

The Epidemic of AIDS: A Failure of Public Health Policy

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THE PRIMARY GOAL OF PUBLIC HEALTH IN controlling the AIDS epidemic is the reduction in the incidence of new infection with HTLV-III/LAV. At present, and probably for the immediate future, two simultaneous and parallel strategies guide efforts to prevent infection: (1) protection of the uninfected high-risk individual from infection with HTLV-III/LAV (and thus from subsequent clinical AIDS); and (2) prevention of the spread of the epidemic into lower-risk populations. The success of these strategies in meeting the overall goal depends on an understanding of the mode of transmission of the virus, basic concepts of infectious disease epidemiology and control, and, most important, a concerted effort by the entire community to reduce transmission of the infection. To date, unfortunately, these efforts have not been very successful; they represent a failure of public health policy.

The epidemic is in different time frames between and within countries. The course of the epidemic is most frequently characterized by averages, or in terms of nationally aggregated data. While exceptions are made for some large cities—San Francisco and New York—the importance of understanding the different time frames between, say, California and Iowa, or between New York and Minnesota, should be underscored. There is no *cordon sanitaire* at the Hudson River or the San Joaquin Valley. Nor is the Pacific anything but a temporal buffer between

the time frames of Australia and the United States, or the Atlantic between us and Western Europe. Cases of AIDS have already been reported in every state of the union; these are but the tip of a broad-based pyramid of infection.

The epidemic is also in different time frames between various groups within the population, none of which appears to be exempt from its lethality. Mothers, fathers, children, grandmothers, clergymen, film stars, and construction workers have all been victims of AIDS. Their friends and loved ones, coworkers and coreligionists, parents and progeny may all be infected.

This paper will focus primarily on the transmission of infection of AIDS among homosexual men, and the approaches—tactics, if you will—that are probably necessary to modify the epidemic: screening and case-contact investigation of a high-risk population; health education of both the at-risk and general publics; effective legal safeguards for all parties; and surveillance of new infection to monitor the efficacy of programs.

By concentrating on a single group, we hope to illuminate the natural history of the disease. The lessons to be learned, and the struggle to be undertaken, will apply to the entire nation in the years ahead.

Background to the Epidemic

There is a waggish quip in the folklore of public health: “Clinicians quarrel over numerators, and demographers over denominators; but epidemiologists argue over both.” Since 1981, when the Centers for Disease Control (CDC) first promulgated standards for case definition of AIDS (subsequently broadened), there has been *relative* uniformity to guide clinicians. Nevertheless, the number of clinically defined cases that make up the epidemiologist’s numerator are undoubtedly too few. Some AIDS-like conditions by themselves will not meet the stringent and narrow CDC definition for AIDS, yet their cause, clinical management, and outcome may be the same. Still other cases meeting the CDC criteria go unreported out of special consideration for the patient and possible opprobrium attached to a diagnosis of AIDS (King 1986).

When it comes to the denominators, necessary for calculating rates of infection, etc., the situation is even more ambiguous. Neither the size nor characteristics of the two major risk groups are known, yet we are confident that they account for over 90 percent of the cases of AIDS. For some groups at lesser risk, say hemophiliacs, reasonably accurate denominators can be deduced. But for homosexual men and intravenous drug abusers, most data are based upon retrospective studies and the self-selected volunteer participation in limited prospective studies. Neither source provides an adequate basis from which to generalize observations to all homosexual men or to all IV drug abusers.

Even as we can acknowledge the insufficiency of data on denominators, we must admit to little possibility that they will be improved. The situation is not unlike one of trying to establish the demography of income tax cheaters. Few will come forward to be counted as members in a legally proscribed group. Perhaps an analogous "amnesty" period might be tried for the sake of better public health. Until such time, however, epidemiologists, public health planners, biomedical researchers, clinicians, and policy makers in general, may be justified in acting as though insufficient data were adequate. But they would do well to be cautious in their extrapolations.

Even with these caveats about completeness of all information, considerably more is known about significant subgroups of homosexual men than about IV drug abusers (Altman 1986). These men are more visible, more vocal, better organized, and more fully and openly represented in the community's life than are IV drug abusers. In addition, they characterize the current overwhelming majority of cases of AIDS and presumably the greatest pool of infection. While these balances may change over time, focusing on a subgroup of sexually active homosexual men gives us the best—albeit imperfect—picture of critical aspects of the natural history of the epidemic.

