CENTERS FOR DISEASE CONTROL

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Progress in Chronic Disease Prevention

Alzheimer Disease – California, 1985–1987

In 1984, the California legislature established the Alzheimer Disease Program (ADP) in the California Department of Health Services (CDHS). Purposes of the ADP are to improve services for the diagnosis and treatment of dementias, support medical education about dementias, and promote research on Alzheimer disease (AD) and related disorders. In 1985, the ADP created six AD diagnostic and treatment centers in affiliation with medical schools and established additional centers in 1989.

Each treatment center collects uniform data on all suspected dementia* patients referred to the center and reports these data to a central registry at the Institute for Aging at the University of California, San Francisco. Sources of data are the initial diagnostic evaluation, periodic follow-up evaluations, and postmortem reports. Data entered in the registry include information from the patients' medical histories, clinical findings, and potential risk factors; medical and social support services used; types of care received; and social and demographic characteristics. Information has been collected on >1700 persons and is available for analysis on 1011 patients referred to the six original treatment centers from June 10, 1985, to December 31, 1987 (Table 1). These centers are located in five counties (Alameda, Los Angeles, Sacramento, San Diego, and San Francisco), which contain 50.5% of the California population >50 years of age.

Of the 439 patients with a diagnosis of AD only, 298 (67.9%) were women. Three hundred thirty-nine (77.2%) were white; 40 (9.1%), black; 33 (7.5%), Hispanic; nine (2.1%), Asian/Pacific Islander; three (0.7%), other races; and 15 (3.4%), unknown race. The ages of patients at onset of symptoms ranged from 45 to 92 years (mean: 70.3 years) (Table 2).

The 439 AD patients were referred to treatment centers from several sources, including family (289 [65.8%]), physicians (106 [24.1%]), social services and support groups (83 [18.9%]), special-care facilities (59 [13.4%]), friends (43 [9.8%]), and self (22 [5.0%]). The most common reasons for referral included evaluation of a memory problem (387 [88.2%]) or personality change (143 [32.6%]), desire for a second opinion about a previous diagnosis of AD or other dementia (201 [45.8%]), concern about patient agitation (160 [36.4%]), and difficulty with patient management (100 [22.8%]).

*Global cognitive impairment and a decline in intellectual function in a person with clear consciousness.

Alzheimer Disease — Continued

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TABLE 1. Final diagnoses of 1011 patients referred to six Alzheimer disease diagnostic and treatment centers — California, June 10, 1985–December 31, 1987

Diagnostic category	No.	(%)
Single diagnosis		
Alzheimer disease	439	(43.4)
Vascular dementia	63	(6.2)
Nondementia	33	(3.3)
Other diagnosis	30	(3.0)
Pseudodementia	15	(1.5)
Parkinson disease	10	(1.0)
Amnestic syndrome	7	(0.7)
Alcoholic dementia	4	(0.4)
Pick disease	4	(0.4)
Normal pressure hydrocephalus	4	(0.4)
Metabolic dementia	3	(0.3)
Space occupying lesion	1	(0.1)
Multiple diagnoses		
Including Alzheimer disease	242	(23.9)
Not including Alzheimer disease	89	(8.8)
Diagnosis deferred	**44**	**(4.4)**
No diagnosis given	**23**	**(2.3)**
All diagnoses	**1011**	**(100.0)**

TABLE 2. Age at symptom onset of 439 patients with a diagnosis of Alzheimer disease only, by sex — California, June 10, 1985–December 31, 1987

Age (yrs) at symptom onset	Men		Women	
	No.	(%)	No.	(%)
Unknown	5	(3.5)	10	(3.4)
45–49	2	(1.4)	3	(1.0)
50–54	6	(4.3)	3	(1.0)
55–59	19	(13.5)	17	(5.7)
60–64	21	(14.9)	35	(11.7)
65–69	22	(15.6)	56	(18.8)
70–74	24	(17.0)	70	(23.5)
75–79	28	(19.9)	58	(19.5)
80–84	12	(8.5)	33	(11.1)
85–92	2	(1.4)	13	(4.4)
Total	**141**	**(100.0)**	**298**	**(100.0)**

Alzheimer Disease — Continued

Editorial Note: Probable AD can be clinically diagnosed if there is typical insidious onset of dementia with progression and no other systemic or brain diseases to account for the progressive cognitive dysfunction. Diagnosis of definite AD requires histopathologic confirmation; characteristics are degeneration of specific nerve cells and presence of neuritic plaques and neurofibrillary tangles.

As the U.S. population ages, the public health impact of dementias is increasing in importance (*1*). An estimated 1.6 million persons suffer from severe dementias, and by the year 2000, at least 2.3 million persons are expected to be affected. An estimated 1 million to 5 million persons suffer mild to moderate dementias. Severe dementias usually require long-term care; in 1985, annual costs for care and related expenses were estimated at $24–$48 billion.

In response to the social, economic, and medical problems related to severe dementias, California and other states have developed statewide approaches that address the needs for training, research, improved services for diagnosis and treatment, public education, and long-term care (*2*). Some states have also established surveillance of dementias (*3*) to help plan service needs, examine temporal and geographic trends in the occurrence of these problems, and guide research efforts.

Efforts to maintain surveillance are constrained by at least two problems (*4*). First, because there are no known biological markers for AD, the most frequent dementia, a practical case definition has not been established. Diagnostic criteria have been developed by consensus; however, these criteria have not been defined in a manner usable by clinicians. Consequently, no data exist on the validity of AD diagnoses. Second, case ascertainment is difficult because diagnostic evaluation is typically done outside referral centers and other hospitals, so access to patient records is not centralized.

Characteristics of patients reported by the ADP may not be representative of all AD patients in California because the registry was not designed as a surveillance system for dementia. Rather, the ADP is designed to provide state-of-the-art diagnoses for those patients referred and should provide useful data for research on the course of these illnesses. Progress in dealing with dementias will depend on the development of more accurate diagnostic criteria (e.g., identifying biological markers for AD); application of appropriate treatment; education of caregivers and the public regarding the care of patients with dementia; and more adequate information on the social aspects of persons with dementia.

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Epidemiologic Notes and Reports

Legionnaires' Disease Outbreak Associated with a Grocery Store Mist Machine — Louisiana, 1989

On October 31, 1989, the Louisiana Department of Health and Hospitals received reports from two physicians of an outbreak of pneumonia among residents of Bogalusa (population 16,000) and the surrounding parish. An investigation confirmed 33 cases of Legionnaires' disease (LD) among persons hospitalized with pneumonia between October 10 and November 13. Patients ranged in age from 36 to 88 years (median: 64 years); 25 (76%) were female. *Legionella pneumophila* serogroup 1 (Lp1), monoclonal antibody subtype 1,2,5,6, was identified by direct fluorescent antibody tests of lung tissues from autopsies of two patients who died of pneumonia during the outbreak (*1,2*).

