or an outside laboratory. Although most hospitals provided FCI through an outside laboratory, the proportion performing FCI in their own laboratory has been steadily increasing. This proportion has been greater among hospitals treating more patients with HIV disease, suggesting it will continue to increase as the number of patients with HIV disease increases. Although this survey did not examine the availability of FCI to outpatient facilities, the finding that FCI is widely available to hospitals suggests that FCI may also be available to other types of health-care facilities.

The NPHHI survey supplements surveys conducted by CDC. In a 1989 survey of 279 laboratories that reported performing FCI, most (90%) tested fewer than 200 samples weekly, suggesting that their equipment was not fully utilized and could test more samples (*3*). Of these laboratories, 60% were located in hospitals; 83% reported testing specimens collected from other hospitals, private physicians, or clinics. In 1991, a survey of 264 laboratories yielded similar results (*10*).

In the NPHHI survey, costs and charges for FCI varied widely among hospitals. Lower amounts in some hospitals reflected the use of abbreviated FCI panels. Full panels include reagents that identify all the lymphocytes (i.e., T-, B-, and NK-cells), distinguish between T-lymphocytes that are CD4+ or CD8+, and provide internal quality-control checks. CDC recommends full panels because they are necessary for maximum quality control and avoidance of errors (*2*). Technologies being developed may help reduce both the cost and the requirement for specially trained personnel for this essential test service.

The widespread and increasing availability of FCI shown in the NPHHI survey reflects the increasing role of CD4+ T-lymphocyte monitoring in care of HIV-infected

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patients, which is important for timely therapy to delay the onset of AIDS and thereby improve the quality of life for these patients.

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Lizard-Associated Salmonellosis — Utah

During June 1992, CDC identified a rare *Salmonella* serotype, *S. poano*, from a stool specimen from an infant. The specimen was sent from the Utah Division of Laboratory Services. This report summarizes the epidemiologic investigation of this case.

In April 1992, an 8-week-old infant was taken to a pediatric clinic because of bloody diarrhea, flatulence, and fever of 101 F (38.3 C). *S. poano* was isolated from a stool specimen. The infant was treated with an antibiotic for 7 days and symptoms resolved. Follow-up stool specimens were negative. The infant was partially breast fed and partially fed iron-enriched infant formula. No household members were symptomatic. The infant attended a child day care facility 3 days a week; no one else at the center had symptoms.

The only household pet at onset of illness was a python. One month before onset of illness, the family pet had been a 2-foot-long savannah monitor lizard (*Varanus exanthemapicus*), which the parents reported had had loose stools for the 8 months it was in their possession. In March, they returned the lizard to the pet store and traded it for the snake. Specimens obtained from the snake and its plastic cage did not yield *Salmonella*. However, *S. poano* was recovered from fecal specimens left on the cage carpet and stone water dish by the lizard nearly 3 months earlier.

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The infant had not had contact with either reptile; they were handled only by the father. Because of the height of the cage, the father had to climb in it to handle the lizard and clean the cage. He did this with bare feet, a potential means of spreading contamination in the home. Heat rocks from the cage were washed in the kitchen sink, and may also have been a source of household contamination.

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Editorial Note: *S. poano* was first isolated in 1968 from a snake in Ghana (*1*). Since then, only three animal isolates have been reported in the United States, all during 1991 from savannah monitor lizards (two from California and one from Maryland) (National Veterinary Services Laboratory, unpublished data, 1992).

Savannah monitor lizards are imported primarily from Ghana and Togo and sold as pets through wholesalers and retail pet shops. No quarantine or health inspections are required for their entry into the United States. Since 1990, more than 13,500 savannah monitor lizards have been imported annually (U.S. Fish and Wildlife Service, unpublished data, 1992).

Transmission of *Salmonella* from household pets, particularly birds and reptiles, to humans has been previously described (*2–4*). Survival of *Salmonella* for up to 30 months in animal feces has been documented (*5*), and as in this case, direct contact with the reptile does not appear to be necessary for transmission.

Infants are more likely than adults to develop symptomatic *Salmonella* infections from any source. Factors that may put infants at increased risk for salmonellosis following low-dose exposures include reduced gastric acidity and rapid emptying of gastric contents (*6*). In a previous report, two infants with *S. marina* infection acquired from pet iguanas were fed either powdered formula or iron-enriched formula and breast milk (*3*). Two case-control studies support the association between formula feeding and infant salmonellosis. In Guam, infants with salmonellosis were more likely to have been fed iron-enriched formula than control infants (*7*), and bottle-feeding was associated with infant salmonellosis in Arkansas (*8*).

Reptiles carry a wide variety of *Salmonella* serotypes, and fecal carriage rates may be as high as 84%–94% (*9*). Persons who handle or care for these animals should carefully wash any items that come in contact with the animal or its environment. Pet reptiles present a particular danger in homes with infants, elderly persons, or others at increased risk for *Salmonella* infections.

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