Relaxation of sexual taboos during the 1960s and 1970s may have led to a great deal of sexual experimentation. While the full impact of such changes in mores—we learned to call them "lifestyles"—may be known only to cultural historians of a later generation, some consequences for public health were clearly visible in new epidemics: teenage pregnancies, herpes, syphilis, gonorrhea, Chlamydia, hepatitis. (Other behavior-related epidemics were also seen: teenage alcoholism, drug abuse, motorcycle-related traumas, among others.)

It would be a mistake to conclude that a climate of new sexual freedom *created* these epidemics. Rather, it enabled the most problem-prone behaviors, which already existed, to flourish as unwitting enabling conditions without immediate public criticism and intervention. *Approval* was never, indeed could never be, explicit; rather, the *disapproval* once so vigorously explicit, became more tacit. People "did their thing" as law enforcement became more permissive in its approach to "victimless crimes." And, it was assumed, the consequences of risk for individuals could readily be ameliorated in one or two discreet visits to a physician's office.

The AIDS epidemic was grafted onto a rising and very substantial epidemic of these and other sexually transmitted diseases in the male homosexual population. The relationship of AIDS to other sexually transmitted diseases was early advanced by Sonnabend (1983), who noted: "Among homosexual men it appears that the disease has been occurring in a rather small subset characterized by having had sexual contact with larger numbers of different partners in settings in which the prevalence of carriage of cytomegalovirus (CMV) and also of other sexually transmitted viruses is very high. Such environments are noted in New York, San Francisco and Los Angeles." Very early in the epidemic, physicians who had been working in the homosexual community noted the three key factors related to the introduction and rapid spread of infection: (1) a high frequency of other sexually transmitted diseases within a subpopulation of homosexuals; (2) the subpopulation characterized by having multiple sex contacts; and (3) frequency of anal intercourse. The primary difference noted between AIDS and other sexually transmitted diseases was its high case fatality, indicating the virulence of the agent once it had taken hold.

Epidemiological studies very quickly verified these initial observations (Curran et al. 1985; Marmor 1984). The relation to multiple sex partners, localization to selected areas of the country, and association with other venereal disease were documented (Marmor et al. 1982). In a study of types of sexual behavior among patients with Kaposi's sarcoma in New York (Marmor 1984), anal intercourse was implicated. Subsequent studies of other routes of sexual exposure demonstrated the low infectivity of the agent, i.e., its relatively weak ability to cause infection through these means.

The specific time and way that the virus was first introduced into the homosexual population are unknown. The San Francisco cohort

study suggests that some individuals were infected late in the 1970s (Curran et al. 1985). By 1978, 4 percent of the cohort were seropositive, although no cases of AIDS were identified until 1981. A recent study in New York (Stevens et al. 1986), also utilizing an existing serum bank from high-risk homosexuals, has documented that the virus was present at least from 1978 onward. The virus had been introduced into the United States population earlier, but because of the relatively low infectivity, the subsequent development of an epidemic was slow.

Evidence of AIDS-like infection prior to the 1970s has been retrospectively identified in Africa (Saxinger et al. 1985; Biggar et al. 1985; Rodriguez et al. 1985), and South America (Rodriguez et al. 1985; Fleury et al. 1986). Its prevalence has been widely discussed and debated (Biggar 1986; Kanki et al. 1985; Daniel et al. 1985; Boffey 1986; Brun-Vezinet et al. 1986), but two scenarios for the origin of the AIDS virus and its pandemic spread are noteworthy. In one, the virus was introduced into the United States homosexual population (from Africa directly, or through Haiti) and spread rapidly within a subpopulation because of their specific sexual practices. In the second, a non- or weakly pathogenic virus was introduced into the United States homosexual population and the virus subsequently mutated to a highly virulent form. In both situations the key ingredient was the availability of this subpopulation of homosexual men with a high frequency of sexually transmitted diseases.

Once the virus had been introduced into this subgroup of the homosexual population, the probability of subsequent transmission was a function of exposure and of infectivity of the virus. As more individuals became infected, the probability of transmission of the virus following a sexual contact obviously increased.

Control of the Epidemic

The Centers for Disease Control (CDC) did a remarkable job in developing almost instantaneously an effective surveillance of AIDS cases. Scientists at the National Institutes of Health (NIH), and many other institutions in the United States and other countries, identified HTLV-III/LAV as the specific etiologic agent in 1984 (Norman 1985). Subsequent

analytic epidemiological studies documented the mode of transmission and identified the high prevalence of infection.

