



Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30333

October 3, 1994

Mr. Randy Miller
National Task Force on AIDS Prevention
944 Market Street, Ste. 210
San Francisco, CA 94102

Dear Mr. Miller:

Thank you for participating as a member of the Centers for Disease Control and Prevention (CDC) Information/Materials Working Group. We appreciate your taking time from your busy schedule to help us make CDC's HIV/AIDS information services more relevant and useful to its priority target audiences. We look forward to collaborating with you in these endeavors.

We hope that you have had time to review the materials provided to you at the September 9th meeting and that you have a better understanding of the range of services provided by the CDC National AIDS Clearinghouse (CDC NAC). At the meeting, it was agreed that the Working Group would also look at the information services of the CDC National AIDS Hotline (CDC NAH). In the packet of materials accompanying this letter, we have included information about the CDC NAH.

In this packet, we have also included background material about the Clearinghouse and the demographics of the epidemic. Some of the information you requested has been difficult to locate, but we are continuing to look. As additional information is located, it will be forwarded to you. Also enclosed are minutes of our September 9th meeting. If you have any questions or need additional information, please let me know and we will attempt to find it. You can call me at (404) 639-0956 or fax me at (404) 639-0973.

CDC will be providing the CDC Advisory Committee on the Prevention of HIV Infection with its comments on the External Review Committee's recommendations on October 11 and 12. We will furnish you with those comments shortly thereafter.

If you are planning on attending the National Skills Building Conference in Atlanta, we invite you to participate in an institute on October 29 coordinated by CDC NAC, entitled "Improving Community Access to HIV/AIDS Information." If you cannot participate in the Institute, shortened versions of the program will be repeated in workshops during the conference. In addition, CDC is sponsoring a Computer Resource Room at the conference where attendees can see demonstrations and receive training on various computer-based HIV/AIDS information services, including NAC Online, HANDSNET, AEGIS, NAPWA Fax and others. Please call me if you would like additional information about the institute.

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Please remember that if you have not yet given us your comments on the first draft of the User Needs Assessment, it is not too late. Please call or fax any comments/suggestions to me or to Maryann Kraye at the Clearinghouse. Her phone and fax numbers are (301) 251-5617 and (301) 738-6616. The information from the assessment will be very important to your work so your input is very important.

Again, thank you for your interest and commitment to improving CDC's HIV/AIDS information services. I look forward to speaking with you soon and seeing you again when we reconvene on December 8 and 9.

Sincerely yours,

A handwritten signature in blue ink, appearing to read "Ken Williams", is written over the "Sincerely yours," line.

Ken Williams
Program Manager, CDC National AIDS Clearinghouse

List of Contents of Package

- 1 letter
- 1 list of contents
- 1 end-of-year surveillance report (D044)
- 1 CDC NAC "Information Materials Working Group Team" list
- 1 list of "Members: CDC Information/Materials Working Group
- 1 CDC "Information Materials Working Group" Meeting Minutes of
September 9
- 1 MMWR "Current Trends AIDS Among Racial/Ethnic Minorities
- 1 Alan R. Hinman, M.D. report
- 1 Kenneth G. Castro, M.D. report
- 1 report, "Population Differences in Susceptibility to AIDS
- 1 report, AIDS Cost and Services Utilization Survey
- 1 each of HOTLINE materials
- 1 notebook

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CDC Information Materials Working Group Meeting

CDC National AIDS Clearinghouse

September 9, 1994

9:00 a.m. - 4:00 p.m.

WORKING GROUP FACILITATOR:

Fran Cooper

MEETING ATTENDEES:

AID Atlanta: Jeff Cheek

American Medical Association: John Henning

California AIDS Clearinghouse: Russ Toth

CDC National AIDS Hotline: David Herrell

Council of State and Territorial Epidemiologists: Willis Forrester

DC Care Consortium: Christopher Bates

Hispanic Designers, Inc.: Elena Alvarado

Multicultural AIDS Coalition, Inc.: Ricardo Rodriguez

National Alliance of State and Territorial AIDS Directors: Julie Scofield

National Association of People With AIDS: Keith Polanen

National Community AIDS Partnership: Gretchen Wooden

National Council of LaRaza: Christina Lopez

National Education Association, Health Information Network: Rafael Rivera

National Latino/a Lesbian and Gay Organization: Roberto Vasquez Pacheco

National Task Force on AIDS Prevention: Randy Miller

National Women HIV/AIDS Project: Toni Young

Salud: Carmen Carrington

MORNING SESSION

SEPT. 9, 1994

Introduction of Participants

Ken Williams, CDC NAC Project Officer, opened the meeting with welcoming remarks. He said the purpose of today's meeting was to begin the process that would make the Clearinghouse become more effective. With the assistance and support of the members of the committee, CDC can make the Clearinghouse work for them and their constituents.

At Mr. Williams' request, everyone in attendance briefly introduced himself or herself, giving their names, titles, and brief descriptions of their organizations. Formal presentations began with a brief overview of Clearinghouse operations and their major services, given by Project Director Ruthann Bates.

Clearinghouse Overview

Ms. Bates' presentation covered background information, explaining the difference between the Clearinghouse and the CDC National AIDS Hotline, the types of services offered, and ways to access those services. She also discussed the types of organizations and professions using Clearinghouse services and provided details on various Clearinghouse services, including all databases, publication distribution, information products such as standard searches, the resource centers, NAC ONLINE, Business and Labor Respond to AIDS Resource Service, and the AIDS Clinical Trials Information Service. The presentation also covered networking, technical assistance, and the soon-to-be-launched HIV/AIDS Treatment Information Service.

At the conclusion of the presentation, Mr. Williams made additional comments on the new HIV/AIDS Treatment Information Service. He said that many people in the Public Health Service had been pushing for it, and that it would have two designated audiences: physicians and health care professionals, and persons with HIV infection.

He then explained that the Clearinghouse is very large and complex and that it costs an average of \$500,000 a month to operate. The largest portion of those costs lies with inventory and distribution, at \$129,000 a month. Some \$21,000-\$22,000 of that is offset through the Cost Recovery program, where clients are asked to pay shipping and handling fees for bulk orders. Prior to the institution of the Cost Recovery program, the Clearinghouse shipped 12 million materials a year; now, the rate stands at 5 million. Mr. Williams then gave the costs of other portions of the operation as follow: ACTIS, \$67,000 a month, or 16 percent of the budget; computer services, \$56,000, or 13.3 percent; Reference and Referral, \$40,000, or 9.5 percent; Database maintenance, \$48,000, or 11.8 percent; Document Production, \$22,000, or 5.2 percent; and Business and Labor Respond to AIDS, \$28,000 or 6.7 percent. These major components add up to 80 percent of the total cost, with many smaller fragments making up the remainder.

In response to a question from Gretchen Wooden of the National Community AIDS Partnership, Ms. Bates said costs had decreased over the years. In 1988 and 1989, the Clearinghouse was sending out a million materials each month because anyone could call and get any publications they wanted in any quantity they wanted. Sometimes, tractor trailers filled with the materials went out to one location. After much study and analysis, the Cost Recovery Program was put into effect; this resulted in a significant decrease in the number of publications ordered by requesters. All other services -- reference, the 800 numbers, exhibits and materials at conferences -- are completely free, she pointed out.