A case-control study of 28 cases and 56 controls, frequency matched by primary physician, age, and chronic-disease status, found that case-patients were no more likely than controls to live or travel within 200 meters of any identified cooling towers within the town in the 10 days before illness. However, case-patients were more likely to report shopping at one grocery store (grocery store A) in the 10 days before illness (25/27* vs. 28/54; odds ratio [OR]=11.6; 95% confidence interval [CI]=2.4–108.0). Among case-patients and controls who shopped at grocery store A, case-patients were more likely to spend >30 minutes in the store (OR=8.6; CI=1.5–86.3) and to select produce items located close to an ultrasonic mist machine (OR=7.4; CI=1.3–75.0). In follow-up interviews of the three case-patients who did not report shopping at grocery store A in the 10 days before illness, two reported visiting the store but were unsure if their visits occurred within 10 days of illness, and one reported shopping there 12 days before onset of illness. No cases occurred among employees (median age: 23.5 years) of grocery store A.

Lp1 subtype 1,2,5,6 was isolated from water in the reservoir of the mist machine. The machine was installed in the store during October 1988 and continuously generated an aerosol over one section of the produce display. The mist was generated by ultrasonic transducers located in the machine's reservoir. In early December, the machine was turned off and removed from grocery store A. Under controlled conditions at CDC, Lp1 was added to the reservoir of the machine and viable Lp1 in respirable droplets (<5 μm) was isolated from mist produced by the machine.

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Editorial Note: LD occurs primarily after inhalation of Lp1 contained in mists from aerosol-producing devices such as cooling towers, evaporative condensers, whirlpool baths, showers, and respiratory therapy equipment (*2–6*). Investigations of LD outbreaks can be challenging because of the potential exposure to many aerosol-producing sources during the disease's 2–10 day incubation period; these sources often contain *L. pneumophila* without being associated with disease (*7*).

Although the infectious dose of *L. pneumophila* for humans is unknown, one study suggests that disease can occur in susceptible persons exposed to one

*Fraction denominators exclude cases and controls who answered "don't know" to this question.

Legionnaires' Disease — Continued

colony-forming unit of *L. pneumophila* per 50 L of air (*2*). Susceptible persons include the elderly and persons with a history of smoking or with underlying health conditions, including chronic lung or renal disease, malignancy, diabetes mellitus, and use of immunosuppressive medications. Employees from grocery store A, who did not develop LD, may have been less susceptible than affected persons.

Proliferation of *Legionella*, presumably introduced through water supplies, occurs most readily in systems with reservoirs (e.g., cooling towers and hot water systems) that are relatively stagnant and have temperatures of 25–42 C (77–108 F) (*8*). Systems similar to the one used in grocery store A (commonly referred to as "foggers") account for <10% of produce misting systems used by retail food stores nationwide (Food and Drug Administration [FDA], unpublished data). These systems generate mists by ultrasonic transducers located in reservoirs containing municipal water. They differ from other misting systems used more commonly in grocery stores that generally create mists in intermittent cycles by passing water directly through spray heads. These latter systems may generate larger, less respirable droplets than those produced by ultrasonic machines. No evidence exists that the more commonly used systems pose a risk of transmitting legionellosis.

Data suggesting that use of humidifiers may be associated with risk of LD have been limited to case reports (*6,9*) and a study in which subclinical infection occurred in laboratory animals exposed to aerosols from a humidifier contaminated with *L. pneumophila* (*10*). This investigation provides further evidence that an ultrasonic humidifier contaminated with *Legionella* can transmit LD to humans. Although some ultrasonic humidifiers used in other settings appear similar in design to the machine associated with this outbreak, their role in sporadic cases or outbreaks of LD is unknown.

Further studies are needed to evaluate factors that influence colonization of *Legionella* in misting machines and humidifiers and to identify design features that affect the potential for transmitting disease. Studies are also needed to determine the lowest concentration of *L. pneumophila* necessary for generation of respirable droplets containing the bacteria. Until such information is available and prevention methods can be refined, ultrasonic mist machines and humidifiers should be drained and cleaned regularly, following manufacturers' latest recommendations. For ultrasonic mist machines used in produce sections of grocery stores, FDA has issued guidelines that specify weekly disassembly and cleaning, which includes use of a hypochlorite solution (at least 50 ppm). General guidelines on the cleaning and maintenance of humidifiers in other settings have been issued by the Consumer Product Safety Commission (*11*).

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Legionnaires' Disease — Continued

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Current Trends

Estimates of HIV Prevalence and Projected AIDS Cases: Summary of a Workshop, October 31–November 1, 1989

Currently about 1 million persons in the United States are infected with human immunodeficiency virus (HIV). The number of cases of acquired immunodeficiency syndrome (AIDS) will continue to increase over the next 4 years, with a projected 52,000–57,000 cases to be diagnosed in 1990. These estimates are based on AIDS case surveillance data, HIV seroprevalence data, and information provided by epidemiologists, statisticians, and mathematical modelers who attended a workshop on October 31–November 1, 1989, in Atlanta. More than 70 specialists from federal agencies, state and local health departments, academic centers, and voluntary organizations met to evaluate methods and data concerning HIV prevalence and incidence, AIDS case projections, the spectrum of HIV-related immunologic deficiency, and the impact of therapeutic interventions on AIDS incidence.* A summary of the conclusions from the workshop, together with current estimates of HIV prevalence and AIDS case projections, are summarized below.[†]

Prevalence and Incidence of HIV Infection

HIV Prevalence. Workshop participants assessed the 1986 Public Health Service (PHS) estimate of 1 million to 1.5 million HIV infections (*1*) and evaluated the range of current estimates derived from statistical models and from direct estimation based on HIV seroprevalence survey data. Based on analyses presented at the workshop, it is estimated that about 750,000 persons in the United States were infected with HIV at the beginning of 1986 (Table 1). This estimate is lower than the 1986 estimate, which was based on the more limited data available at that time. In 1989, an estimated 1 million living persons in the United States were infected with HIV (Table 1).

*Estimates were developed from workshop reports and may not be endorsed by all participants.
[†]Single copies of this document will be available until February 23, 1991, from the National AIDS Information Clearinghouse, P.O. Box 6003, Rockville, MD 20850; telephone (800) 458-5231. The full report and recommendations from the workshop will be published in a future issue of *MMWR Recommendations and Reports.*

HIV/AIDS — Continued

Estimates of current HIV prevalence derived from statistical models ranged from 650,000 to 1.4 million, after adjustments for previous deaths, underreporting of AIDS cases, and nonascertainment of HIV disease outside the AIDS surveillance definition.[§] Preliminary HIV seroprevalence survey data provided estimates most consistent with between 800,000 and 1.2 million HIV infections (*3*). Although based on independent data sources and subject to different biases, both methods provide estimates that overlap and center around the 1 million estimate.

Discussions at the workshop highlighted the importance of estimates obtained using back-calculation, a statistical method that estimates the number of prior HIV infections that would account for the AIDS cases that have subsequently occurred (*4,5*). Difficulties in the use of this method were also discussed. Current HIV prevalence estimates derived from back-calculation depend on the interpretation of the slowing in the rate of increase in reported AIDS cases that occurred in mid-1987, particularly among homosexual/bisexual men who were not users of intravenous (IV) drugs (*6*). Variations in the methods, assumptions, and data used by different statisticians make direct comparisons difficult and led to the wide range (650,000 to 1.4 million) in current HIV prevalence estimates derived from back-calculation.

HIV Incidence. The incidence of new HIV infections in the U.S. population is an indicator of the growth of the epidemic at a given time. Incidence can be either observed directly in groups that are repeatedly screened for HIV infection or estimated from serial prevalence measurements. Incidence estimates derived from HIV serosurveys based on blood specimens from newborn infants indicate that 1500–2000 HIV-infected infants (0.5 per 1000 births) were born in 1989 (Table 1). According to data from the U.S. Department of Defense, approximately 0.6–0.8 per 1000 active-duty personnel acquired HIV infection each year since 1986 (*7,8*).