Once the viral etiology of AIDS was identified, and a specific serological test became available, seroepidemiological methods became the primary approach to *monitoring* the epidemic; they offer the potential to be further utilized to *control* it. To date, monitoring has been directed primarily to the study of prevalence of existing infection, to identifying certain high-risk groups in the community, and to attempting to determine the risk of clinical disease among those who have been infected. There have been three approaches to the use of seroepidemiology to control the transmission of the disease. The first, screening of blood donations, has been remarkably successful in all but eliminating infection from transfused blood and blood products, and has met with little perceptible resistance. The other two have caused considerable controversy. First, *screening the "at risk population"* to identify those infected, and second, *case-contact investigations of individuals* presumed to have been exposed. A major goal of these approaches is to protect the 80 percent or more of the estimated total homosexual population that is still not infected. The specific approach chosen to control the epidemic will depend on the current prevalence of infection in the specific community.

The high prevalence of infection in some communities, estimated to be over 70 percent among homosexual men in New York and San Francisco, suggests that much of the most immediately susceptible population of homosexuals in them has already been infected. The major efforts with these populations must be to prevent the transmission of the infection and disease outside of these very high-risk subgroups. At the same time, there must be more extensive research to reduce the risk of acquiring clinical disease among those already infected.

The increasing prevalence of seropositivity in other cities is also of concern. A recent report from the Multicenter AIDS Cohort Study (MACS) (1985) reported the prevalence of infection among cohorts of homosexual men in four cities: Baltimore, 30 percent; Pittsburgh, 23 percent; Chicago, 44 percent; and Los Angeles, 51 percent. This high prevalence, only about four years since the apparent beginning of the epidemic, was also noted by Spivak and Wormser (1985), who, in November 1985, estimated that 1.3 million homosexual or bisexual males in the United States were already infected. If the reported 10

to 20 percent incidence of disease among those infected is correct (Goedert et al. 1986), then up to 260,000 AIDS cases could be expected within the next 5 years.

In communities with prevalence of infection of 5 to 30 percent among the at-risk population, there is still a great potential to blunt the epidemic by screening methods and health education. Given the available serological tests and the more specific confirmatory testing procedures, practically all infected persons could be identified if they were all screened for the HTLV-III/LAV antibody. Such a task is not easy and, as noted, requires two approaches: screening programs to identify infected individuals within the high-risk populations; and case-contact investigation of individuals in order to find their sexual contacts who also may be seropositive.

The Importance of Cooperation

The methods used to identify infected individuals must be combined with health education in order to advise infected individuals about possible methods to prevent transmission of the disease, as well as about subsequent risk of clinical disease. Both of the approaches will depend on the voluntary cooperation of those individuals at highest risk; they are likely to withhold it unless there is a clear and comprehensive commitment to safeguarding their full civil rights in the process. While *actual* cases of denial of fundamental rights have been reported, they have been relatively few. It is the fear of *potential* abrogation of rights of autonomy and privacy—leading to loss of housing, employment, and insurance—that has understandably set high-risk groups against aggressive public health measures.

Paul Starr (1986) makes a helpful distinction regarding this seeming impasse. When rights to individual privacy demonstrably conflict with collective rights to survival, some hierarchy of values will be invoked. Starr suggests that use of serological testing as an epidemiological-medical tool for community survival must be separated in law from its misuse for unrelated purposes against individuals in housing, employment, and insurance. While strengthening the “moral” compulsion for being tested, he would strengthen legal guarantees of those fundamental rights of the infected, since their exercise poses no reasonable threat to the community. With such fears removed, cooperation in

voluntary testing might well become universal. Without such guarantees, fear of reprisal will undermine even mandatory approaches.

Screening, Case-contact Investigation, and Education

Of the two approaches to identifying the infected, screening of the high-risk populations and case-contact investigation, the latter is more problematic. There are several problems that may go far beyond the social and legal issues of case-contact investigation. Consider, for purposes of illustration, a case-contact approach to investigation for HTLV-III/LAV in the Commonwealth of Pennsylvania. As of early 1986 over 400 cases of AIDS have been reported. The ratio of seropositives to the cumulative diagnosed cases may be as high as 100:1 (Curran et al. 1985), in which event there would be 40,000 persons in Pennsylvania currently infected. At best, only a small percentage, probably fewer than 5 percent, are likely to be aware of their seropositivity. Thus, a case-contact investigation of all these individuals cannot be addressed outside the context of a suitable screening program to detect many of these seropositive individuals. A very small percentage of seropositive individuals might be detected by screening those who attend clinics for sexually transmitted diseases (STD). Even if we were to expand this approach to identifying the infected by making seropositivity to the AIDS virus officially reportable by physicians and licensed laboratories (as is the case with gonorrhea and syphilis), still only a small percentage of seropositives would be found: most individuals are asymptomatic, outside the medical care system, and therefore unlikely to see any reason to volunteer to be tested.