Toni Young of the National Women HIV/AIDS Project asked for demographic information on who uses Clearinghouse services. She was told that while the Hotline has demographics available, the Clearinghouse does not collect this type of data. Lynn Lisella of the CDC suggested that a plan could be drawn up to obtain this information in the future. Mr. Williams called on David Herrell of the Hotline, who explained that the Hotline has some data on age group and gender of callers, but that it doesn't have an ethnic or racial breakdown. Anita Taylor of the Clearinghouse pointed out that while it is important to know the demographics of current users, the purpose of the review process is to reach out to organizations not currently using Clearinghouse services.

External Review and Recommendations

Mr. Williams explained that last year CDC had initiated an external review process that involved five separate subcommittees. This review resulted in seven recommendations for CDC NAC involving major issues that needed to be addressed. The recommendations were: One, define the priority target audience, which the review group felt was community-based organizations; Two, tailor services to meet the needs of this audience and consider the use of regional satellite centers; Three, develop periodic communication with users to establish their needs and determine if needs are being met; Four, market services to priority users; Five, reinstate external review process for accuracy and currency of materials; Six, acquire the best available publications and make them readily available; and Seven, identify gaps in information and education materials and develop materials to fill these gaps.

Although these recommendations are broad, Mr. Williams said he felt that all could be accomplished, and that it was the purpose of the Working Group to help in this process.

Working Group Concerns

He then turned the meeting over to Fran Cooper, the meeting facilitator. He said he hoped for results from the Working Group in February or March. Ms. Cooper asked if there were other areas of concern in addition to the ones listed on the agenda. John Henning of the American Medical Association said he felt concerned about gaps in services, that he wanted to identify things that the Clearinghouse could be doing that are outside the present structure. Julie Scofield of the National Alliance of State and Territorial AIDS Directors said she thought that many

people found the Clearinghouse intimidating, and that she wanted to address ways to ease access and the ability to utilize Clearinghouse services.

Following a break, the group reconvened to discuss tools needed to accomplish the review process.

Ms. Young once again asked for demographics, specifically on usage of services, cross-referenced as to which ethnic groups and genders are using which services. Ms. Lisella pointed out that some restraints are imposed by the Office of Management and Budget, and that we may have to work around that. Roberto Vasquez Pacheco of the National Latino/a Lesbian and Gay Organization added a desire for a regional breakdown, and Ms. Wooden asked for urban vs. rural demographics. It was pointed out by Ms. Bates that some of this information had not been collected in the past because it was not part of the Clearinghouse mission. Mr. Herrell explained how the Hotline collects data from every 50th caller as a way of extrapolating demographics. Carmen Carrington of Salud asked why Spanish language calls were not included, and Mr. Herrell said the Hotline had just begun including Spanish requests.

Christina Lopez of the National Council of LaRaza asked if a user needs assessment had ever been done, and Ms. Cooper explained that comment on a proposed needs assessment was one of the tasks of the day. Ms. Wooden said she wanted not only a snapshot of recent usage, but also background data on any substantial changes in service utilization.

Mr. Henning asked about the possibility of learning about the politics involved in the process: how much of the results have to please the Working Group, how much has to please Congress, how much has to please the CBOs.

Ms. Scofield asked for a specific budget of the Clearinghouse, including funds derived from other Federal agencies as well as the CDC. Ms. Lisella pointed out that the Clearinghouse is able to offer services more cheaply because it performs so many different tasks, and economies of scale drive unit costs down.

Ms. Lopez asked if there were any way to determine information about Hispanic users other than tracking calls in Spanish. Ms. Bates explained she could also track what organizations are asking questions about Hispanics and the distribution of Spanish language publications.

Ms. Carrington asked if there were any way to track how many organizations become "rejected" in the system, either due to lack of time or lack of understanding of the process, and was told that both the Clearinghouse and the Hotline had methods of tracking lost calls. Ms. Bates gave statistics on the number of calls coming in to each service each month, and pointed out that some 600 regular users log 900-1000 hours on NAC ONLINE each month.

Russ Toth of the California AIDS Clearinghouse asked for a direct contact person at the Clearinghouse with whom to discuss issues.

The issue arose as to whether the process involved only the Clearinghouse, or both the Clearinghouse and the Hotline. Ms. Wooden said she wasn't sure it was important to users to know the difference between the two; it was more important to them to be able to call a number and get help.

In reference to the concept of regional satellites, Ms. Scofield asked if anyone, other than California, had a statewide clearinghouse and distribution mechanism. Mr. Toth said his clearinghouse is faced with budget constraints and a general feeling that it is more important to develop specific materials than to use general ones. He added to Ms. Scofield's request by saying he would like to know about for-profit, as well as nonprofit, organizations that were heavy users of Clearinghouse materials.

It was explained that development of materials is not done at the Clearinghouse, but is done by CDC as part of the America Responds to AIDS (ARTA) campaigns. The Working Group can recommend purging materials from the inventory, as well as addition of new materials.

Mr. Henning asked for a complete list of everyone involved with the Working Group's activities, including CDC officials, with Internet addresses, NAC ONLINE usernames, and FAX numbers. Ms. Cooper asked participants to bring other groups that should be involved in the process to CDC's attention. Mr. Toth pointed out that most of the organizations now on the list are large organizations, not the small CBOs that are the Clearinghouse's main target audience. He said he would have to do a lot of work to involve small organizations within his constituency, and Ms. Cooper agreed that was part of each committee member's job.

Mr. Toth asked for the budget priorities of the Clearinghouse, citing the example that CBOs might not see the necessity of the Business Responds to AIDS service, but it plays an important part in the CDC's plan.

Ms. Scofield asked if anyone in the room was a regular user of Clearinghouse services and received a number of affirmative replies.

Formation of subcommittees

Discussion then turned to the formation of subcommittees to address specific issues. Several proposals were considered for dividing into three subcommittees. The first suggestion was Marketing, which includes access; Materials and Services, which includes the inventory; and Communication, which would focus on users and subsets of users. This was rejected as being too vague.

Steve Cahill of the CDC then proposed grouping activities as answers to several questions: Who is the target audience? (The Market); How can we reach this audience? (Marketing and Access); How should we run the Clearinghouse? (Operations, Product Development, Services); and What materials should we use? He suggested the group as a whole consider the first question and the subcommittees consider the remaining three.

It was pointed out that the external reviewers kept coming back to three common problems faced by organizations: They don't know the Clearinghouse is there, they can't reach the Clearinghouse, and what they need isn't offered.

Mr. Toth then suggested a two-tiered approach to subcommittees. First, two subcommittees would consider Marketing and Access, and Materials and Services. Then, selected members of those two committees would meet to discuss communication and public relations. Christopher Bates of the DC Care Consortium suggested that the whole group come back to consider the third subject.

As it was nearing time to break, it was decided to continue discussion about subcommittees and timelines after lunch and the presentation on the needs assessment survey.

AFTERNOON SESSION

The afternoon session of the CDC National AIDS Clearinghouse Working Group meeting began with a discussion of the CDC NAC Needs Assessment.

Needs Assessment Overview

Ken Williams gave an overview of the survey which has been designed to investigate how Clearinghouse users obtain information, what communication systems they utilize, and what information they need but can not currently access. The questionnaire focuses on an organization's typical client and its core activities. The questionnaire asks for general information about the community-based organizations (CBOs) being interviewed, such as what audiences they serve. Mr. Williams said that some of these questions may be deleted because some of this information is already included in the Clearinghouse's Resources and Services Database.

