

# AIDS in Primary Care: A Report from the Ambulatory Sentinel Practice Network

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**Background.** Despite the importance of the epidemic of acquired immune deficiency syndrome (AIDS), little is known about the incidence and prevalence of AIDS in the patient population of primary care physicians. This study was designed as an initial step in evaluating the impact of this disease on primary care practices.

**Methods.** We conducted a survey to characterize the AIDS cases in the Ambulatory Sentinel Practice Network (ASPEN). ASPEN is a practice-based primary care research network. In 1987 it was composed of 65 practices and 193 clinicians serving approximately 270,000 patients in the United States and Canada. Clinicians representing each practice were asked to report the number of AIDS patients that their practice cared for between January 1982 and December 1987. They were further asked to characterize relevant data for these patients.

**Results.** Thirty-nine prevalent cases of AIDS were

reported in ASPEN from January 1982 through December 1987. Seventy-nine percent of the patients were male, 15 to 44 years of age; three patients (7.6%) were female; and all cases had at least one risk factor for AIDS. An expected number of cases for the 194,973 patients of 47 practices was calculated using age-sex register data and nationally based rates from 1986. The projected number, 13, corresponded with the number of AIDS cases, 11 and 15, reported from ASPEN practices in 1986 and 1987, respectively.

**Conclusions.** This survey suggests that AIDS is at least as prevalent in the primary care practices in ASPEN as predicted using national estimates, and may, in fact, be more prevalent. Primary care clinicians need to be prepared to assume a major role in addressing the AIDS epidemic.

**Key words.** Acquired immunodeficiency syndrome, primary health care. *J Fam Pract* 1991; 32:369-372.

While considerable epidemiologic data have been gathered about AIDS, little is known about the incidence and prevalence of AIDS in the office practices of community-based primary care physicians. As AIDS continues to increase in importance as a national and personal health issue, there is an increasing need to evaluate the impact of this disease on primary care practices, including those in rural communities. The Ambulatory Sentinel Practice Network (ASPEN) is a practice-based primary care research network in operation since 1982. In 1987, ASPEN was composed of 65 practices and 193 clinicians serving approximately 270,000 patients in the United States and Canada. Sixty-two percent of the ASPEN practices served rural communities, providing an ideal setting for inves-

tigating AIDS in both rural and urban primary care. The age and sex distribution of ASPEN's combined patient population did not significantly differ from that of the United States population.<sup>1</sup> The purpose, policies, and general methods of ASPEN have been described elsewhere.<sup>2</sup> This paper describes the characteristics of patients with AIDS in the ASPEN patient population and compares estimates of the occurrence of AIDS in the ASPEN population to that expected based on available US data.

## Methods

A telephone survey of the 65 ASPEN practices was conducted between September 1987 and May 1988. Three practices did not respond to the survey and were excluded from the rest of the study, resulting in a 95% participation rate. Clinicians representing each practice were asked to recall and report whether they or other clinicians in their practice had diagnosed or treated any patients with AIDS in the practice between January 1982 and December 1987. Affirmative responses prompted

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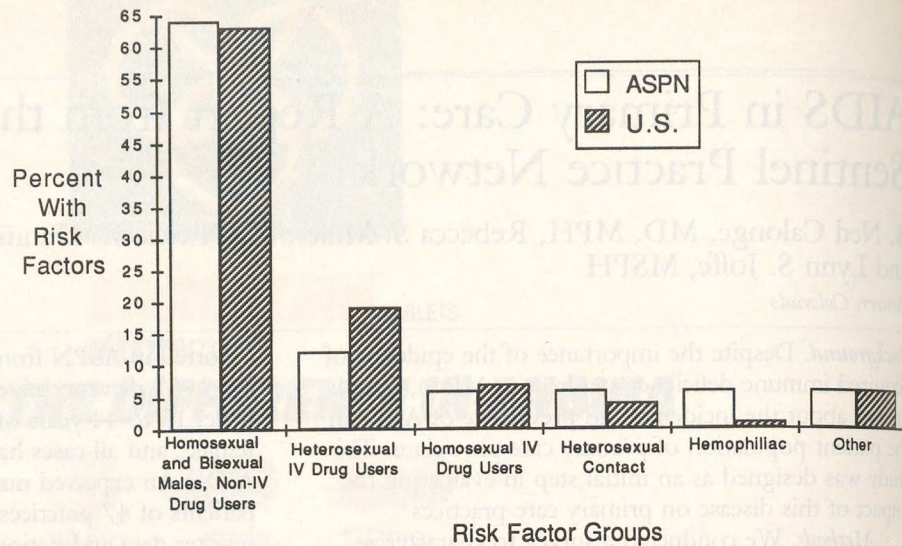


Figure 1. Distribution of risk categories among AIDS cases in ASPN and in the United States. Source of US data: Institute of Medicine, National Academy of Sciences. Confronting AIDS: update 1988. Washington, DC: National Academy of Sciences, 1988.

additional questions about each patient to characterize the relevant demographic and historical data, including sex, year of diagnosis, age when diagnosed, known AIDS risk factor(s), and whether the patient was still alive. The clinician was asked to use all sources of information available (ie, charts, fellow clinicians) to respond to these questions. Data on all 62 practices were used to describe the characteristics of AIDS patients treated in primary care settings. The 62 practices were categorized as rural, urban, or suburban in agreement with a suburban metropolitan statistical area (SMSA)/non-SMSA classification.