The second problem is that case-contact investigation of seropositives is not easy, even when they are identified, especially when contrasted with the traditional epidemiologic model for syphilis or gonorrhea. The classical STD case-control model is based on the interviewing of a case with early (generally less than six months) treatable disease. Here, the goal is to identify sexual contacts who are potential cases from the index case that had been identified. These identified contacts are given either prophylactic or therapeutic treatment. Generally, the source is difficult to detect and becomes more so as a direct function of the length of the incubation period and subsequent seropositivity. The identification of the source of any given AIDS infection is unlikely, particularly in areas where HTLV-III/LAV seropositivity among homo-

sexual men has exceeded 20 to 30 percent. The value of the case-contact investigation will be limited primarily to identifying clusters of individuals who are seropositive among the sexual contacts of this index individual, i.e., the secondary, or associated cases, rather than the original source of infection of any single individual. These seropositive individuals could then be advised about the risk of transmission of the disease to other individuals. The seronegative individuals within these clusters can be notified about the best methods to avoid infection, specifically the importance of modifying specific sexual practices and, if possible, avoiding sexual contact with individuals who are infected.

Screening, on the other hand, offers greater promise for public health efforts. Ideally, the entire population should be tested for seropositivity to HTLV-III/LAV for, as noted in a Public Health Service report (Pear 1986), infection has already spread well beyond the established risk groups. "High risk" and "low risk," especially in the context of imperfect knowledge about co-factors, designate only grossly relative constructs of imputed behaviors. At no time, however, are they to be taken as implying that any behaviorally defined group (except, of course, chaste non-IV drug users) is at "no risk." Reason should indicate that at this stage of the AIDS epidemic, after the initial failure of public health policy, it is *individuals*, rather than *groups*, who are infected and capable of infecting others. But reason—here constrained by immediate considerations of political feasibility and efficient use of resources—necessitates that we settle for less than the ideal. Screening, then, in the short run may have to concentrate on groups known to have the highest number of infected individuals in order to identify them and to intervene effectively. Again, the singular focus on homosexual men in this paper is chosen because of better information, and must be seen as illustrative only. (The Public Health Service report [Pear 1986] clearly forewarns that "intravenous drug abusers serve as the major reservoir for transmission of infection to heterosexual adults and their infants, as well as among themselves.")

It is important to recognize that screening among high-risk groups, much like the case-contact method previously described, requires a substantial amount of cooperation by the individuals at risk, not only in terms of their participation in the screening program, but also in their willingness to reduce markedly the probability of transmission of the virus, i.e., modification of sexual behavior or IV drug use. Recent changes in sexual behavior (Stevens et al. 1986; McKusick,

Horstman, and Coates 1985; Feldman 1986; Riesenbergs and Fishbein 1986; Centers for Disease Control 1985), most notably a decrease in both the number of partners and high-risk sexual practices—especially receptive anal intercourse—suggest that behavioral change is an achievable goal.

Massive screening in the community, even just to identify infected male homosexuals, would require major resources beyond those currently available. Again, lacking good denominators, we can only guess at the target numbers of those to be screened. The estimates made by Kinsey, Pomeroy, and Martin (1948), although challenged for almost four decades, are not yet superseded: about one adult male in ten has had repeated homosexual experiences. Applying this estimate to the 1985 (U.S. Bureau of the Census 1986) male population aged 15 to 59, the most sexually active years, yields a national target of over 7,200,000. Even at any reasonable rate of discount the numbers are large, although they may not be proportionally distributed across the nation.

One-time testing will not be sufficient. Screening would have to be repeated at periodic intervals in order to identify subsequent seroconverters (possibly 5 to 10 percent per year); more specific diagnostic tests would also have to be done among those who are initially seropositive by the screening tests. Furthermore, a health education and counseling program would have to be combined with the screening to include the efforts previously described to educate both those who are seropositive and seronegative. As yet, there are no clear models for the content of such behavior modification programs. In some instances, as noted in the falling rates for other STDs among homosexual men, straightforward provision of “safer sex” information may be persuasive. In others, changing attitudes and behaviors will require more complex approaches. Unfortunately, we do not have clear predictors of which approach will be most effective with which highly specific subgroup.

The incentives for the seronegative to stay uninfected are likely to be powerful. Adoption of “safer sex” practices can clearly reduce risk of infection; they can nearly eliminate risk when combined with restriction of partners to the uninfected. An important question, then, will be how to identify the serologic status of current or potential partners. Some proposals advanced—such as tattooing of the infected—are patently offensive; they would also be dysfunctional. Such an

eventuality would inevitably deter men who even suspected their serologic status from participation in screening.