Mr. Williams asked the group what type of information is needed in order to provide CDC with assistance in redirecting the Clearinghouse activities. This is the first time a Federal agency has asked CBOs for feedback on what information they need in order to better serve their constituents. CDC will share information obtained through this survey. The information from the survey will be used in three ways: as baseline information about the Clearinghouse and the needs of CBOs; as a reference tool to see how Clearinghouse goals are being met in the future; and as a planning tool for the Clearinghouse.

Mr. Williams reviewed the Clearinghouse's Resources and Services Database. CBOs make up the largest portion of records in the database, followed by public health agencies. The database includes a special designation for high profile organizations of which there are approximately 117. These include important groups such as the National Association of State and Territorial AIDS Directors and Whitman-Walker Clinic. A 100 percent sample of high profile organizations will be used in the survey because these organizations are highly active. In order to obtain highly valid data, the sample used for the needs assessment will consist of approximately 2,000 - 2,800 organizations. Mr. Williams asked that the group let CDC know about any other organizations they are aware of which are not included in the Resources and Services Database. Julie Scofield expressed concern that the survey may rely too heavily on information from national organizations.

Maryann Krayner, CDC National AIDS Clearinghouse, provided an overview of the draft version of the computer-assisted telephone interview which will be pilot tested. The Clearinghouse will send out letters explaining the survey a couple of weeks before contacting each organization for an interview. Approximately six call back attempts will be made in order to complete each survey. The telephone interviewer will walk through the survey with the organization representative. Following each day of telephone interviews, a tally will be made

to attain frequency counts for each question. It is estimated that it will take approximately 3 weeks to complete the survey.

Survey Methodology

Carmen Carrington requested that the survey be conducted in Spanish for Hispanic organizations. She noted that some of the interpretations will be different if the survey is translated literally into Spanish. She found that some classification categories confused race and ethnicity with high-risk behavior. Mr. Williams confirmed that a Spanish adaptation of the survey can be done. Ms. Carrington said she would like to review the adapted version. Roberto Vasquez Pacheco said that the survey may need to be translated into a number of languages to use with other organizations, for example into Haitian Creole for a CBO which works with the Haitian community in New York.

Russ Toth suggested that organizations be given time to process the questions before the telephone interview takes place. Christina Lopez said that a copy of the questions could be sent out ahead of time to allow the person responding to the telephone survey time to discuss the questions with the appropriate person in their organization in order to prepare for the interview. Mr. Pacheco concurred that it would be more effective to gather information from more than one individual and suggested that the introductory letter encourage the interviewee to talk to coworkers. Gretchen Wooden suggested that the introductory letter mention the topics to be covered in the interview and ask people to contact the Clearinghouse if they would like a copy of the survey questions. Ms. Lopez mentioned that the questions could be produced in a condensed version so that the length of the survey does not intimidate the person receiving it.

Chris Bates mentioned the suspicions that people often have about telephone questionnaires. Mr. Pacheco added that many of the organizations in the survey receive funding from CDC and, therefore, may be suspicious about how the survey information will be used. Ms. Kraye said the survey was completely voluntary and has no bearing on CDC funding. Mr. Williams added that only summary data was being provided to CDC; individual organizations will not be identified.

Steve Cahill asked who had produced the survey draft. CDC staff produced the draft with input from Clearinghouse staff. He suggested that the survey begin by asking what kinds of services organizations would find helpful in a clearinghouse before asking more specific questions. In this way they might avoid directing the thinking of the callers through specific questions.

Mr. Toth said that he was unclear about several aspects of the survey, including whether users or non-users would be questioned, ethnic-specific categories, the size of the population being surveyed, whether the survey would be field tested, and what type of statistical analysis would be done. Ms. Kraye explained that a pilot test would be conducted on approximately 25 organizations. She said that the entire test would be run, feedback on the test would be collected, and the survey would be revised accordingly. Ms. Kraye said that the survey is intended to

provide baseline information about the information needs of CBOs, what resources CBOs use, and whether the Clearinghouse meets their needs.

Mr. Toth suggested that the survey be broken down into two phases. Phase I would collect information about users and why nonusers do not use the service. Phase II would survey only Clearinghouse users and collect feedback on what they like/dislike about the Clearinghouse. The group made other suggestions about what information the survey should obtain, including comments on the usefulness of materials; customer satisfaction and timeliness of publications receipt; and how users access the Clearinghouse.

Ms. Lopez said that cooperation with the survey is largely an issue of trust. She brought up the question of how the group could assist CDC NAC, and suggested including information about the survey in newsletters so that people would know why it is important.

Gretchen Wooden asked whether the survey was intended to be a user survey or a needs assessment of resources and services. Mr. Williams responded that both are needed and CDC would like to get as much of both kinds of information as possible. He asked the group what information was needed. Boni Westover, CDC, said that the survey would be administered to a sample of organizations who had submitted information to the Clearinghouse. It was assumed that some of those are CDC NAC users while others are not. It would be easier to ask this question during the telephone survey.

Mr. Toth asked if there was a way of looking at who had used the Clearinghouse in the past 12 months.

Toni Young asked about the possibility of including information from individuals in the survey. In response, Mr. Williams said that data from about two percent of the people who use the CDC National AIDS Hotline is collected; the Hotline uses both active and passive data collection methods. Ms. Young questioned the assumption that individuals understand the difference between the Clearinghouse and the Hotline, and are therefore using the correct hotline telephone number. Mr. Williams said that individuals are transferred to the Hotline when it is appropriate. Lynn Lisella said that trying to incorporate the CDC NAH into this survey would make the process too complex. This survey is tailored to CDC NAC, although, in the future, a similar process may be undertaken with NAH. The process assesses the Resources and Services Database, which is used by both the Clearinghouse and the Hotline, as well as the Clearinghouse's Educational Materials Database. Mr. Williams added that the CDC Prevention Marketing Initiative program has been doing survey work and data collection activities targeting individuals. Ms. Westover said that it would be possible to use a sub-sample of individuals in the survey but there would be no way of ensuring anonymity. Mr. Toth suggested that reference specialists ask requesters if they could call them back to participate in the survey. Ruthann Bates questioned whether this would be a biased sample because certain types of people are more likely to agree to take part in the survey.

Mr. Bates suggested that first, effectiveness of educational materials should be examined, and then, how materials are used by organizations in their communities. Only a small number of organizations in a given community may actually use CDC NAC materials which would skew the information gathered by the survey.

Meeting attendees continued to suggest information that could be gathered by the survey. Ms. Carrington and Ms. Lopez suggested that the survey could be used to verify the information in the database. Ms. Carrington also said that obtaining information about the socioeconomic group served by organizations would be valuable. Mr. Williams added that more accurate information could be obtained by asking organizations to describe aspects of their group rather than giving them categories from which to choose. Ms. Westover asked that group members mail or fax their comments on the survey to CDC so that a revised questionnaire can be produced. She also explained that the survey is intended to be a needs assessment for CDC NAC. It is not intended to extrapolate information about the needs of the nation.

Ms. Wooden suggested another means of obtaining feedback about CDC NAC. She said that the Clearinghouse could send out a postcard with publications in order to obtain information about user satisfaction. Ms. Bates said that the Clearinghouse previously used this method but found that they only received replies from satisfied customers.