Once the descriptive analysis was completed, data for practices outside of the United States (5 practices) and for practices without completed age-sex registers (10 practices) were excluded, so that estimates based on US data could be compared with data from the remaining 47 practices. Estimates of 1984 and 1986 AIDS incidence rates were available for four US population categories: male patients 15 years of age and older, female patients 15 years of age and older, hemophiliacs, and intravenous drug users.<sup>3,4</sup> Based on the assumption that the ASPN population had rates similar to the rest of the United States, the numbers of intravenous drug users and hemophiliacs were calculated using US estimates. The numbers of male and female patients 15 years of age and older were extracted from the age-sex register data from the 47 US practices. Individuals receiving medical care from an ASPN clinician in the preceding 2 years were enumerated in the practice age-sex register; the methods involved in age-sex register data collection and the use of this information as denominator data have been discussed elsewhere.<sup>1,2</sup>

The rates of AIDS incidence in the United States

and the estimates of ASPN patients in each population category were used to calculate the expected number of AIDS cases in ASPN in 1984 and 1986. The number of reported cases was then compared with the number of expected cases, using chi-square methods and, where appropriate, Fisher's exact test.

## Results

The clinicians were confident that they could accurately enumerate all AIDS patients in their practices and reported no difficulties in collecting and reporting the relevant data. Thirty-nine prevalent cases of AIDS were reported from the 62 practices responding to the survey. The number of cases diagnosed in these practices progressively increased from 1982 to 1987 ( $n = 1, 0, 2, 7, 12, 17$ , respectively). Seventy-nine percent of the AIDS patients were male, 15 to 44 years of age; only three were female. Homosexuals comprised the largest risk category, accounting for 54% of the reported cases. The risk-factor profile for ASPN patients with AIDS is similar to that seen nationally (Figure 1). All patients with AIDS had one or more recognized risk factors. At the time of the survey, 17 (43.6%) of the 39 AIDS patients had died.

Twenty practices (32.2%) reported at least one case. Sixteen of the 39 cases (41.0%) were reported by 11 rural practices (Table 1). Three practices, located in urban or suburban areas in the southeastern United States, accounted for 15 of the reported cases (38.5%).

As mentioned above, only the 47 US practices with complete age-sex register data were used to calculate the observed and expected incidence rates. These 47 practices had a combined patient population of 194,973. There

Table 1. Distribution of AIDS Cases by ASPN Practice Location

| Practice Location | No. of Practices | Practices Reporting AIDS Cases No. (%) | No. of AIDS Cases Reported |
|-------------------|------------------|--|----------------------------|
| Rural             | 41               | 11 (26.8)                              | 16                         |
| Suburban          | 13               | 6 (46.2)                               | 13                         |
| Urban             | 8                | 3 (37.5)                               | 10                         |
| Total             | 62               | 20 (32.2)                              | 39                         |

ASPN—Ambulatory Sentinel Practice Network.

were no significant differences in the age and sex distributions of the ASPN and the US population, based on comparison with 1985 census data. Only the data from these 47 practices were used in the remainder of this report.

The estimated annual incidence rate of AIDS in 1984 for the US population aged 15 years or older was 1.4 cases per 100,000.<sup>3</sup> Using this rate, the expected number of AIDS cases for the 47 ASPN practices in 1984 was 2.57. ASPN actually reported two AIDS cases in 1984; both cases involved single men over 15 years of age. The estimated number of cases for this specific risk group was 1.73.

The 1986 national rate estimates for AIDS included four specific risk categories (hemophiliacs, women over 15 years old, men over 15 years old, and intravenous drug users) and an "other" category.<sup>4</sup> Listed in Table 2 are the estimated number of cases in ASPN for 1986 and the actual cases reported in ASPN by risk category for 1986 and 1987. For 1986, 13.44 AIDS cases were expected in ASPN; this number corresponds to the 11 and 15 cases reported in 1986 and 1987, respectively. The number of male patients 15 years and older with AIDS reported for 1986 and 1987 (7 and 11 cases, respectively) was not significantly different from the expected number of cases (10.25,  $P > .05$ ).

## Discussion

This study demonstrates that the emergence of AIDS in a network of primary care practices paralleled that in nonprimary care settings, and, as would be expected, there was considerable geographic variation in the incidence of AIDS in ASPN practices. The results also suggest that AIDS may be more prevalent than suspected, especially in rural areas. The incidence of AIDS in ASPN is comparable to that estimated for the United States; however, ASPN has no practices in high-risk areas such as New York City and San Francisco, which are represented in the US estimations. In addition, the overall ASPN patient population may not include a large number of patients from high-risk groups such as intravenous drug users and homosexuals.

