Measuring HIV-1 Seroprevalence among English Newborns: Blood Spot Size

In "Improving Estimates of HIV-1 Seroprevalence among Childbearing Women: Use of Smaller Spots," Hoxie and his colleagues report a substantial failure to include eligible, residual, neonatal dried blood-spot specimens in a US survey of human immunodeficiency virus (HIV) infection among child-bearing women.1 Following a protocol that required the use of a single 1/4-in. (6.4-mm) diameter circular blood-spot disk (area 31.7 mm²), the group reported that 4.8% of 154 683 eligible specimens had insufficient areas of blood spot (termed "quantity not sufficient") [QNS], although by taking multiple small (1/8-in/3.2-mm) disks they found it possible to gather the required area of specimen in the majority of samples, reducing the QNS proportion to 0.52%. Surprisingly, the group also reported that HIV-1 seroprevalence was three times higher among the specimens derived from multiple small spots compared with the single large spots. This difference just reached statistical significance at the odds ratio's 95% confidence interval (1.2, 7.4).

If replicated elsewhere, such a finding would be of concern, because unlinked anonymous dried blood-spot surveys employ specimens residual to those used in screening for inborn deficiencies such as phenylketonuria. In our experience in the United Kingdom, it is common not to find enough dried blood residue to produce a single disk as large as 31.7 mm², and so a substantial QNS proportion would be inevitable if such a single spot was used.

In a survey coordinated by the Public Health Laboratory Service in England, from January to December 1992, a total of 99 041 neonatal specimens were found eligible for unlinked anonymous sampling. Two hundred and twenty were found to be insufficient for testing; thus the QNS proportion was 0.22% (220/97 800) after the subtraction of 121 mothers who objected to their babies' blood being used for unlinked anonymous testing. When the remainder were tested, 47 were confirmed HIV-1 antibody positive (seroprevalence 0.0476%). The criteria for QNS was inability to cut a blood spot or spots equivalent to a 3-mm diameter spot. Even if the seroprevalence in the QNS samples were 7.4 times higher, this would mean missing only an additional 220 x 0.0048 x 7.4 positives (= 0.78) and would still imply an actual seroprevalence among the eligibles of 0.0483% ([47 + 0.78]/[98 700 + 220]). Hence, at this low QNS proportion any effect on the measured seroprevalence is trivial.

In the United Kingdom's neonatal surveys, very low QNS proportion is achieved through the use of anti-HIV tests (GACPAT and MAT) that are modifications of a commercially available particle agglutination assay (Serodia-HIV).2,3 Both are economical and can use either a 3-mm or a 5-mm diameter disk.4 We investigated whether eluates from such disks contain sufficient immunoglobulin G (IgG) to sustain high sensitivity. Eluting from 203 5-mm diameter dried blood spots with 200 µl buffer, we found a minimum IgG concentration of 19 mg/l (median and maximum values 57 and 110 mg/l, respectively), and, because the GACPAT assay will detect IgG anti-HIV in specimens with as little as 1 mg/l total IgG, 3-mm disks (which will contain one third of the specimen in a 5-mm disk) will also give enough material for testing. Support for this view comes from titrations of anti-HIV positives. In our experience with the GACPAT, the minimum titer from dried blood spots has been 1 in 800 and is usually tenfold higher. □

Christine McGarrigle
John Parry
Angus Nicoll

Christine McGarrigle and Angus Nicoll are with the Communicable Disease Surveillance Centre, and John Parry is with the Virus Reference Divisions, Public Health Laboratory Service, London, England.

Request for reprints should be sent to Christine McGarrigle, Public Health Laboratory Service, Communicable Disease Surveillance Centre, HIV & STD Division, 61 Colindale Ave, London, NW9 5EQ, England.

References

HIV and Trends in Cervical Cancer Death Rates among Young Women

In "The Reporting of HIV/AIDS Deaths in Women," Buechler et al. examined death rates for human immunodeficiency virus (HIV) infection and associated conditions in order to assess the impact of the HIV epidemic among women 15 through 44 years of age.1 One conclusion from this analysis was that the HIV epidemic had not yet had a demonstrable impact on cervical cancer mortality, based on two observations: (1) trends in cervical cancer deaths were similar in states with high or low incidences of acquired immunodeficiency syndrome...
(AIDS); and (2) cervical cancer death rates did not increase during the later 1980s in tandem with HIV death rates, but they instead increased slightly and gradually throughout the 1980s.

We wish to clarify this last observation, which was based on crude death rates for the 15- through 44-year age group. In 1980, 58% of the women aged 15 through 44 years in the United States were younger than 30 years old; by 1988, however, this percentage had decreased to 51%. Thus, when cervical cancer death rates were standardized to the 1970 US population, cervical cancer death rates actually decreased slightly, from 1.6 per 100,000 in 1980 to 1.5 per 100,000 in 1988 (Figure 1). A comparison of adjusted rates among states with high or low AIDS incidence was not presented in the original paper because the central conclusion was the same if based on crude rates: there is no evidence that the HIV epidemic affected overall cervical cancer mortality between 1979 and 1988.

Our findings do not exclude a possible future increase in HIV-associated cervical cancer mortality if preventive gynecologic services are not incorporated into the care of HIV-infected women.

Matthew T. McKenna and Judith R. Qualters are with the National Center for Chronic Disease Prevention and Health Promotion, and James W. Buehler and Susan Y. Chu are with the Division of HIV/AIDS, National Center for Infectious Diseases, Centers for Disease Control and Prevention, Atlanta, Ga.

Requests for reprints should be sent to Matthew T. McKenna, MD, MPH, Centers for Disease Control and Prevention, 4770 Buford Hwy, NE (K55), Atlanta, GA 30341-3724.

Reference

Illegal Sales to Minors and Retailers

In 1990, Project TRUST (Teens and Retailers United to Stop Tobacco) of San Diego, Calif, studied the ease with which minors could purchase tobacco. Despite the fact that California law Penal Code 308 deems it illegal, 75% of the merchants studied sold cigarettes to minors. Similar illegal cigarette sales to minors have been reported elsewhere. In 1992, Project TRUST found that cigarettes are not the only controlled product sold illegally to minors.

Project TRUST sent minors aged 15 through 17 years to 40 convenience stores and supermarkets to purchase state lottery tickets. Sale of lottery games to minors is illegal under the California State Lottery Act of 1984; any person who knowingly sells to a minor is guilty of a misdemeanor. Disturbingly, minors were more successful in purchasing cigarettes than they were in purchasing lottery tickets: 66% of retailer outlets sold lottery tickets to teens.

The problem of illegal sales to minors is not unique to San Diego. Researchers in Illinois recently reported that one 16-year-old had a 97% success rate in purchasing lottery tickets. Thus, many retailers seem to be selling whatever they want to whom-ever they want, to achieve maximum profits. Although it may not be physically harmful to sell lottery tickets illegally, the common practice of selling cigarettes to minors has far-reaching health implications. The tobacco laws that exist are not currently enforced. Not only are retailers being reinforced financially for their illegal sales behaviors, teens' illegal purchasing behaviors are also being reinforced. If teens know they can buy cigarettes and lottery tickets with no negative consequences, why wouldn't they attempt to purchase another illegal product, such as alcohol? Teens can and do purchase alcohol.

Consumers should patronize only those retailers who adhere to the laws. Citizens must communicate to retailers that the retailers are part of the community's front line and thus have community responsibilities. In some instances, however, local legislation to control retail sales and civil penalties for violations may be our only recourse.

References
2. Altman DG, Foster V, Rasenick-Douss L,