John Henning expressed several concerns about the survey. He said that a great deal of data may be accumulated, but that it may not further knowledge about the Clearinghouse and its users. He also found the survey categories to be unclear; every box could be checked in response to many of the questions.

Fran Cooper suggested that another subcommittee could be formed to look at the survey.

Ms. Westover said that CDC NAC needs to gather information from a baseline needs assessment even if all recommendations of the external review panel can not be met. The information is needed for CDC NAC, as well as to provide the external review panel with data on which to recommend Clearinghouse priorities. Meeting attendees were provided with copies of the CDC NAC Annual Report, July 1993 - June 1994, for additional background data on the Clearinghouse.

After the group took a short break, Ms. Cooper reviewed the time line that had been established. As requested, CDC will provide data to the committee members. The group had previously determined that subcommittees would be formed to address the question of access, marketing, and target audience; and to address product services. After these subcommittees have met, the committee will reconvene to discuss communications strategy. Ms. Cooper reviewed the goals of each subcommittee.

Ms. Lisella said that CDC epidemiology data would be sent to Working Group members in a couple of weeks. Mr. Cahill suggested that it might be helpful to have this information presented so that there would be an opportunity to ask questions about the information.

Formation of subcommittees

The group discussed breaking into subcommittees and working on assignments within subcommittees. Several suggestions were made. Ms. Cooper suggested that subcommittees work separately and that they begin by communicating by phone and fax and conclude with a one-day meeting in Washington, D.C. She said that committees needed to meet simultaneously in order to accomplish the tasks within the time frame; information can be exchanged between committees as they work. Committee (1) would need to work on defining the target audience first so that they could pass on the information for committee (2) to work with as it relates to products and services.

It was established that all present Working Group members have access to NAC ONLINE, another possibility for communication between groups.

Ms. Wooden asked that CDC clarify what was meant by defining a target audience. Although CBOs were suggested as a target audience, the Working Group may determine other target audiences as well. Ms. Cooper noted that part of the task of defining the target audience may be to define community-based organization.

Committee members discussed methods of sharing ideas. The work will require time for discussion and reflection. One group will need to hand off its thinking to another, which is a difficult process.

After many suggestions were made for convening subcommittee meetings, the group decided that all committee members should work on all subcommittees. It was decided that the group would need more than a single two-day session to establish recommendations for the Clearinghouse. A two-day meeting will be held to work on the recommendations assigned to subcommittees (1) and (2) on December 8 - 9, 1994. Then, Working Group members will have time to consult with constituents before reconvening to make final recommendations on the target priorities for NAC. The committee will have necessary staff support from the Clearinghouse to assist with compiling a final report of recommendations for the Clearinghouse.

Data from the needs assessment survey will be available in mid-January, after the two-day meeting and before the final meeting. The time frame for the questionnaire is as follows: revisions using comments from Working Group members will be made; then OMB approval will be obtained (a minimum of four weeks is needed); and data collection will take approximately four weeks.

Conclusion and Review

Ms. Lisella reviewed CDC planning assumptions. First, the recommendations of the Working Group will be used in making current adjustments and planning for the future. Second, it is impossible to completely separate the CDC National AIDS Clearinghouse and the CDC National AIDS Hotline. Third, the Clearinghouse will be used for CDC community planning initiatives,

such as the Prevention Marketing Initiative. Fourth, the CDC will provide the Working Group with support and data as needed. Fifth, the Clearinghouse cannot be all things to all people, and therefore, the Working Group must work within the finite resources available to produce resources and products. And finally, the Working Group will establish definite priorities for the Clearinghouse. Ms. Lisella also added that the Clearinghouse is a CDC partnership under contract with Aspen Systems Corporation.

Mr. Williams concluded the Working Group meeting by thanking everyone present for involving the community in this review process. He said that the CDC will provide all participants with what is needed to do their job. The priorities recommended by the Working Group will be given strong consideration. If the government can not meet all goals, suggestions will be made for ways in which other organizations can help meet these needs. Mr. Williams also provided committee members with his telephone and fax numbers for additional information and assistance.

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MJ: Ethnic groups. Epidemiological reporting. Statistics.

TX: In 1993, local, state, and territorial health departments reported to CDC 58,538 cases of acquired immunodeficiency syndrome (AIDS) among racial/ethnic minorities (Table 1). A total of 38,544 (66%) cases were reported among blacks, 18,888 (32%) among Hispanics, 767 (1%) among Asians/Pacific Islanders, and 339 (1%) among American Indians/Alaskan Natives*. These cases represented 55% of the 106,949 AIDS cases reported in the United States in 1993. Rates of AIDS and modes of human immunodeficiency virus (HIV) exposure varied substantially both among and within minority populations. This report describes these differences and summarizes the epidemiologic characteristics of AIDS cases reported among racial/ethnic minorities during 1993.

In 1993, racial/ethnic minorities accounted for 45,039 (51%) of 89,165 AIDS cases reported among adult and adolescent males (aged greater than or equal to 13 years) and 12,696 (75%) of 16,824 cases among adult and adolescent females. Of the 959 cases reported among children (aged less than 13 years), 803 (84%) were among minorities.

In 1993, 111 AIDS cases per 100,000 adults and adolescents were reported among racial/ethnic minorities. Rates were highest among blacks and Hispanics (162 and 90, respectively) and lowest among American Indians/Alaskan Natives and Asians/Pacific Islanders (24 and 12, respectively). Blacks are disproportionately affected by the HIV epidemic: the AIDS rate for black females (73) was approximately 15 times greater than that for white females (5), and the rate for black males (266) was nearly five times greater than that for white males (57). AIDS rates for blacks and Hispanics varied substantially by geographic region (Figures 1 and 2).** Rates for both groups were generally highest in the Northeast.*** For blacks, rates were highest in Vermont (445****), New York (379), New Jersey (373), and Florida (366). AIDS rates for blacks were less than the overall adult and adolescent rate (50) in 11 (22%) of the 50 states.

For Hispanics, AIDS rates were highest in New York (293), Connecticut (271), Massachusetts (249), and Pennsylvania (246). Rates for Hispanics were less than the overall rate in 26 (52%) of the 50 states. In Arizona, California, Hawaii, Mississippi, New Mexico, Texas, Wyoming, and the District of Columbia, AIDS rates for Hispanics were lower than rates for whites.

Among males who were racial/ethnic minorities, the most common modes of HIV exposure were male-male sex (39%) and injecting-drug use (IDU) (38%). Among females, the most common exposures were IDU (47%) and heterosexual contact (37%). However, the distribution of exposures differed substantially by race/ethnicity (Table 2) and geographic location. IDU was the principal HIV exposure among blacks and Hispanics; most (60%) IDU-associated cases among blacks and Hispanics were reported in the Northeast and Puerto Rico. Male-male sex was the primary exposure among Asians/Pacific Islanders and American Indians/Alaskan Natives. The proportion of AIDS cases with no reported risk for HIV infection was greater among racial/ethnic

minorities than among whites.

