Letters

Monitoring the U.S. AIDS Epidemic

The report by E. O. Laumann *et al.* entitled "Monitoring the AIDS epidemic in the United States: A network approach" (9 June, p. 1186) is a creative attempt to estimate the relative prevalence of acquired immunodeficiency syndrome (AIDS) in various groups and geographic locations. The authors suggest that national AIDS surveillance data underestimate the prevalence of AIDS in the white population relative to that in minority populations and underestimate the prevalence of AIDS in the Midwest relative to that in the East. These conclusions are suspect because the methodology employed invokes several questionable assumptions, the term "AIDS" may be subject to broad interpretation, the sample size is small, and the results contradict other independent efforts to evaluate AIDS and human immunodeficiency virus (HIV) surveillance efforts.

First, the implication by Laumann *et al.* that the results on homicide support their methodology may be questioned; an "underestimate" for homicide victims among minorities and a higher estimate for persons from the Midwest were found similar to those differences in estimates found for persons with AIDS. Second, the authors' results depend on the key assumption that the structure of personal networks for persons with AIDS are not systematically different from those for the entire population, but they do not evaluate this assumption. The social networks of white homosexual men may well differ in size, social composition, geographic mobility, and other important characteristics from the networks of minority intravenous drug users with AIDS and those of homicide victims.

More important, the assumption that a person with AIDS could be assigned to the geographic location of the respondent is not a reasonable one, since a large proportion of early reported cases of AIDS, particularly in homosexual men, were reported among men who had migrated to New York and California from other states. In a case-control study conducted in 1981, 23% of homosexual men with AIDS residing in New York, Los Angeles, San Francisco, and Atlanta had been born in the Midwest; 26% had lived in their cities of residence less than 5 years, and another 23% had lived there 5 to 9 years (*2*). Also, the first cases in many southern and midwestern states were among such men who had returned home after diagnosis in a coastal city (*2*).

The design of the survey of Laumann *et al.* assumes equal representation of all persons at risk for AIDS. However, populations with a high incidence of AIDS other than homosexual men (for example, intravenous drug users, who may be homeless and of lower socioeconomic status, especially minorities) would be less likely to be "captured" using the household-based design of the General Social Survey. The effect of this bias would be to underestimate AIDS cases among minority populations and women, which appears to have occurred in this study. While the authors state that they found the same gender imbalance as the surveillance data of the Centers for Disease Control, they in fact estimated only 4% of persons with AIDS were women as compared to 8% in CDC surveillance reports.

Also, respondents may differ in what they consider to be "AIDS." Homicide is clear-cut; what is meant by "AIDS," however, may be subject to wide interpretation. Is the person with hemophilia who carries the "AIDS" virus considered by his neighbor to have AIDS? Does the homosexual man living down the street who appears to be losing weight have AIDS? Furthermore, the authors do not provide data on how many respondents knowing persons with AIDS were incidental acquaintances as opposed to persons with more personal ties.

In discussing the national surveillance system for AIDS, Laumann *et al.* state that many private physicians may be reluctant to report their patients with AIDS to the health department. Most state health departments, however, work directly with hospitals to identify AIDS cases; and most persons with AIDS have become sufficiently ill in the course of the disease to require hospitalization. Thus, these independent reporting networks have decreased the impact of individual physicians who do not report cases of AIDS.

Certainly, AIDS cases are underreported; additionally, reported AIDS cases do not represent the full spectrum of illness associated with HIV infection (*3–6*). However, underestimates are probably greater for women and minorities than for white homosexual men, on the basis of unpublished and recently published data (*4, 5*). Stoneburner *et al.* have documented an increasing mortality in intravenous drug users in New York City, which may represent a spectrum of serious HIV-related diseases that have not been identified through AIDS surveillance and has probably resulted in an underestimation of the impact of HIV infection on intravenous drug users, blacks, and Hispanics (*4*). In addition, HIV seroprevalence surveys conducted in various populations, including military recruit applicants, childbearing women, blood donors, homosexual men, and intravenous drug users, have demonstrated a considerably lower prevalence of HIV infection in the Midwest, supporting the relative distribution of AIDS cases found through surveillance reports (*6*). For example, the percent of childbearing women positive for HIV in Michigan and Illinois are 0.06% and 0.09%, respectively, compared with 0.66% and 0.49% for New York and New Jersey, respectively (*2*).

An alternative interpretation of the results would be that the higher "proportion" of whites from the Midwest observed in this study may result from incomplete ascertainment by the survey of minority cases (including women) due to inadequate sampling of intravenous drug users, the homeless, and those with less geographic mobility. Regardless of interpretation, the survey sample size is small and no confidence limits are provided, making it unclear whether observed differences are statistically significant.

HIV infection and AIDS remain a national and worldwide problem, affecting every community and most individuals either directly or indirectly. We need creative approaches to monitoring the HIV epidemic; a study such as this one may be useful to measure attitudes and behaviors, but the methodology is not adequate to replace or to validate more directly measured surveys of HIV morbidity or mortality.

RUTH BERKELMAN
JAMES CURRAN
WILLIAM DARROW
TIM DONDERO
MEADE MORGAN
AIDS Program, Center for Infectious Diseases, Centers for Disease Control, Atlanta, GA 30333

REFERENCES

1. H. W. Jaffe *et al.*, *Ann. Intern. Med.* **99**, 145 (1983).
2. Centers for Disease Control, unpublished data.
3. J. W. Buehler, *Abstr. V Int. Conf. AIDS* (1989), p. 124.
4. R. L. Stoneburner *et al.*, *Science* **242**, 916 (1988).
5. G. Conway, personal communication; R. Hindin, *Abstr. V Int. Conf. AIDS* (1989), p. 110.
6. Centers for Disease Control, *Morb. Mortal. Wkly. Rep. Suppl.* **38** (S-4), 1 (1989).

Response: Berkelman *et al.* make several important points. The most important issue is the concern that "populations with a high incidence of AIDS . . . would be less likely to be 'captured' using the household-based design." The network sampling procedure assumes that members of populations with a high incidence of AIDS have family, friends, and acquaintances who will fall into the household sample and thus will be reported. Suppose there are in fact two distinct populations, one of household members with one distribution of AIDS cases and the other of