[§]CDC estimates that 70%–90% of all HIV-related deaths in young adult men are reported through AIDS surveillance (*2*) and that 85% of all diagnosed AIDS cases are reported.

TABLE 1. Estimates of HIV prevalence* and annual incidence of new HIV infections — United States, 1986 and 1989

Category	January 1986	June 1989
Prevalence	≈750,000[†]	≈1 million[§¶]
Annual incidence		
Newborns	NA**	1,500–2,000[††]
Adults	NA	≥40,000[§§]

*Total current infections, excluding persons who have died.

[†]Based on unadjusted figures of 500,000–650,000 HIV infections from back-calculation models, adjusted to 650,000–900,000 for the effects of AIDS underreporting, HIV disease not meeting the AIDS case definition, and deaths before the time of the estimate.

[§]Based in part on unadjusted figures of 550,000 to 1.1 million HIV infections from back-calculation models, adjusted to 650,000 to 1.4 million (as in preceding footnote).

[¶]Based in part on the range of 800,000 to 1.2 million HIV infections most consistent with preliminary seroprevalence data from CDC's family of surveys.

**Not available.

[††]National seroprevalence of 1.5 per 1000 for childbearing women multiplied by approximately ⅓ (rate at which infected women transmit HIV perinatally to their infants) times the number of births (about 4 million).

[§§]Assumes that the observed HIV seroconversion rate in active-duty military personnel is equalled or exceeded in the general population aged 15–39 years.

HIV/AIDS – Continued

Extrapolation from the lower estimate (0.6 per 1000) suggests that at least 40,000 new HIV infections occurred in adults and adolescents in the United States during 1989, assuming that the risk of new infection is at least as high for young adult civilians as for military personnel (Table 1). This is a plausible assumption because the military actively discourages homosexual/bisexual men and IV-drug users (IVDUs) from applying for service and has policies against homosexual and drug-using behavior among military personnel.

Spectrum of Immunologic Deficiency in HIV-Infected Persons

Assessments of immune status in a population infected with HIV help quantify morbidity, estimate the future burden of HIV disease, and estimate the potential need for antiretroviral and other therapies. Because the primary target of HIV is the T-helper lymphocyte (CD4+ cell), monitoring the CD4+ cell counts of persons with HIV infection provides a measure of HIV-related immune dysfunction. Workshop participants reviewed data from immunologic studies in active-duty military personnel with HIV infection (*9*; National Naval Medical Center, unpublished data) and in

(Continued on page 117)

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

Disease	7th Week Ending			Cumulative, 7th Week Ending		
	Feb. 17, 1990	Feb. 18, 1989	Median 1985-1989	Feb. 17, 1990	Feb. 18, 1989	Median 1985-1989
Acquired Immunodeficiency Syndrome (AIDS)	753	U*	205	6,169	4,220	2,051
Aseptic meningitis	61	75	75	563	548	548
Encephalitis: Primary (arthropod-borne & unspec)	12	14	17	80	80	104
Post-infectious	4	1	2	17	8	8
Gonorrhea: Civilian	12,267	13,872	13,872	88,906	89,680	109,349
Military	144	242	405	1,372	1,545	1,962
Hepatitis: Type A	436	796	479	3,200	4,263	3,020
Type B	320	419	453	2,196	2,482	2,942
Non A, Non B	32	46	46	232	307	366
Unspecified	27	38	68	211	283	454
Legionellosis	19	18	16	146	119	101
Leprosy	4	6	4	18	20	29
Malaria	14	16	16	121	131	82
Measles: Total†	200	65	49	1,152	467	204
Indigenous	179	56	46	929	432	192
Imported	21	9	2	223	35	33
Meningococcal infections	51	101	65	373	398	398
Mumps	71	147	97	626	726	553
Pertussis	71	28	35	355	278	237
Rubella (German measles)	4	10	4	41	30	29
Syphilis (Primary & Secondary): Civilian	743	676	606	5,521	4,995	4,416
Military	12	4	4	78	42	27
Toxic Shock syndrome	13	9	7	54	37	37
Tuberculosis	389	352	352	2,303	2,132	2,132
Tularemia	1	1	1	5	9	10
Typhoid Fever	7	5	4	40	50	33
Typhus fever, tick-borne (RMSF)	1	-	1	12	16	8
Rabies, animal	46	73	83	358	487	487

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1990		Cum. 1990
Anthrax	-	Leptospirosis (Calif. 1, Hawaii 1)	5
Botulism: Foodborne (Calif. 1)	1	Plague	-
Infant	3	Poliomyelitis, Paralytic,§	-
Other	1	Psittacosis (Ohio 2, Md. 1)	25
Brucellosis (La.1, Calif. 1)	7	Rabies, human	-
Cholera	-	Tetanus (Tenn. 1)	6
Congenital rubella syndrome	-	Trichinosis (Upstate N.Y.1, N.C.1)	6
Congenital syphilis, ages < 1 year	-		
Diphtheria	-		

*Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.
†Twelve of the 200 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.
§No cases of suspected poliomyelitis have been reported in 1990; none of 13 suspected cases in 1989 have been confirmed to date. Nine of 14 suspected cases in 1988 were confirmed and all were vaccine-associated.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending February 17, 1990 and February 18, 1989 (7th 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. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	6,169	563	80	17	88,906	89,680	3,200	2,196	232	211	146	18
NEW ENGLAND	287	36	5	-	2,706	2,537	57	135	4	14	5	-
Maine	9	1	-	-	35	36	-	10	-	1	-	-
N.H.	23	1	-	-	26	30	1	9	-	1	-	-
Vt.	-	2	-	-	9	11	1	5	2	-	1	-
Mass.	163	13	1	-	1,014	1,087	41	98	2	12	2	-
R.I.	7	16	-	-	135	229	6	11	-	-	2	-
Conn.	85	3	4	-	1,487	1,144	8	2	-	-	-	-
MID. ATLANTIC	2,446	103	2	-	10,157	14,833	542	325	37	20	40	5
Upstate N.Y.	279	37	2	-	1,990	2,100	116	94	5	1	18	-
N.Y. City	1,532	8	-	-	4,806	6,550	36	79	5	12	2	3
N.J.	424	-	-	-	1,940	1,764	57	40	14	-	8	2
Pa.	211	58	-	-	1,421	4,419	333	112	13	7	12	-
E.N. CENTRAL	439	98	11	4	18,571	15,905	185	305	16	16	42	-
Ohio	90	36	2	2	6,075	3,946	27	66	6	2	17	-
Ind.	39	20	1	2	1,434	782	28	99	2	4	7	-
Ill.	197	5	3	-	5,652	5,001	38	8	1	3	-	-
Mich.	86	36	4	-	4,694	4,753	77	85	7	7	12	-
Wis.	27	1	1	-	716	1,423	15	47	-	-	6	-
W.N. CENTRAL	160	26	5	-	5,199	3,783	152	88	6	2	6	-
Minn.	15	-	2	-	597	342	15	5	1	-	-	-
Iowa	6	2	1	-	453	316	39	13	1	1	1	-
Mo.	106	12	-	-	2,900	2,342	76	59	-	-	5	-
N. Dak.	-	-	-	-	21	19	1	-	-	-	-	-
S. Dak.	1	1	1	-	34	37	5	1	1	-	-	-
Nebr.	16	7	1	-	212	280	8	6	1	-	-	-
Kans.	16	4	-	-	982	447	8	4	2	1	-	-
S. ATLANTIC	981	111	27	3	25,399	24,284	375	447	38	19	19	-
Del.	22	3	1	-	329	355	20	6	1	-	2	-
Md.	191	26	3	-	2,697	1,716	187	76	5	1	8	-
D.C.	51	1	-	-	365	1,704	3	3	2	-	-	-
Va.	180	26	10	-	2,151	2,303	15	31	5	12	2	-
W. Va.	15	1	1	-	179	210	4	16	-	-	-	-
N.C.	56	11	7	-	4,738	3,728	63	134	19	-	3	-
S.C.	53	2	-	-	2,356	2,557	10	92	3	2	2	-
Ga.	157	5	3	-	6,115	4,546	32	46	1	1	2	-
Fla.	256	36	2	3	6,469	7,165	41	43	2	3	-	-
E.S. CENTRAL	91	36	6	-	7,426	7,359	49	175	19	2	13	-
Ky.	23	10	-	-	798	672	14	42	7	2	3	-
Tenn.	28	4	3	-	2,099	2,455	12	98	8	-	5	-
Ala.	22	16	3	-	2,865	2,135	23	35	4	-	5	-
Miss.	18	6	-	-	1,664	2,097	-	-	-	-	-	-
W.S. CENTRAL	509	16	-	1	8,039	9,299	226	98	4	20	8	6
Ark.	31	1	-	-	1,103	1,029	61	8	1	-	-	-
La.	112	2	-	-	1,606	1,647	11	24	-	-	2	-
Okla.	27	3	-	1	762	967	71	23	2	1	6	-
Tex.	339	10	-	-	4,568	5,656	83	43	1	19	-	6
MOUNTAIN	176	24	3	-	1,552	1,764	399	160	16	24	7	-
Mont.	3	1	-	-	18	31	15	13	1	1	-	-
Idaho	6	-	-	-	12	32	6	12	4	-	-	-
Wyo.	-	1	1	-	19	19	13	3	-	-	-	-
Colo.	63	5	-	-	343	298	23	25	3	11	-	-
N. Mex.	3	3	-	-	151	150	34	14	-	-	-	-
Ariz.	66	6	2	-	666	656	245	43	7	6	3	-
Utah	15	3	-	-	60	74	22	8	-	2	-	-
Nev.	20	5	-	-	283	504	41	42	1	4	4	-
PACIFIC	1,080	113	21	9	9,857	9,916	1,215	463	92	94	6	7
Wash.	81	-	1	1	951	899	185	64	16	3	-	1
Oreg.	16	-	-	-	376	410	132	51	7	3	-	-
Calif.	950	102	19	7	8,319	8,404	839	330	68	87	6	3
Alaska	7	2	-	-	173	157	26	5	1	-	-	-
Hawaii	26	9	1	1	38	46	33	13	-	1	-	3
Guam	1	-	-	-	19	25	2	1	-	3	-	-
P.R.	312	16	4	-	-	133	7	8	-	-	-	-
V.I.	3	-	-	-	59	76	-	1	-	-	-	-
Amer. Samoa	-	-	-	-	-	8	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	17	-	-	-	-	-	-

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 February 17, 1990 and February 18, 1989 (7th Week)