In geographic locations outside the Northeast, patterns of HIV exposure among blacks and Hispanics varied substantially. Among black males with AIDS, male-male sex was the most common mode of exposure in the District of Columbia, the U.S. Virgin Islands, and 32 (67%) of 48 states that reported AIDS cases among black males. Among Hispanic males, male-male sex was the most common exposure in the District of Columbia and 34 (71%) of 48 states that reported cases among Hispanic males. Among black females, IDU was the most common exposure in the District of Columbia and 23 (52%) of 44 states that reported AIDS cases among black females, and heterosexual contact was the leading exposure in 20 (45%) states. Among Hispanic females, heterosexual contact was the most common exposure in the District of Columbia, Puerto Rico, and 19 (54%) of 35 states that reported AIDS cases among Hispanic females, and IDU was the leading exposure in 10 (29%) states. Reported by: Local, state, and territorial health depts. Div of HIV/AIDS, National Center for Infectious Diseases, CDC. Editorial Note: Following the 1993 expansion of the AIDS surveillance case definition, the number of AIDS cases reported among racial/ethnic minorities in 1993 increased 135% over that in 1992, while the number among whites increased 114%. The greater increase in cases among racial/ethnic minorities is consistent with trends in the number of AIDS cases reported in previous years, representing a continued increase in the epidemic among certain minority populations. However, because the increase in cases reported in 1993 reflects a transient effect of the expansion of the AIDS surveillance case definition, the number of AIDS cases reported in 1994 is expected to be lower than that in 1993 (1).

AIDS surveillance may underestimate the number of AIDS cases reported among certain minority populations because of misclassification of race/ethnicity on medical records, which are the source for AIDS case reports. For example, a study conducted during June 1990-August 1992 that compared self-reported race/ethnicity with that listed on AIDS case reports indicated that AIDS cases among Asians/Pacific Islanders (12 cases), American Indians/Alaskan Natives (14), and Hispanics (249) were underreported by 25%, 21%, and 18%, respectively; in comparison, AIDS cases among whites and blacks were overreported by 4% and 2%, respectively (2).

The increase in the number of persons with AIDS has greatly affected death rates for racial/ethnic minorities, particularly young adults. In 1991, among males aged 25-44 years, HIV infection was the leading cause of death for blacks and Hispanics and the sixth leading cause for Asians/Pacific Islanders and American Indians/Alaskan Natives. Among females in this age group, HIV infection was the third leading cause of death for blacks and Hispanics, the seventh for American Indians/Alaskan Natives, and the ninth for Asians/Pacific Islanders. Provisional mortality data for 1992***** indicate that HIV infection was the second leading cause of death among black females aged 25-44 years (3); in 1991, the HIV/AIDS death rate for all black females was approximately 10 times the rate for white females (4).

Most AIDS cases classified as having no reported risk for HIV infection will be reclassified into one of the known exposure groups after additional follow-up. A greater proportion of racial/ethnic minorities than whites may be initially classified without an HIV risk because of unrecognized heterosexual transmission, the diagnosis of AIDS at or near death, and language and cultural differences that make risk ascertainment more difficult.

Although race and ethnicity are not risk factors for HIV transmission, they are markers for underlying social, economic, and cultural factors and personal behaviors that affect health (5). Socioeconomic status in particular is associated with morbidity and premature mortality (6); unemployment, poverty, and illiteracy are correlated with decreased access to health education, preventive services, and medical care, resulting in an increased risk for disease (5). In 1992, 33% of blacks and 29% of Hispanics lived below the federal poverty level,***** compared with 13% of Asians/ Pacific Islanders and 10% of whites (7). Therefore, the social, economic, and cultural context of HIV infection should be considered when designing and implementing prevention programs for diverse populations.

Although IDUs in the Northeast and Puerto Rico accounted for 24% of all AIDS cases reported among racial/ethnic minorities, AIDS rates and modes of HIV exposure varied greatly among minority populations in other areas of the country. HIV serosurveillance studies have demonstrated similar patterns (8). In addition, the incidence of AIDS and the distribution of HIV exposures among Hispanics and Asians/Pacific Islanders vary in relation to their place of birth (9,10). These geographic and racial/ethnic differences are directly related to variations in the prevalence of HIV infection, the type and frequency of behaviors associated with HIV transmission, and the time of introduction of HIV into the specific communities; and indirectly related to the social, economic, and cultural influences within those communities.

Because the epidemiology of HIV infection varies considerably by geographic region and among racial/ethnic populations, preventive interventions should be developed at the local level to ensure that they reflect the language, culture, and behavioral norms of the targeted community. CDC is collaborating with local, state, and territorial health departments to establish planning groups composed of community representatives, epidemiologists, behavioral scientists, and other public health practitioners who will participate in the development and implementation of HIV-prevention programs.

References

1. CDC. Update: impact of the expanded AIDS surveillance case definition for adolescents and adults on case reporting--United States, 1993. MMWR 1994;43:160-1,167-70.
2. Kelly JJ, Chu SY, Diaz T, Leary LS, Buehler JW. Race/ethnicity misclassification of persons reported with AIDS. Ethn Dis (in press).
3. CDC. Update: mortality attributable to HIV infection among persons aged 25-44 years--United States, 1991 and 1992. MMWR 1993;42:869-72.
4. NCHS. Excess deaths and other mortality measures for the black population, 1979-81 and 1991. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, CDC, 1994.
5. National Commission on AIDS. The challenge of HIV/AIDS in communities of color. Washington, DC: National Commission on AIDS, December 1992.
6. Adler NE, Boyce WT, Chesney MA, Folkman S, Syme SL. Socioeconomic inequalities in health. JAMA 1993;269:3140-5.
7. Bureau of the Census. Poverty in the United States, 1992. Washington, DC: US Department of Commerce, Economics and Statistics Administration, Bureau of the Census, September 1993.
8. CDC. National HIV serosurveillance summary: results through 1992. Atlanta: US Department of Health and Human Services, Public

Health Service, CDC, November 1993.

9. Diaz T, Buehler JW, Castro KG, Ward JW. AIDS trends among Hispanics in the United States. Am J Public Health 1993;83:504-9.

10. Metler R, Hu DJ, Fleming PL, Ward JW. AIDS among Asians and Pacific Islanders (A/PI) reported in the U.S.A. [Abstract no. PC0325]. Vol 2. Xth International Conference on AIDS/International Conference on STD. Yokohama, Japan, August 10-11, 1994:241.

* The racial/ethnic categories used in federal statistics are specified in the Office of Management and Budget's Directive 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1978).

** The numbers of AIDS cases reported among Asians/Pacific Islanders and American Indians/ Alaskan Natives were insufficient to analyze by state.

*** New England and Middle Atlantic regions.

**** Based on six reported AIDS cases in 1993.

***** Provisional data were available only for blacks and whites without stratification by Hispanic ethnicity.

***** Poverty statistics are based on definitions originated by the Social Security Administration in 1964, subsequently modified by the federal interagency committees in 1969 and 1980, and prescribed by the Office of Management and Budget as the standard to be used by federal agencies for statistical purposes.

Disease Prevention Programs for Racial and Ethnic Minorities

ALAN R. HINMAN, MD, MPH

ABSTRACT

Many studies show a dramatic relationship between socioeconomic status and disease incidence. Clear racial and ethnic disparities also exist in the occurrence of diseases such as acquired immunodeficiency syndrome (AIDS), tuberculosis, and syphilis. Consequently, to identify true risk factors for diseases when planning prevention programs, the effect of socioeconomic status must be differentiated from that of race or ethnicity. Further, different cultural heritages and social structures may affect how interventions are perceived or used and this must also be taken into account when planning programs. The Centers for Disease Control, through its National Center for Prevention Services, provides financial and technical assistance to state and local health departments to develop approaches that are culturally sensitive and linguistically appropriate to reach persons in racial and ethnic minority groups. *Ann Epidemiol* 1993; 3:185-192.