A less Draconian method of identification, one that meets the standard of voluntary compliance, has also been advanced. In this approach, testing centers would issue cards to screened individuals reporting the results of their tests and subsequent confirmatory tests and the dates of testing. Such cards could also provide information on the risks of infection and how best to avoid transmission of the virus. This card system would make it possible for seronegative individuals to demand proof of the reported serological status of potential sexual partners. It is important to note that this approach does not require that the names of individuals who are seropositive or seronegative be retained in a registry or data file once the laboratory tests are completed. The information on seropositivity, dates and place of examination, and other identifiers are specifically for the education and information of the individual and any potential sexual contact. Any system, including such a card approach, is obviously subject to misuse, fraud, and misinterpretation. It is an imperfect method among other poorer choices. The greatest danger in each, however, is that it may engender a false and fatal sense of confidence. None adequately protects against the imperfection of information communicated or the vagaries of human behavior.

Changing the behavior of those determined to be seropositive may draw upon some of the same approaches, but different reinforcements are called for. The consent form for voluntary testing used by the New York City Department of Health since March 1985 is instructive on several counts. It states, in part:

. . . there exists a real possibility that a positive test may be harmful to you in several ways. A positive test for you may cause unnecessary *psychological distress*. You may fear later becoming ill with AIDS or being able to infect others, when actually you may be immune, and not infectious. A positive test result, if not kept absolutely confidential, could be used to *discriminate against* you. If this information were known by your *employer*, you might face *job discrimination*. If this information became part of your *medical records*, it could influence your *health* or *life insurance company* and adversely affect your insurability [emphasis in original].

The lack of clear assurance of confidentiality, a condition already noted as fundamental to voluntary compliance with judicious public

health practice, is lamentable. Confidentiality must be pursued more vigorously to ensure participation not only in initial identification, but also in educational and counseling follow-up. However, despite the explicit and dire forewarnings, more than 7,500 persons have voluntarily taken the test (Deputy Commissioner's Office, New York City Department of Health, personal communication, 1986). In San Francisco, where tradition and law are more protective of the sensitivities and rights of homosexuals, the comparable number responding to voluntary testing exceeds 11,000 (J. Zone, Department of Social and Behavioral Sciences, University of California, San Francisco, personal communication, June 1986). Surely these responses indicate, among other things, a strong residual interest in responsible action to avoid infecting others. Pro bono concerns can be a powerful reinforcement and merit a central role in any program.

On the level of more immediate self-interest, there is a possibility that the infected individual himself, once identified, might benefit. The pathogenicity (ability to cause disease) and virulence of HTLV-III/LAV infection is not completely understood. Most of those infected, as already noted, will not get AIDS. It is possible that other factors, as Sonnabend (1983) has suggested, including repeated infection with a variety of sexually transmitted diseases, such as cytomegalovirus or herpes, may increase the pathogenicity or virulence of HTLV-III/LAV infection. Zagury et al. (1986) support the concept that activation of infected T4 lymphocytes by blood, semen, or other infectious agents leads to activation of the virus and cell death. If these hypotheses can be substantiated, then vigorous efforts to prevent and treat other infectious diseases might reduce the risk of clinical AIDS among those who prove seropositive.

If voluntary approaches to reducing infection in the community are unsuccessful, then it may be necessary to consider more aggressive approaches. These will center on the identification of a subset of individuals who are infectious and not willing to adhere to "common sense" approaches to the reduction of the transmission of the disease. Such aggressive approaches occasionally have been necessary in the control of other infectious diseases, as when patients who, with open tuberculous lesions, refused to take chemotherapy and were spreading the disease in the community.

Wing (1986) has reviewed some of the legal issues related to AIDS: "Compulsory treatment or even quarantine of known carriers of AIDS

who continue to engage in homosexual activity, much like the commitment of the tuberculosis patient in past decades may well be viewed as the least drastic means of achieving a compelling government interest, i.e., to prefer the prevention of the spread of AIDS, despite its impact on the individual." What treatment is alluded to here is unclear, but it is unlikely that detention and restraint would be required except in highly unusual situations. Musto (1986) and Gostin (1986) offer compelling reasons why quarantine is an unacceptable approach not only for ethical reasons, but also for effective public health practice.