Reporting Area	Malaria	Measles (Rubeola) Indigenous		Measles Imported*		Measles Total	Meningococcal Infections	Mumps		Pertussis			Rubella		
	Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	Cum. 1990	1990	Cum. 1990	1990	Cum. 1990	Cum. 1989	1990	Cum. 1990	Cum. 1989
UNITED STATES	121	179	929	21	223	467	373	71	626	71	355	278	4	41	30
NEW ENGLAND	19	-	5	-	6	4	27	-	4	4	58	12	-	1	-
Maine	-	-	-	-	-	-	4	-	-	-	1	4	-	-	-
N.H.	2	-	-	-	6	-	-	-	1	-	6	5	-	-	-
Vt.	3	-	-	-	-	1	3	-	1	-	1	1	-	-	-
Mass.	10	-	-	-	-	3	15	-	2	4	47	-	-	-	-
R.I.	1	-	-	-	-	-	-	-	-	-	-	2	-	1	-
Conn.	3	-	5	-	-	-	5	-	-	-	3	-	-	-	-
MID. ATLANTIC	20	88	113	7	67	35	57	5	43	34	95	24	-	-	1
Upstate N.Y.	3	83	85	5†§	57	-	19	4	17	32	84	6	-	-	1
N.Y. City	9	3	8	2†	4	15	3	-	-	-	-	-	-	-	-
N.J.	3	-	-	-	-	19	12	-	7	-	2	17	-	-	-
Pa.	5	2	20	-	6	1	23	1	19	2	9	1	-	-	-
E.N. CENTRAL	7	35	500	5	116	46	53	1	53	4	68	31	-	5	2
Ohio	2	-	45	-	-	45	17	-	12	-	19	1	-	-	-
Ind.	-	31	34	-	-	-	7	-	4	1	27	1	-	-	-
Ill.	2	-	166	-	-	-	13	-	9	-	4	10	-	5	1
Mich.	2	4	37	5§	116	-	11	1	20	2	10	4	-	-	-
Wis.	1	-	218	-	-	1	5	-	8	1	8	15	-	-	1
W.N. CENTRAL	1	1	20	-	-	188	15	2	20	2	4	7	-	-	1
Minn.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Iowa	-	1	20	-	-	-	1	1	4	1	1	5	-	-	-
Mo.	1	-	-	-	-	187	7	-	1	-	1	2	-	-	1
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S. Dak.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Nebr.	-	-	-	-	-	-	1	-	1	-	1	-	-	-	-
Kans.	-	-	-	-	-	1	3	1	14	1	1	-	-	-	-
S. ATLANTIC	27	29	52	6	20	11	73	35	231	5	41	17	-	-	-
Del.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Md.	5	1	8	-	11	4	9	13	130	-	15	1	-	-	-
D.C.	4	-	-	-	1	2	-	-	4	-	1	-	-	-	-
Va.	6	-	3	-	2	-	9	-	9	2	4	1	-	-	-
W. Va.	-	-	-	-	-	-	2	3	11	-	5	1	-	-	-
N.C.	3	3	3	-	-	5	12	3	22	-	5	10	-	-	-
S.C.	-	-	-	-	-	-	6	-	9	-	-	-	-	-	-
Ga.	4	-	1	-	-	-	17	9	20	3	7	1	-	-	-
Fla.	5	25	37	6†	6	-	18	7	26	-	3	3	-	-	-
E.S. CENTRAL	3	-	15	-	-	1	22	1	23	2	13	11	-	-	-
Ky.	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-
Tenn.	2	-	10	-	-	-	9	1	7	1	3	8	-	-	-
Ala.	1	-	-	-	-	1	6	-	3	1	10	2	-	-	-
Miss.	-	-	5	-	-	-	-	N	N	-	-	1	-	-	-
W.S. CENTRAL	-	19	37	3	5	16	26	13	148	-	6	3	-	-	5
Ark.	-	-	-	-	-	-	3	4	26	-	-	1	-	-	-
La.	-	-	-	-	-	1	7	1	31	-	1	-	-	-	-
Okla.	-	-	3	-	-	-	6	-	61	-	5	2	-	-	-
Tex.	-	19	34	3†	5	15	10	8	30	-	-	-	-	-	5
MOUNTAIN	2	7	14	-	1	15	5	1	32	16	39	133	-	-	1
Mont.	-	-	-	-	-	13	3	-	-	-	-	-	-	-	-
Idaho	1	-	-	-	-	1	-	-	16	-	2	6	-	-	-
Wyo.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Colo.	-	-	1	-	1	-	1	1	4	15	28	10	-	-	-
N. Mex.	-	1	1	-	-	-	-	N	N	-	6	1	-	-	-
Ariz.	1	6	12	-	-	1	-	-	7	1	3	114	-	-	-
Utah	-	-	-	-	-	-	-	-	2	-	-	1	-	-	-
Nev.	-	-	-	-	-	-	1	-	1	-	-	1	-	-	1
PACIFIC	42	-	173	-	8	151	95	13	72	4	31	40	4	35	20
Wash.	2	-	-	-	6	-	7	3	8	1	4	2	-	-	-
Oreg.	2	-	-	-	-	-	8	N	N	-	2	-	-	-	-
Calif.	37	-	173	-	2	147	78	10	63	3	22	37	4	31	20
Alaska	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Hawaii	1	-	-	-	-	4	-	-	1	-	3	1	-	4	-
Guam	1	U	-	U	-	-	-	U	-	U	-	1	U	-	-
P.R.	-	19	19	-	-	70	3	-	2	-	-	-	-	-	-
V.I.	-	U	-	U	-	-	-	U	1	U	-	-	U	-	-
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 February 17, 1990 and February 18, 1989 (7th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1989	Cum. 1990	Cum. 1990	Cum. 1990	Cum. 1990
UNITED STATES	5,521	4,995	54	2,303	2,132	5	40	12	358
NEW ENGLAND	244	218	3	33	45	-	-	-	-
Maine	1	-	-	-	1	-	-	-	-
N.H.	23	-	-	1	4	-	-	-	-
Vt.	-	-	-	1	1	-	-	-	-
Mass.	87	81	2	13	13	-	-	-	-
R.I.	1	6	-	7	9	-	-	-	-
Conn.	132	131	1	11	17	-	-	-	-
MID. ATLANTIC	1,027	993	7	583	517	1	11	2	112
Upstate N.Y.	48	67	3	17	45	-	6	-	3
N.Y. City	763	356	1	417	355	-	1	-	-
N.J.	176	197	-	69	52	1	4	2	36
Pa.	40	373	3	80	65	-	-	-	73
E.N. CENTRAL	345	185	13	269	237	-	5	1	5
Ohio	62	7	5	24	56	-	2	-	-
Ind.	4	5	1	14	6	-	-	-	-
Ill.	152	96	-	122	100	-	2	-	2
Mich.	92	70	7	96	66	-	1	1	-
Wis.	35	7	-	13	9	-	-	-	3
W.N. CENTRAL	48	46	6	58	59	2	-	1	44
Minn.	13	3	-	13	13	-	-	-	29
Iowa	5	10	-	6	8	-	-	-	-
Mo.	24	24	3	20	15	2	-	1	-
N. Dak.	1	-	-	3	4	-	-	-	3
S. Dak.	-	-	-	4	6	-	-	-	8
Nebr.	2	9	2	7	2	-	-	-	-
Kans.	3	-	1	5	11	-	-	-	4
S. ATLANTIC	2,036	1,832	-	361	403	1	4	3	96
Del.	30	20	-	5	4	-	-	-	2
Md.	157	109	-	36	27	-	2	-	35
D.C.	32	118	-	5	26	-	-	-	-
Va.	83	82	-	24	50	-	-	-	20
W. Va.	2	3	-	6	14	-	-	-	1
N.C.	227	107	-	53	36	1	-	2	1
S.C.	131	102	-	62	53	-	-	1	14
Ga.	536	406	-	45	51	-	1	-	23
Fla.	838	885	-	125	142	-	1	-	-
E.S. CENTRAL	439	304	4	152	156	-	-	1	12
Ky.	12	7	-	62	44	-	-	-	4
Tenn.	135	93	2	28	16	-	-	1	-
Ala.	148	127	2	54	70	-	-	-	8
Miss.	144	77	-	8	26	-	-	-	-
W.S. CENTRAL	736	659	2	263	202	-	1	3	45
Ark.	37	58	-	35	24	-	-	-	3
La.	284	127	-	32	32	-	-	-	-
Okla.	29	10	2	15	8	-	-	3	11
Tex.	386	464	-	181	138	-	1	-	31
MOUNTAIN	94	83	4	36	54	1	2	-	11
Mont.	-	-	-	-	-	-	-	-	4
Idaho	1	-	1	-	1	-	-	-	-
Wyo.	-	-	1	-	-	-	-	-	5
Colo.	4	4	-	-	-	-	-	-	-
N. Mex.	7	1	1	14	8	1	-	-	1
Ariz.	53	27	1	11	34	-	2	-	-
Utah	1	5	-	-	-	-	-	-	-
Nev.	28	46	-	11	11	-	-	-	1
PACIFIC	552	675	15	548	459	-	17	1	33
Wash.	4	42	1	30	24	-	-	-	-
Oreg.	9	34	-	16	14	-	-	-	-
Calif.	533	595	13	477	398	-	16	1	24
Alaska	2	-	-	3	4	-	-	-	9
Hawaii	4	4	1	22	19	-	1	-	-
Guam	-	3	-	6	9	-	-	-	-
P.R.	-	53	-	1	16	-	-	-	12
V.I.	-	1	-	1	1	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	1	-	-	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending February 17, 1990 (7th Week)

Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1	Total
NEW ENGLAND	692	503	103	46	13	27	60
Boston, Mass.	191	110	46	18	4	13	22
Bridgeport, Conn.	42	28	8	2	2	2	-
Cambridge, Mass.	26	20	3	2	1	-	1
Fall River, Mass.	27	24	3	-	-	-	-
Hartford, Conn.	77	62	2	8	3	2	6
Lowell, Mass.	28	24	1	1	-	2	2
Lynn, Mass.	15	12	1	1	-	1	3
New Bedford, Mass.	34	26	6	2	-	-	1
New Haven, Conn.	33	22	8	2	-	1	3
Providence, R.I.	51	34	8	5	2	2	3
Somerville, Mass.	9	7	-	2	-	-	2
Springfield, Mass.	59	50	7	-	-	2	11
Waterbury, Conn.	32	24	4	2	1	1	6
Worcester, Mass.	68	60	6	1	-	1	-
MID. ATLANTIC	2,725	1,813	476	302	76	57	194
Albany, N.Y.	47	32	4	6	2	3	1
Allentown, Pa.	21	16	4	1	-	-	-
Buffalo, N.Y.	122	87	24	4	4	3	8
Camden, N.J.	43	29	5	4	2	3	-
Elizabeth, N.J.	28	21	3	3	1	-	4
Erie, Pa.†	47	38	4	5	-	-	9
Jersey City, N.J.§	69	46	13	8	1	1	5
N.Y. City, N.Y.	1,447	924	264	196	36	27	97
Newark, N.J.	82	40	16	15	6	4	7
Paterson, N.J.	29	15	4	4	3	3	-
Philadelphia, Pa.	293	190	59	27	11	6	17
Pittsburgh, Pa.†	81	60	14	3	2	2	5
Reading, Pa.	37	25	7	4	1	-	7
Rochester, N.Y.	108	85	14	5	3	1	13
Schenectady, N.Y.	27	23	1	3	-	-	-
Scranton, Pa.†	41	30	9	-	1	1	6
Syracuse, N.Y.	109	85	17	4	1	2	6
Trenton, N.J.	42	31	4	5	1	1	4
Utica, N.Y.	28	18	6	4	-	-	2
Yonkers, N.Y.	24	18	4	1	1	-	3
E.N. CENTRAL	2,411	1,641	484	159	48	79	161
Akron, Ohio	64	48	8	5	1	2	4
Canton, Ohio	58	48	7	1	1	1	8
Chicago, Ill.§	564	362	125	45	10	22	16
Cincinnati, Ohio	112	63	30	8	5	6	9
Cleveland, Ohio	186	110	46	11	9	10	8
Columbus, Ohio	174	122	34	10	5	3	12
Dayton, Ohio	131	85	34	6	3	3	15
Detroit, Mich.	221	158	34	16	5	8	10
Evansville, Ind.	60	35	17	6	-	2	7
Fort Wayne, Ind.	56	41	11	2	-	2	10
Gary, Ind.§	16	9	4	3	-	-	-
Grand Rapids, Mich.	75	54	15	4	-	2	14
Indianapolis, Ind.	186	132	32	12	3	7	13
Madison, Wis.	40	28	6	5	-	1	2
Milwaukee, Wis.	151	108	28	11	1	3	5
Peoria, Ill.	45	33	9	-	1	2	4
Rockford, Ill.	39	30	7	2	-	-	9
South Bend, Ind.	52	40	6	4	1	1	2
Toledo, Ohio	102	66	24	8	2	2	9
Youngstown, Ohio	79	69	7	-	1	2	4
W.N. CENTRAL	847	630	123	52	18	24	83
Des Moines, Iowa	78	56	17	2	-	3	5
Duluth, Minn.	29	19	9	1	-	-	1
Kansas City, Kans.	28	21	2	4	-	1	-
Kansas City, Mo.	133	102	19	9	1	2	15
Lincoln, Nebr.	34	26	6	2	-	-	5
Minneapolis, Minn.	176	136	18	14	4	4	15
Omaha, Nebr.	82	62	13	6	-	1	11
St. Louis, Mo.	161	118	19	10	10	4	26
St. Paul, Minn.	72	53	11	2	1	5	3
Wichita, Kans.	54	37	9	2	2	4	2
S. ATLANTIC	1,267	774	260	140	42	46	98
Atlanta, Ga.	164	99	42	16	4	3	11
Baltimore, Md.	160	97	37	18	5	3	17
Charlotte, N.C.	98	57	16	14	4	7	13
Jacksonville, Fla.	116	71	25	10	8	2	9
Miami, Fla.	137	66	34	28	5	3	3
Norfolk, Va.	57	36	6	6	2	7	6
Richmond, Va.	109	68	27	10	3	1	14
Savannah, Ga.	58	39	13	4	-	2	14
St. Petersburg, Fla.	76	64	3	4	3	2	2
Tampa, Fla.	82	57	15	4	3	3	5
Washington, D.C.§	185	98	41	24	5	13	4
Wilmington, Del.	25	22	1	2	-	-	-
E.S. CENTRAL	981	656	195	72	22	36	75
Birmingham, Ala.	142	84	33	15	5	5	4
Chattanooga, Tenn.	59	41	11	6	1	-	5
Knoxville, Tenn.	103	64	24	8	5	2	11
Louisville, Ky.	175	131	27	7	3	7	9
Memphis, Tenn.	247	173	44	13	4	13	27
Mobile, Ala.	43	25	11	2	2	3	2
Montgomery, Ala.§	56	46	7	2	1	-	3
Nashville, Tenn.	156	92	38	19	1	6	14
W.S. CENTRAL	2,005	1,300	400	190	70	45	141
Austin, Tex.	83	55	14	9	3	2	10
Baton Rouge, La.	48	30	11	5	2	-	3
Corpus Christi, Tex.§	72	53	14	4	-	1	9
Dallas, Tex.	210	127	38	31	8	6	11
El Paso, Tex.	81	58	13	6	2	2	6
Fort Worth, Tex	112	80	21	4	6	1	12
Houston, Tex.§	734	436	169	89	24	16	18
Little Rock, Ark.	66	37	17	8	3	1	12
New Orleans, La.	148	97	29	14	3	5	-
San Antonio, Tex.	205	150	33	8	9	5	24
Shreveport, La.	122	90	19	3	5	5	20
Tulsa, Okla.	124	87	22	9	5	1	16
MOUNTAIN	776	523	138	69	26	20	57
Albuquerque, N. Mex.	85	50	13	6	13	3	5
Colo. Springs, Colo.	39	23	9	3	2	2	4
Denver, Colo.	130	87	26	15	-	2	3
Las Vegas, Nev.	131	89	28	10	2	2	17
Ogden, Utah	38	23	9	4	1	1	2
Phoenix, Ariz.	169	119	23	16	5	6	14
Pueblo, Colo.	27	22	3	2	-	-	1
Salt Lake City, Utah	36	23	7	3	1	2	1
Tucson, Ariz.	121	87	20	10	2	2	10
PACIFIC	2,165	1,475	400	182	57	41	157
Berkeley, Calif.	16	11	3	-	1	1	-
Fresno, Calif.	78	50	17	5	3	3	4
Glendale, Calif.	32	28	3	1	-	-	4
Honolulu, Hawaii§	70	49	16	4	-	1	7
Long Beach, Calif.	76	51	12	5	6	2	12
Los Angeles Calif.	649	401	140	68	20	10	31
Oakland, Calif.	76	48	16	9	1	2	1
Pasadena, Calif.	42	37	3	1	-	1	5
Portland, Oreg.	156	122	19	6	8	1	11
Sacramento, Calif.	152	101	32	12	3	4	17
San Diego, Calif.	184	122	37	16	7	2	28
San Francisco, Calif.	169	113	26	25	4	1	9
San Jose, Calif.	189	141	30	10	3	5	15
Seattle, Wash.	172	120	31	16	1	4	4
Spokane, Wash.	57	44	7	2	-	4	6
Tacoma, Wash.	47	37	8	2	-	-	3
TOTAL	13,869††	9,315	2,579	1,212	372	375	1,026

*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/AIDS — Continued

cohorts of homosexual/bisexual men (*10,11*). These studies suggest that by 1989 approximately 17%–19% of HIV-infected persons evaluated between 1985 and 1989 had <200 CD4+ cells/mm^3. An additional 41%–45% had between 200 and 500 CD4+ cells/mm^3. Thus, 58%–64% of persons with HIV infection may have CD4+ cell counts of <500/mm^3.