KEY WORDS: Socioeconomic factors, primary prevention, minority groups, immunization, tuberculosis, sexually transmitted diseases, acquired immunodeficiency syndrome.

INTRODUCTION

Before prevention programs can be designed and implemented, a disease problem must be characterized in the population as a whole and in subsegments of the population, considering all possible risk factors, including age, sex, race or ethnicity, and socioeconomic status. From an epidemiologic point of view, it is important to differentiate the effect of socioeconomic status from that of race or ethnicity to identify true risk factors. From a programmatic point of view, this is also important because the state of the economy may affect the size of the population dependent on health department services, and the race or ethnicity of those affected has major implications in designing and carrying out interventions. Unfortunately, it is often not possible to separate these influences.

Simply put, being poor may be hazardous to your health. Because members of racial and ethnic minority groups are more likely to be poor, this alone may account for some of the racial disparities observed. Data from the US Census Bureau indicate that approximately 33.5 million persons, or 13.5% of the US population, lived below the poverty level in 1990 (1). Although whites made up approximately two-thirds of the poverty population, blacks (31.9%) and Hispanics (28.0%) were much more likely to be poor than were whites (10.7%). Blacks account for approximately 12% and Hispanics 8% of the total US population.

The focus on racial and ethnic minority groups results from two important factors: the fact that members of racial and ethnic minority groups may be disproportionately at risk for disease and the realization that different cultural heritages and social structures may affect how interventions are perceived or used.

This article will consider some of the issues in assessing disease burden and designing and implementing disease prevention programs that serve racial and ethnic minority population groups. It will focus on infectious disease programs delivered through the public sector, that is, local and state health departments that have constitutional responsibility for disease prevention and control. The specific programs to be discussed address sexually transmitted diseases and human immunodeficiency virus (HIV) infection, tuberculosis, and vaccine-preventable diseases.

SOCIOECONOMIC STATUS AND DISEASE

This section reflects work carried out in the New York State Department of Health in the early 1970s. At that time, there was concern that collecting information about race or ethnicity and disease might result in racist labeling. Consequently, collection of information about the race or ethnicity of persons who had reportable communicable diseases was stopped. At the same time, the consensus was that socioeconomic status had a lot to do with the risk of illness. Therefore, to assess the influence of socioeconomic status on disease incidence, we used a technique developed at the Centers for Disease Control that involved determining the socioeconomic status of small geographic units (census tracts and minor civil divisions) using three indicators: income, occupation (or employment status), and education (2-6).

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TABLE 1. Scoring system used in socioeconomic stratification, upstate New York 1970 census data

Score	Median education (y)	Unskilled workers in labor force (%)	Median family income (\$)
0	<8.50	≥35.0	<5600
1	8.50-9.74	22.0-34.9	5600-8499
2	9.75-10.99	14.5-21.9	8500-10,199
3	11.00-11.99	11.5-14.4	10,200-12,249
4	≥12.00	<11.5	≥12,250

The initial step in the socioeconomic stratification was to correlate selected population characteristics from 1970 census data with reported morbidity and mortality to determine indices that would delineate populations that had the highest risks. Rochester, New York, was chosen for a pilot study. Several population characteristics from the 1970 census were tested in the development of stratification indices. Characteristics tested were median family income, the median number of school years completed (for persons 25 years or older), the percentage of families living below poverty level, the percentage of households with 1.01 or more persons per room, and the percentage of unskilled workers among employed persons 16 years or older. Regression analysis indicated that most of the correlation between health problems and socioeconomic status could be accounted for by median family income, the median number of school years completed, and the percentage of unskilled workers.

Through the use of these three indices, Rochester was stratified by census tract into three socioeconomic areas according to the relative method of stratification described by Serfling and Sherman (2). A point system was developed to provide five point values (0 to 4) for each index. Point values for each of the three indices were then added to give an overall score of 0 to 12. Table 1 shows the values used in the scoring. Table 2 shows the transformation of point scores into socioeconomic strata and the proportion of the population in each of the strata. The middle socioeconomic status category was later subdivided into lower middle and

TABLE 2. Socioeconomic distribution, upstate New York, 1970

Stratum	Point score	1970 population	Percentage of total
Low	0-4	612,465	5.9
Middle	5-9	5,641,917	54.5
Lower middle	5-6	1,414,422	13.7
Upper middle	7-9	4,227,495	40.8
High	10-12	4,082,614	39.5
Unknown		8707	0.1
Total		10,345,703	100.0

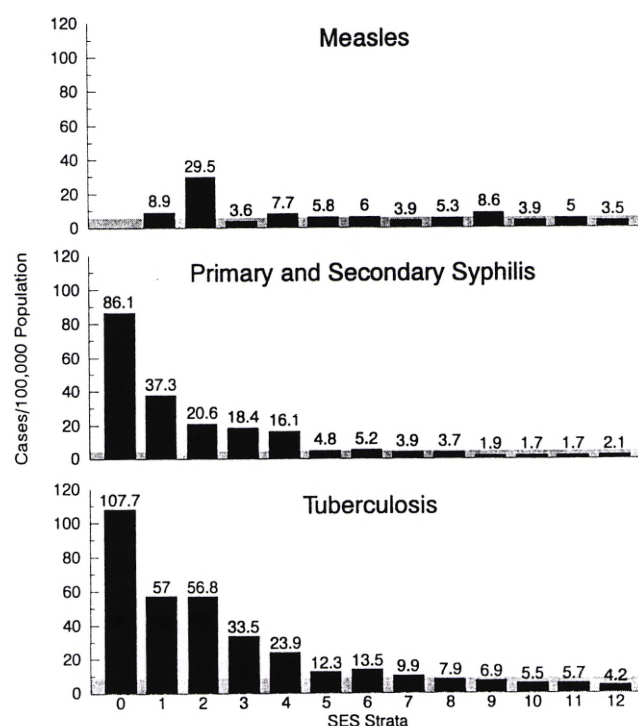
upper middle, as shown in the table. The population is not equally divided among the strata.

All census tracts and minor civil divisions in New York State were given a point score according to data from the 1970 census. The addresses of persons reported as having disease were used to determine (manually) the census tract in which they lived.

Given the census tract or the minor civil division in which a person lived and the socioeconomic level of that area, a picture of the incidence of disease by socioeconomic level was developed; the assumption was that a person's socioeconomic status reflected that of the area in which he or she lived. Although it is certainly true that not every resident of an area is accurately represented by these summary characteristics, in the aggregate this is the case, and the more persons (or events) found in a given area, the more likely they will be described by the mean characteristics.

The results of this analysis are shown in Figure 1, which depicts reported morbidity in New York State, exclusive of New York City, from 1972 to 1974. Essentially as expected, a dramatic relationship exists between socioeconomic status and the incidence (per 100,000 population) of primary and secondary syphilis and tuberculosis. This clear pattern did not emerge for measles, most likely reflecting the enforcement of school immunization requirements in New York,

FIGURE 1. Average annual incidence of measles, primary and secondary syphilis, and tuberculosis in upstate New York, 1972 to 1974. The shaded areas represent the incidence rates in the entire population. SES = socioeconomic status.