Legitimate restrictions on behavior likely to result in transmission of the AIDS virus, if based on the best possible information, may be justified and acceptable only when determined to be necessary by public health authorities knowledgeable about the risks of infection. Restrictions in employment, housing, school attendance, etc., based on unsubstantiated opinion and fear that any behavior will result in risk of infection, are unacceptable. Attempts to legitimate them are likely to result in the failure of the entire prevention program, leading to more infection and risk of disease rather than less. However, based on the current changes in sexual behavior within the homosexual community, it is unlikely these more stringent procedures will be required.

Surveillance

Once in place, identification programs will have to be carefully monitored in the community through surveillance of new infection over time. This public health activity should be separated from screening or case-contact investigation. Surveillance is primarily an analytic/research tool to measure the efficacy of the intervention program in the community, and to guide decisions about further intervention. It is not a specific benefit for any individual or the community at large. The technique requires a defined population at risk as a denominator (which, as noted, can only be guessed at) and the number of new infections, i.e., seroconversion or incidence, as the numerator. The decline in the number of new seropositives is the primary measure of the success of the intervention program. Longitudinal studies of new seroconversion rates in different populations must, therefore, be a major component of the overall control strategy. Other measures of

the success of education and counseling, such as changes in health behavior—both as self-reported and as measured in reduction of other sexually transmitted diseases—are but an intermediate point. They are of little value to the control of the AIDS epidemic until reflected in reduction in incidence of HTLV-III/LAV infection.

The popular media have given almost exclusive attention to the number of cases of AIDS—its exponential rise, momentary deceleration, and renewed increase. Such attention is understandable and even important, but it focuses only on past experience. Surveillance of new infection, removed from the drama of clinical concern though it may seem, must be a fundamental tool of public health practice.

Discussion

The AIDS epidemic is unique primarily because of the initial inability to identify the specific cause of the disease, the relatively long incubation period, and the high case-fatality rate once the disease is manifested. The epidemic probably would not have occurred in the United States if there had not been such a large susceptible population of high-risk men and IV drug abusers. The failure to control effectively the rising epidemic of sexually transmitted diseases within a subgroup of the homosexual population was, in retrospect, perhaps the greatest public health failure. The reasons for this lack of success in controlling the epidemic of sexually transmitted diseases are multiple and embedded in the times.

Reasons for the Failure

The difficulties of dealing with behaviors that are presumed to be different from those of the majority of the population in the past often impeded, but rarely deterred, public health efforts. The first of these difficulties has been largely overcome, even if belatedly. It is now clear that an early lack of familiarity with, and subsequent discomfort in discussing, the specific behaviors practiced within the initially defined risk groups led to a lag in sensitive and sensible epidemiologic investigations. Even mature and respected scientists were sometimes prey to squeamish ineffectuality when it came to

matters of anal intercourse. Perhaps the greatest lesson learned by epidemiologists is the necessity for engaging members of an affected risk group to participate in the earliest formulations.

A second difficulty in dealing with uncommon behavior may also have to be overcome in this way: how to think creatively about changing behaviors associated with high risks of disease. A similar incorporation of the expertise indigenous to the specific group at risk must be undertaken. Only then can we begin to tailor approaches to fit the problems. These will necessarily involve education, behavior modification, judicious “penalties and rewards,” among others. And the language and modes of expression may well have to be flagrantly heterodox if they are to be effective.

Contrary to the priggish sensibilities of the administration, moralistic attitudinizing won't do the job of forceful education. Former Surgeon General Thomas Parran showed during World War II that “safe sex” practices could be promulgated effectively among the armed forces. Plain talk and simple proven methods, delivered in situ, were the cornerstone of the remarkably successful campaign against epidemic syphilis and gonorrhea. Even greater risks than those of “offenses to the average sensibilities of the community” were at stake then. They are exponentially greater in the face of the AIDS epidemic.

To date, the federal public health response to control of the epidemic through behavior change has been weak at best. The U.S. Office of Technology Assessment (OTA) (1985) called attention to the paucity of specific control activities. Expenditures for research into all psychosocial risk factors in fiscal year 1985 were less than \$2,000,000. That minuscule amount covered research into factors both consequent from and contributing to AIDS. With further respect to behavioral education by the Public Health Service, the OTA memorandum noted that, more by default than by design, “gay organizations have provided much more explicit and practical advice on the relative safety of various sexual practices.” Clearly, the areas of prevention and control were relegated to the “back burner” of AIDS research and programming. Local governments, mainly where the number of cases are highest, and voluntary efforts have partially filled the void of ideas, personnel, and financing. Numerous indicators of success—albeit indirect, uneven, and unsteady—are only qualifiedly encouraging.