AIDS Case Projections

Participants concluded that AIDS cases in the United States will continue to increase through 1993 in each of the current principal transmission categories (i.e., homosexual/bisexual men, IVDUs, persons infected through heterosexual transmission, and children infected perinatally). An estimated 37,500 cases diagnosed from October 1988 through September 1989 eventually will be reported, a 14% increase over the corresponding count for October 1987 through September 1988 (*6*). Between 52,000 and 57,000 cases of AIDS will be diagnosed during 1990, and the annual count will increase to 61,000–98,000 cases diagnosed during 1993 (Table 2). These projections include an adjustment for the estimate that about 85% of diagnosed AIDS cases are eventually reported.

Effects of Therapy on Disease Progression

Data presented at the workshop indicate that the use of zidovudine (formerly called AZT) initially reduces the risk for developing AIDS in HIV-infected persons who are asymptomatic or mildly symptomatic but who have CD4+ cell counts of <500/mm^3. Current data indicate that, in a clinical trial setting, the risk in treated patients is one third to one half the risk in untreated patients (National Institute of Allergy and Infectious Diseases [NIAID], unpublished data). Although the use of zidovudine only temporarily delays onset of AIDS, the therapeutic benefit may be extended by new therapies currently being evaluated. Data available at the workshop were insufficient to estimate the relative contribution of therapeutic interventions, such as zidovudine or prophylaxis for *Pneumocystis carinii* pneumonia, to the slowing in the rate of increase in reported AIDS cases that occurred in the middle of 1987.

TABLE 2. Projected numbers of AIDS cases, deaths attributable to AIDS, and living persons with AIDS, after adjustments for underreporting* — United States, 1989–1993

	AIDS cases		
Year	New cases†	Alive§	Deaths
1989	44,000–50,000	92,000–98,000	31,000–34,000
1990	52,000–57,000	101,000–122,000	37,000–42,000
1991	56,000–71,000	127,000–153,000	43,000–52,000
1992	58,000–85,000	139,000–188,000	49,000–64,000
1993	61,000–98,000	151,000–225,000	53,000–76,000
Through 1993¶	390,000–480,000		285,000–340,000

*Projections are adjusted for unreported diagnoses of AIDS by adding 18% to projections obtained from reported cases (corresponding to 85% of all diagnosed cases being reported: 1/0.85 = 1.18) and rounded to the nearest 1000.
†Number of cases diagnosed during the year.
§Persons with AIDS alive during the year.
¶Rounded to the nearest 5000. Includes an estimated 120,000 AIDS cases diagnosed through 1988, 48,000 persons alive with AIDS at the end of 1988, and 72,000 deaths in diagnosed patients through 1988.

HIV/AIDS — Continued

Reported by: Div of HIV/AIDS, Center for Infectious Diseases, CDC.

Editorial Note: Estimates of the number of HIV-infected persons, the number with laboratory evidence of immune dysfunction, and the projected number of persons with AIDS are used to assess current and future health-care needs. Although these estimates cannot be made precisely, ongoing studies will provide additional data to improve the estimates and test the assumptions on which they are based.

Current HIV prevalence estimates and AIDS case projections are influenced by the slowing of the rapid upward trend in AIDS incidence that occurred in 1987. The number of AIDS cases diagnosed per month continued to increase in 1987, but the rate of increase declined in the middle of that year, particularly in non–IV-drug-using homosexual/bisexual men (*6*). Reasons for this change in trend include: 1) a decline in the incidence of new HIV infections in homosexual/bisexual men in the early 1980s, leading to a subsequent decline in AIDS case incidence (*12*); 2) use of antiretroviral and other therapies by mid-1987, leading to a lengthening of the incubation period from infection to AIDS; and 3) possible decreases in the completeness or timeliness of reporting. The accuracy of HIV prevalence estimates and AIDS case projections depends in part on the determination of the relative contribution of these or other factors.

After the workshop, additional data became available on zidovudine use in mid-1987, and estimates were made of the possible effect of medical therapy on the change in trend in AIDS incidence that occurred in that year. One study estimated that zidovudine treatment given during early 1987 to 5000–7000 homosexual/bisexual men with severe immunodeficiency but without AIDS could account for the change in the trend in AIDS incidence in that group in the last half of 1987 (*13*). More than 10,000 persons received zidovudine from the manufacturer under a limited drug distribution system during March–September 1987. Data from a 4% systematic sample of this group indicate that about 4000 homosexual/bisexual men who were infected with HIV and had low CD4+ counts but who had not yet developed AIDS received zidovudine during that time (*14*). While this suggests that medical therapy could have made a substantial contribution to the change in trend in AIDS incidence in this group since 1987, the relative contribution of this and the other factors noted above requires further study.

Despite the apparent change in reported AIDS incidence in 1987, needs for current and future health-care services are expected to increase. AIDS has been diagnosed in no more than 10% of the approximately 1 million persons currently infected with HIV. Recent studies indicate that early treatment with zidovudine can slow disease progression in asymptomatic persons with CD4+ counts $<500/mm^3$ (NIAID, unpublished data). As discussed in the report, about 60% of the estimated 1 million HIV-infected persons in the United States—including about 500,000 persons without AIDS—may have CD4+ counts $<500/mm^3$ and may benefit from such therapy.

In addition to the suffering and health-care burden involving those already infected, a major concern is the number of new infections that continue to occur. Currently an estimated 1500–2000 new infections occur each year in newborns as a result of perinatal transmission, and a minimum of 40,000 new infections occur each year in adults and adolescents. Comparing the estimate of about 750,000 HIV-infected persons alive at the beginning of 1986 with the current estimate of about 1 million alive in mid-1989 suggests that an average of more than 80,000 new infections have occurred yearly since 1986.

HIV/AIDS — Continued

These incidence estimates must be refined to measure the growth of the epidemic and the effectiveness of current and future prevention efforts. Nonetheless, AIDS case projections and HIV-prevalence estimates indicate that the annual toll of AIDS cases and the nationwide burden of HIV-related disease will continue to grow, requiring further prevention efforts and increased medical and social services for the next several years for persons with HIV infection.

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Occupational Disease Surveillance: Occupational Asthma

In 1987, the National Institute for Occupational Safety and Health (NIOSH), CDC, initiated the Sentinel Event Notification System for Occupational Risks (SENSOR) (*1*), a pilot project conducted in association with state health departments. A goal of SENSOR is to improve the reporting and surveillance of work-related health conditions, including occupational asthma. Of the 10 states* participating in the SENSOR

*California, Colorado, Massachusetts, Michigan, New Jersey, New York, Ohio, Oregon, Texas, and Wisconsin.

Occupational Asthma — Continued

program, six (Colorado, Massachusetts, Michigan, New Jersey, New York, and Wisconsin) have identified occupational asthma as a condition targeted for surveillance. This report describes the implementation and early results of occupational asthma surveillance in Michigan, Colorado, and New Jersey, whose programs share certain features.

SENSOR programs in each of these three states receive occupational asthma case reports by telephone from any health-care provider in the respective state. Information about the surveillance activity has been disseminated to groups of "sentinel providers" (such as allergists and pulmonary and occupational medicine specialists) who are most likely to encounter occupational asthma in their clinical practices. Characteristics of the case report (including its congruence with the surveillance case definition [see box], the number of co-workers with exposures similar to those of the reported case-patient, and the number of co-workers with respiratory symptoms) determine priorities for follow-up workplace investigations conducted by the SENSOR program personnel. Each program sends to reporting physicians summaries of worksite investigations conducted in response to cases they have reported. To assist physicians in the evaluation of possible cases, the programs may provide other services such as peak flow meters (New Jersey and Colorado) or radioallergosorbent testing (Michigan). In addition, all three programs actively collaborate with academic occupational medicine programs in their states.