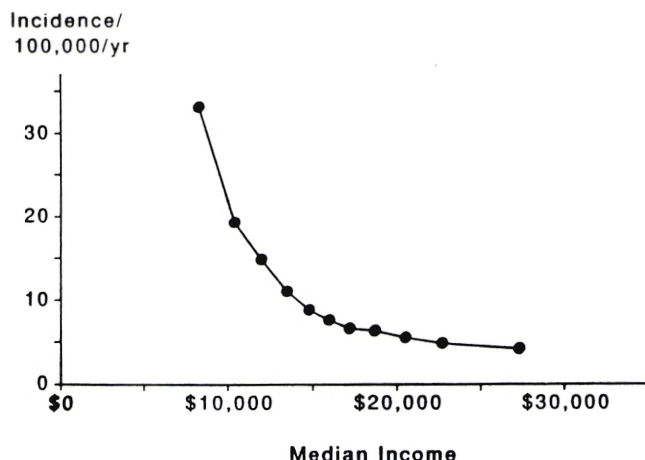


FIGURE 2. Incidence of tuberculosis by income, by zip-code area of residence. Unpublished data from the Centers for Disease Control.

which affected all segments of the school-age population, the primary risk group for measles.

More recently and on a national level, the incidence of tuberculosis during 1985 to 1987 has been analyzed on the basis of socioeconomic characteristics of persons in the zip code in which patients reside (Figure 2) (Centers for Disease Control. Unpublished data, 1990). Tuberculosis is unquestionably a disease borne much more heavily by the poor. Although there is a clear gradient of risk, tuberculosis affects all socioeconomic groups. Of all cases, 29% occur in persons in the upper half of the socioeconomic scale.

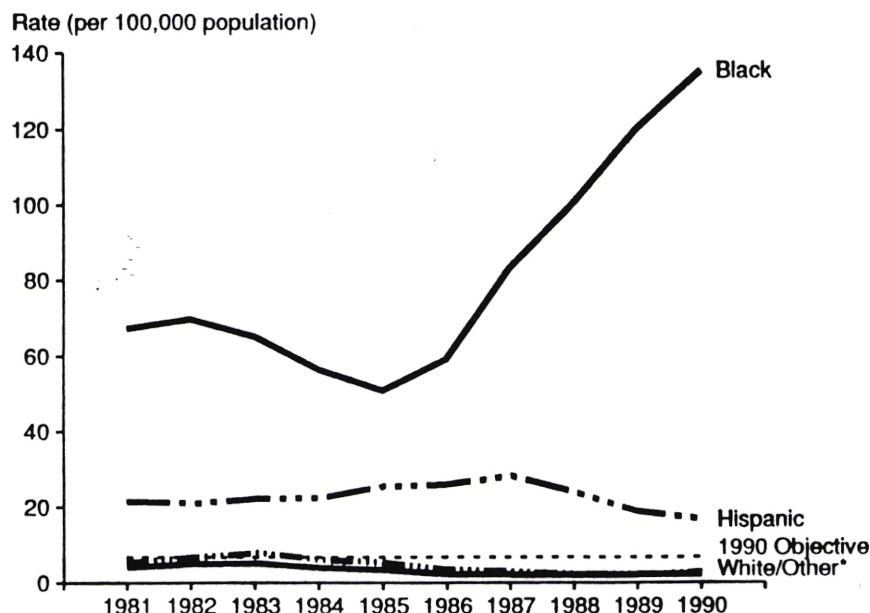
RACE OR ETHNICITY AND DISEASE

At the national level, data on race and ethnicity are now obtained for a number of conditions. Figure 3 shows the chief disparities in the incidence of primary and secondary syphilis in blacks and whites in the United States during recent years, and the divergent trends in the incidence. Although the rates of incidence of gonorrhea are substantially higher for blacks than whites (Figure 4), the trends are in the same direction (7). The reasons for the disparity in racial trends of syphilis and gonorrhea are not entirely clear, but an important factor may be the association of syphilis with the use of crack cocaine and with the exchange of sex for drugs or money (8).

Clear racial and ethnic disparities also exist in the occurrence of acquired immunodeficiency syndrome (AIDS) and in the exposure categories associated with AIDS (9). Blacks account for more than 25% of adult and adolescent cases of AIDS and more than 50% of pediatric cases (Table 3), although blacks account for only approximately 12% of the US population. Similarly, Hispanics account for more than 15% of adult and adolescent cases of AIDS and nearly 25% of pediatric cases, although Hispanics account for only 8% of the US population. Considering exposure categories of persons with AIDS, whites, Asians, and Pacific Islanders are substantially more likely to report homosexuality or bisexuality as a risk factor, and blacks and Hispanics are substantially more likely to report injection drug use as a risk factor.

Striking differences exist in the risk for tuberculosis in different racial and ethnic groups (Table 4) (10). Striking differences also exist in the age-specific incidence in different

FIGURE 3. Primary and secondary syphilis: rates by race and ethnicity, United States, from 1981 to 1990 and 1990 objective. "Other" includes Asian, Pacific Islander, American Indian, and Alaskan Native populations (7).



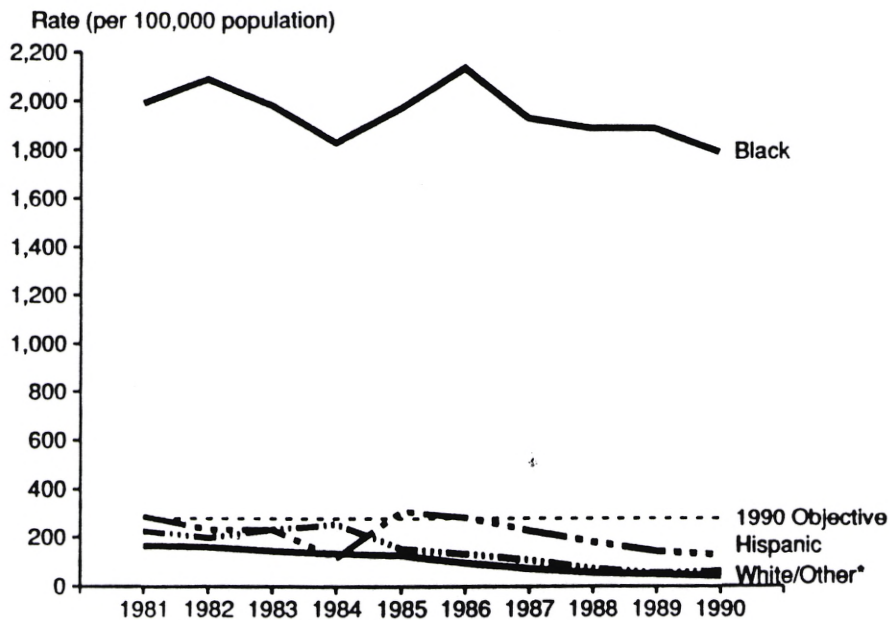


FIGURE 4. Gonorrhea: rates by race and ethnicity, United States, from 1981 to 1990 and 1990 objective. "Other" includes Asian, Pacific Islander, American Indian, and Alaskan Native populations (7).

groups as well as differences in the trends over time (Figure 5). For whites, the incidence of tuberculosis increases steadily with increasing age; in recent years, the incidence has progressively decreased at all ages. By contrast, the incidence for blacks is highest in the 25- to 40-year-old group, and has progressively increased in recent years. This is thought to be due in great part to the association between tuberculosis and HIV infection, which is most common in these age groups and which disproportionately affects blacks (9, 10).