Intravenous drug abusers are not likely to be reached effectively by behavioral strategies aimed exclusively at sexual behavior, especially

when these strategies are intended to address homosexual men. The principles and problems of efforts to deal with unpopular behaviors are undoubtedly the same; but the specific components may have to be markedly different. There is little reason to expect that IV drug abusers will be any less homophobic than is the general population. Organizations serving the special needs of IV drug abusers report frequent resistance to even the risk of possible identification with "the gay plague" (Jackson and Grooms 1986). Often, their clients/patients seek advice only at the point of advanced and multiple illness. Since this risk "group" has no, or at best poorly understood, group-like qualities, education will be difficult. Drug treatment clinics, detoxification centers, and methadone maintenance programs may be the best loci for case identification and education. But lacking denominators, we know little about the nature or proportion of IV drug abusers being reached. Nor do the long waiting lists for service at many of these treatment modalities in the cities with greatest need encourage limitless hope. The initial failure of public policy is thus being perpetuated and compounded with respect to IV drug abusers.

A third—and perhaps more fundamental—difficulty lies in the very notion of "uncommon behavior" and the persistence in attributing it to arbitrarily defined and mutually exclusive groups. Earlier attention to Kinsey (1948), for example, would have yielded more realistic and operational understanding. In the course of this monumental study, Kinsey and his colleagues queried respondents about the extent of male-to-male sexual experience. The answers indicated that such experience was far from uncommon. Undoubtedly, the introduction of extraneous modifiers—"homo-," "bi-," "hetero"—which imply exclusivity or primary self-identification would have elicited different, and distorted, responses. The emergence of "bi-sexual" males as a "group" at risk for AIDS would not have surprised the behavior-oriented Kinsey team.

Further examples of the fallacy of "uncommon" behavior and "group" attributions abound in the AIDS epidemic. The illicit use of intravenous drugs is likely more pervasive than is discussed under the rubric "IV drug abuser." When, and under what circumstances, does use become abuse? Are the conditions of sterility assured when use is "occasional" or "recreational"? Is the setting for infection limited to inner-city "shooting galleries," thereby precluding the parking lots of suburban shopping malls? The artificiality of categories should have become

obvious in the quizzical efforts of epidemiologists to categorize male homosexual IV drug abusers.

In a sense, the failure to grasp the very commonness of some behaviors has placed a majority of the population at increased risk of infection. Take the case of sexual transmission of HTLV-III/LAV. If all sexual relations—either homosexual or heterosexual—were confined to monogamous partners, the spread of infection would be easier to control. But heterosexual partnering, like that of the much-discussed homosexual partnering, is not always exclusive. Multiple and anonymous sexual partnering is not uncommon behavior. Monogamy, itself, does not confer immunity; the monogamous partner of a monogamous IV drug abuser remains at high risk. In recognizing, even if not approving, these realities of contemporary social life, public health education can better turn its message to the central fact of sexual transmission of HTLV-III/LAV: in all sexual intercourse the penile receptive partner is at greatest risk.

It is important to remember that whatever epidemiological utility there had been in initial ascription of behaviors to groups, continued singular reliance on these is fast becoming untenable. The groups both interact and overlap in ways that provide innumerable pathways for the spread of HTLV-III/LAV to the population at large.

Finally, if the AIDS epidemic can be said to have brought certain aspects of frequent homosexual behavior ineluctably out of the closet, probably the public—and certainly public health—must recognize that changes in behaviors cut across the *total* community. Otherwise, rapid transmission of AIDS through the heterosexual population is inevitable. The lesson for public health in its failure to control the earliest stages of the epidemic will have been lost.

Controversies about Control

The one strategy for control of the AIDS epidemic around which there is consensus among informed professionals—if only in principle—is education. To be tactically effective, as we have shown, education will have to be paralleled (perhaps preceded) by vigorous screening and surveillance. Controversy over approaches to these strategies persists even within the public health community.

Some advocate a passive approach, i.e., to provide the facilities for testing and to urge that those at risk voluntarily use them. Others,

like the Association of State and Territorial Health Officers (1986), advocate that we go into the community and actively seek those at greatest risk. Similarly, the information obtained about seropositivity can be either confidential, i.e., available only to the individual who has been screened, or made available to those responsible for control of the epidemic. Former Assistant Secretary of Health Dr. Edward Brandt (1985) favors voluntary reporting of information that would not allow patients to be identified. He believes that mandatory reporting is in conflict with an individual's right to privacy. His other major concern is that many groups would demand secondary release of the names, resulting in adverse consequences for those individuals identified. It is unlikely that voluntary reporting and surveillance alone will be sufficient to stem the AIDS epidemic. However, the realistic concerns raised by Brandt must be given high priority.