There are several sources of bias that could make the comparison with national estimates problematic. As a result of the increased awareness of AIDS and intensive surveillance efforts, health care professionals may be sensitized to AIDS detection. Also, because of the nature of their physician-patient relationship, primary care clinicians may be more aware than other physicians of a patient's potential risk of acquiring HIV infection, and, therefore, engage in more intensive case-finding efforts when appropriate.

At-risk persons may seek attention differently from persons not at risk. For example, while single men 15 to 44 years old tend to seek medical attention only when they are ill, they also may seek medical attention when concerned that their past or present lifestyle places them at increased risk for AIDS. As a result, the single men in this age category seeking care in the ASPN practices may be more likely to have a higher incidence of AIDS. This would inflate estimates of AIDS incidence relative to the actual incidence in the general population.

The results should be interpreted in light of other

Table 2. Number of Estimated Cases Compared with Observed Cases of AIDS in 47 ASPN Practices

| Risk Group    | 1986 US Incidence per 100,000 | At-Risk Population | ASPN Practices                        |                |      |
|---------------|-------------------------------|--------------------|---------------------------------------|----------------|------|
|               |                               |                    | Expected Number of AIDS Cases in 1986 | Observed Cases |      |
|               |                               |                    |                                       | 1986           | 1987 |
| Hemophiliacs  | 1106.0                        | 9.5                | 0.10                                  | 0              | 0    |
| Women >15 yrs | 1.1                           | 89,103.0           | 0.98                                  | 1              | 1    |
| Men >15 yrs   | 15.7                          | 65,316.0           | 10.25                                 | 7*             | 11*  |
| IV users      | 498.0                         | 423.0              | 2.11                                  | 3              | 2    |
| Other         | —                             | —                  | —                                     | 0              | 1†   |
| Total         | 1620.8                        | 154,851.5          | 13.44                                 | 11             | 15   |

\*Includes heterosexual/multiple partners, homosexuals, and bisexual males but excludes intravenous drug users.

†A bisexual man >15 years old who was an intravenous drug user.

ASPN—Ambulatory Sentinel Practice Network.

NOTE: All comparisons of observed cases to expected cases were not significant at the  $P = .05$  level using chi-square tests or Fisher's exact test.

limitations of the study: (1) estimation of the population at risk is based on assumptions that may not accurately reflect the actual numbers of patients in each category; (2) the population categories themselves are broad, and significant variation may exist between risks for AIDS in ASPN and risk for AIDS in the US population; (3) only AIDS cases known to ASPN clinicians were reported; and (4) risk factor data were based on the perceptions of the clinician rather than on direct patient inquiry. None of the clinicians had any difficulty in recalling and reporting their AIDS cases, however, as might be expected for a disease of such current concern and relatively low incidence.

Our findings indicate that AIDS was at least as prevalent in primary care practices as was estimated for the general population. As AIDS continues to grow as a national health issue, the identification and management of AIDS patients will not be confined to specialized clinics; rather, primary care clinicians will play a large role in the national effort to prevent, identify, and manage AIDS. While primary care clinicians are in an ideal position to contribute to national efforts to control AIDS, important barriers must be reduced or eliminated. In some instances, clinicians' general knowledge of AIDS may be limited<sup>5-7</sup>; they may have negative attitudes about patients with AIDS or patients who are at risk for acquiring AIDS<sup>6,7</sup>; they may be unsure of their ability to counsel AIDS patients or those at risk for acquiring AIDS<sup>5-7</sup>; and they may not have the specific skills necessary to identify, diagnose, and manage patients with AIDS.<sup>6-10</sup> Creative programs should be designed to provide primary care providers with the AIDS-relevant knowledge and skills needed for their role in the AIDS epidemic.

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#### References

- Green LA, Calonge BN, Fryer GE, et al. Age/sex registries in primary care research. *Fam Med* 1988; 20:185-8.
- Green LA, Wood M, Becker L, et al. The Ambulatory Sentinal Practice Network: purpose, methods and policies. *J Fam Pract* 1984; 18:275-80.
- Hardy AM, Allen JR, Morgan WM, et al. The incidence rate of acquired immunodeficiency syndrome in selected populations. *JAMA* 1985; 253:215-20.
- Curran JW, Jaffe HW, Hardy AM, et al. Epidemiology of HIV infection and AIDS in the United States. *Science* 1988; 239:610-6.
- Anderson P, Mayon-White R. General practitioners and management of infection with HIV. *Br Med J* 1988; 296:535-7.
- Milne RIG, Kean SM. Are general practitioners ready to prevent the spread of HIV? *Br Med J* 1988; 296:533-5.
- Sibbald B, Freeling P. AIDS and the future general practitioner. *J R Coll Gen Pract* 1988; 38:500-2.
- Antoniskis D, Sattler RF, Leedom JM. Importance of assessing risk behavior for AIDS. *Postgrad Med* 1988; 83:138-60.
- Dunford A. The management of HIV symptomatic patients in the general practice. *Practitioner* 1988; 232:445-51.
- Goodson C. The general practitioner and community care of HIV and patients. *Practitioner* 1988; 232:398-405.

*For editorial comment, see page 367.*