Michigan. In Michigan, an occupational disease reporting law was already in effect when the SENSOR program started. With the implementation of SENSOR, physician-education efforts and case follow-up were enhanced and focused on a few target conditions, including occupational asthma. Consequently, the number of occupational asthma reports increased sharply, from 18 during 1984–1986 to 101 cases reported from September 1988 through August 1989. Cases have been reported in persons who worked in a variety of exposure settings, and case follow-ups have led to the recognition of at least one new setting for occupational asthma—sugar beet pulp processing. Thus far, at eight worksites where investigations have been completed or are in progress, employee interviews have identified 97 co-workers of reported patients with symptoms suggestive of occupational asthma.

Colorado. In Colorado, voluntary reporting of occupational asthma cases started in October 1987; in August 1988, state health regulations were modified to make occupational asthma and occupational hypersensitivity pneumonitis reportable conditions. From October 1987 through December 1989, Colorado SENSOR received 87 case reports of occupational asthma and 21 case reports of hypersensitivity pneumonitis. In Colorado, the SENSOR program gives health-care providers a mechanism to report unusual clusters of occupational illness. For example, from two case reports received in Colorado, a cluster of 14 cases of probable hypersensitivity pneumonitis was identified among workers at an indoor swimming pool; follow-up investigation is under way.

New Jersey. New Jersey implemented voluntary reporting of occupational asthma in 1988. From June 1988 through October 1989, the New Jersey SENSOR program received reports of 66 possible cases of occupational asthma. Seven of the first eight worksites investigated had inadequate engineering controls; at these sites, 35 co-workers of possible case-patients had work-related respiratory symptoms.

Occupational Asthma — Continued

SURVEILLANCE GUIDELINES FOR STATE HEALTH DEPARTMENTS: OCCUPATIONAL ASTHMA

REPORTING GUIDELINES

State health departments should encourage providers to report all suspected or diagnosed cases of occupational asthma. These should include persons with:

A. A physician diagnosis of asthma

AND

B. An association between symptoms of asthma and work.

State health departments should collect appropriate clinical, epidemiologic, and workplace information on reported cases to set priorities for workplace investigations.

SURVEILLANCE CASE DEFINITION

A. A physician diagnosis of asthma*

AND

B. An association between symptoms of asthma and work† *and* any one of the following:

1. Workplace exposure to an agent or process previously associated with occupational asthma§

   OR

2. Significant work-related changes in FEV1 or PEFR

   OR

3. Significant work-related changes in airways responsiveness as measured by nonspecific inhalation challenge¶

   OR

4. Positive response to inhalation provocation testing with an agent to which patient is exposed at work. Inhalation provocation testing with workplace substances is potentially dangerous and should be performed by experienced personnel in a hospital setting where resuscitation facilities are available and where frequent observations can be made over sufficient time to monitor for delayed reactions.

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*Asthma is a clinical syndrome characterized by increased responsiveness of the tracheobronchial tree to a variety of stimuli (*2*). Symptoms of asthma include episodic wheezing, chest tightness, and dyspnea, or recurrent attacks of "bronchitis" with cough, sputum production, and rhinitis (*3*). The primary physiologic manifestation of airways hyperresponsiveness is variable or reversible airflow obstruction, which may be demonstrated by significant changes in the forced expiratory volume in 1 second (FEV1) or peak expiratory flow rate (PEFR). Airflow changes can occur spontaneously, with treatment, with a precipitating exposure, or with diagnostic maneuvers such as nonspecific inhalation challenge.

†Patterns of association can vary. The following examples are patterns that may suggest an occupational etiology: symptoms of asthma develop after a worker starts a new job or after new materials are introduced on a job (a substantial period of time may elapse between initial exposure and development of symptoms); symptoms develop within minutes of specific activities or exposures at work; delayed symptoms occur several hours after exposure, during the evenings of workdays; symptoms occur less frequently or not at all on days away from work and on vacations; symptoms occur more frequently on returning to work. Work-related changes in medication requirements may have similar patterns, also suggesting an occupational etiology.

§Many agents and processes have been associated with occupational asthma (*3,4*), and others continue to be recognized.

¶Changes in nonspecific bronchial hyperreactivity can be measured by serial inhalation challenge testing with methacholine or histamine. Increased bronchial reactivity (manifested by reaction to lower concentrations of methacholine or histamine) following exposure and decreased bronchial reactivity after a period away from work are evidence of work-relatedness.

Occupational Asthma — Continued

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Editorial Note: Asthma caused by occupational exposures has been recognized for nearly 3 centuries (*3*), but the true incidence and prevalence of work-induced asthma remain uncertain. More than 200 agents have been associated with workplace asthma (*5*), and the classes of agents implicated include certain microbial products (e.g., *Bacillus subtilis* enzymes in the detergent industry), certain animal proteins (e.g., urine protein/dander from laboratory mammals), certain plant products (e.g., wheat flour), and certain industrial chemicals (e.g., toluene diisocyanate). Occupational asthma is an increasingly important cause of respiratory impairment; it can persist for years, even after termination of workplace exposures (*6*). Early recognition is particularly important because a more favorable prognosis is associated with a shorter duration of symptoms before diagnosis (*7*) and because prompt removal from further exposures to the offending agent is beneficial. Fatal cases have been reported when workplace exposures continue (*8*). Identification of occupational asthma can also lead to recognition of affected co-workers, identification and correction of inadequate worksite exposure controls, and discovery of new causes of occupational asthma (*9*).

Early experience in Michigan, Colorado, and New Jersey indicates that physician reporting of occupational asthma can be used to identify workplaces with remediable health hazards. This approach may improve surveillance of occupational asthma and provide opportunities for primary and secondary prevention.

To facilitate provider-based surveillance of work-related conditions and to enhance uniformity of reporting in the states, NIOSH periodically disseminates recommended surveillance case definitions for selected occupational diseases and injuries. Because these definitions are designed for surveillance-related functions, they may differ from those used for other purposes, such as determining workers' compensation or level of disability. The reporting guidelines and case definition for surveillance for occupational asthma[†] (see box) are recommended for surveillance of work-related asthma by state health departments receiving reports of cases from physicians and other health-care providers.

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[†]This definition was reviewed and approved by a panel of consultants convened by NIOSH that comprise the Surveillance Subcommittee of the NIOSH Board of Scientific Counselors: H Anderson, MD, Wisconsin Department of Health and Social Services; M Cullen, MD, Yale University School of Medicine; E Eisen, ScD, Harvard School of Public Health; R Feldman, MD, Boston University School of Medicine; J Hughes, MD, University of California, San Francisco; MJ Jacobs, MD, University of California, Berkeley; K Kriess, MD, National Jewish Center for Immunology and Respiratory Medicine; J Melius, MD, New York State Department of Health; J Peters, MD, University of Southern California School of Medicine; D Wegman, MD, University of Lowell.

Occupational Asthma — Continued

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Erratum: Vol. 39, No. 1

In the article, "Repeat Injuries in an Inner City Population—Philadelphia, 1987–1988," the last author on the first line of credits on page 2 should read: A Wishner, MSN.

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