The joint Health and Public Policy Committee of the American College of Physicians and the Infectious Diseases Society of America (1986) advocates a national program emphasizing prevention and coordination at the local level. The committee recommends that testing for HTLV-III/LAV antibodies be used only in situations in which it would be beneficial to public health and under conditions to prevent discriminatory reprisal. It also suggests that selective screening of persons whose personal conduct poses unique risk to others be conducted, if at all, on a case-by-case basis. Further, the committee opposes the release of information related to a confirmed positive test except when required by public health law, although it does support the reporting of anonymous HTLV-III/LAV positive tests to public health authorities as a method of surveillance. The committee also suggests that health education and some form of passive surveillance may be the best available approach to control the epidemic.

The Centers for Disease Control (1986) recommends that serological testing be done only in health care settings and in combination with a vigorous health education program. (It is interesting to note here that the U.S. Public Health Service has issued general recommendations for "safe sex" to be promulgated as part of the education message to all high-risk individuals, despite the fact that efficacy is still not proven.)

Acheson (1986), chief medical officer of England's Department of Health and Social Security, notes that the value of screening the high-risk population for HTLV-III/LAV is unproven. The critical question,

he suggests, is whether an individual is more likely to change his behavior if he knows his serologic status. This question obviously requires an immediate answer.

Echenberg (1985) suggests another approach. He believes that the educational message may already have been effective in reducing high-risk behavior in much of the local homosexual population. Case finding and tracing, he concludes, will be more importantly directed to heterosexual contacts of AIDS patients. He proposes that AIDS patients be interviewed to obtain their heterosexual contacts for serologic testing. All contacts that are positive would be counseled and educated about the nature of AIDS and its transmission, and their contacts would in turn be tested. Wykoff (1986) doubts the value of this approach without further expansion of surveillance and case follow-back to all identified infected individuals.

Other scientific and public interest groups are exploring the delicate balance between the needs for privacy and confidentiality and the demands for effective control: the Institute of Medicine/National Academy of Sciences; the Hastings Center; the American Civil Liberties Union. City councils and state legislatures are also taking positions, although sometimes without recourse to salient evidence.

Envoi

The control of the AIDS epidemic ultimately will depend on breaking the cycle of disease transmission. Public health practice has long valued treatment and cure, when it is available, as one effective tool in breaking the cycle of an infectious disease, as in the case of syphilis or tuberculosis. However, a cure for AIDS is only a distant hope. Even if new treatments reduce the morbidity and mortality from this disease they will not thereby reduce its spread. Vaccines may someday be available to protect the susceptible population against infection. But if the behaviors that are clearly implicated in increased risk of AIDS are not modified, or if methods to control transmission of disease given these behaviors are not developed, then, assuredly, new epidemics—due to other, as yet unidentified agents—will follow. That AIDS followed epidemic hepatitis B should be instructive.

The hepatitis B vaccine played an important role in controlling that earlier epidemic, closely associated in its spread with many sexual and IV drug use behaviors also linked to AIDS. But the success of

the vaccine in reducing host susceptibility to a specific agent enabled a false—and tragically lingering—sense of the unimportance of changing inherently dangerous host behaviors. The AIDS epidemic reinforces well-known relations among host, agent, and environment.

The individual's right to avoid becoming infected with HTLV-III/LAV and dying from AIDS must have the highest priority in public policy. Protecting this right will require renewed emphasis on basic preventive medicine for the individual, infectious disease control for the community, and a responsible public health organization for the nation. The resources needed will be substantial. Until we reach the point at which surveillance records a decrease in the incidence of new infection, the resources committed will be inadequate or ineffective. The ultimate duration, magnitude, and economic and social costs of the AIDS epidemic are unknown, but they will only increase as a direct result of our inaction.

In the end, the lack of a responsible public health organization for the nation will prove our greatest handicap. Governments, too, can suffer a "wasting disease"; the gradual erosion of the coordinated leadership of the Public Health Service has created a void. Surveillance of the nation's health itself is no longer the clear responsibility of any agency of government, nor is the surveillance of proposals for meeting crises. Isolated islands of excellence—in the Centers for Disease Control and National Institutes of Health, among others—do not alone constitute a national strategy to defend and promote the national health.

Absent thoughtful, rigorous, and visible health leadership there will continue to be competition, not for increasing excellence, but only for diminishing budgetary resources or even between the Department of Health and Human Services and the Department of Justice for claims to authority in the public health. The AIDS epidemic serves both as a reminder and a forewarning of our vulnerability.

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