Overall, more than two-thirds of all cases of tuberculosis occur in members of racial or ethnic minorities. Nearly one-third of cases in members of minority groups occur in persons who were born outside the United States.

There also may be striking disparities in the prevalence of infection with the tubercle bacillus, as measured by the tuberculin test. Barry and coworkers (11) studied tuberculin positivity in schoolchildren in Boston and found major differences in different racial and ethnic groups: 1.4% of

white students had positive results on the tests, compared to 4.9% of blacks, 6.4% of Hispanics, and 13.5% of Asians (11). Of all the persons with positive results found in this study, 80% were born outside the United States.

Tuberculosis is one of the few infectious diseases for which there is some evidence suggesting a difference in susceptibility among races. Stead and colleagues (12) studied the infection rates of initially tuberculin-negative residents of 165 racially integrated nursing homes in Arkansas and found that blacks had a significantly higher risk than whites of becoming infected (relative risk = 1.9). Part of the disparity observed may have been a result of differential exposure, but part seems to have been constitutional. No racial difference was found in the likelihood of progression to clinical tuberculosis.

SEPARATING THE INFLUENCES OF SOCIOECONOMIC STATUS AND RACE AND ETHNICITY

One recent study addressing the influences of socioeconomic status separately from those of race and ethnicity, carried out by Rice and associates, considered the incidence

TABLE 3. AIDS cases by race and ethnicity through September 1991, United States

Race/ethnicity	Adult/adolescent		Pediatric	
	No.	% ^a	No.	% ^a
White	104,707	54.8	711	21.5
Black	54,701	28.4	1746	52.7
Hispanic	31,053	16.1	823	24.8
Asian/Pacific Islander	1190	0.6	17	0.5
American Indian/ Alaskan Native	298	0.2	7	0.2
Unknown	457		8	
Total	192,406		3312	

^a Of known race/ethnicity.

From the Centers for Disease Control (9).

TABLE 4. Tuberculosis case rates and rate ratios by race and ethnicity, United States, 1990

Race/ethnicity	Case rate ^a	Rate ratio
Non-Hispanic white	4.2	1.0
Asian/Pacific Islander	41.6	9.9
Non-Hispanic black	33.0	7.9
Hispanic	21.4	5.1
American Indian/Alaskan Native	18.9	4.5

^a Rate per 100,000 population.

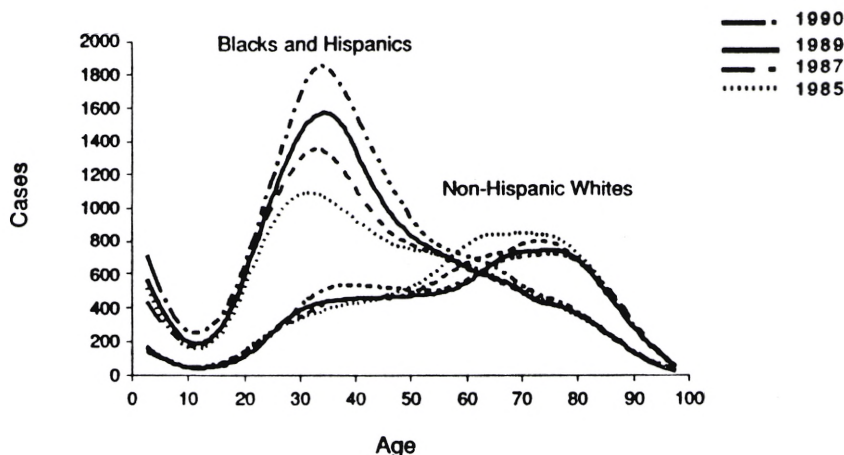


FIGURE 5. Cases of tuberculosis among blacks and Hispanics, compared to non-Hispanic whites, United States, 1985, 1987, 1989, and 1990. Data from the Centers for Disease Control (10).

of gonorrhea in Seattle (13). The investigators used the census tract of residence as an indicator of socioeconomic status and race or ethnicity as recorded on the report form (Hispanics were classified separately, regardless of race designation). The investigators found striking differences in the incidence in different racial and ethnic groups and a striking inverse correlation between socioeconomic status and the annual incidence of gonorrhea (Table 5). This correlation held for each race or ethnicity category, although the relative magnitude of the disparity between socioeconomic groups differed. Within each socioeconomic category, the incidence differed significantly among different racial and ethnic groups.

PROGRAMMATIC IMPLICATIONS

For the infectious diseases considered, with the possible exception of tuberculosis, the data do not indicate differential susceptibility in different racial and ethnic groups. The primary issue thus seems to be the likelihood of exposure to the infectious agent. This is affected by the prevalence of the agent in the environment, which often may be a function of socioeconomic status. It also is affected by the likelihood of being in a situation or participating in an activity that places someone at risk, for example, sharing drug injection equip-

ment. This, in turn, is affected by a complex mixture of factors such as living conditions, employment, homelessness, community norms, and individual and cultural value systems. Members of racial and ethnic minority groups may be disproportionately likely to be in adverse situations.

In designing prevention programs, health departments have had to be sure that programs were available to all persons. Sometimes the generic approach adopted was not equally suitable for all segments of the population because of differences in language, culture, and perception. Given the level of resources available to health departments, many have found their capacity overloaded with or without appropriately tailored approaches. This has been manifested by waiting lines and long delays in appointments (14). Clearly, the basic system of providing preventive health services needs to be strengthened.

In addition, many members of racial or ethnic minority groups may not know about, have access to, or trust services. They may also have other priorities that compete with obtaining preventive services, for example, food, shelter, care for sick children, or addictive behaviors. Immigration status may also be a factor.

Notwithstanding the absence of tailored approaches, some prevention programs have had considerable impact on disease. In the immunization arena, for example, enactment

TABLE 5. Gonorrhea annual incidence (per 100,000) by race or ethnicity and socioeconomic status, Seattle, 1986 and 1987

Race or ethnicity	Socioeconomic status (census tract)				Overall
	Low	Low middle	Upper middle	Upper	
White	386	153	104	78	121
Asian	310	214	181	125	190
Hispanic	1796	527	427	302	617
Native American	1961	1003	640	519	843
Black	3394	3018	2305	1990	3033
Overall	1147	421	224	183	289

From Rice et al. (13).

and enforcement of requirements that children be vaccinated before attending school have resulted in extremely high levels of immunity in children entering school—more than 95% for all vaccines. Because school attendance is mandatory, these levels cut across race or ethnicity and socioeconomic categories. This regulatory approach has had tremendous impact on the occurrence of vaccine-preventable diseases in school-age children, who previously were the group with the highest incidence of diseases such as measles, mumps, and rubella. However, it has not been totally successful, because some children may not be completely vaccinated until just before entry to school and thus remain at risk throughout the preschool period. This is a particularly serious problem because some of these diseases are most severe when contracted by the very young. Measles, for example, is much more likely to cause complications or death in an infant than in a school-age child.

Not surprisingly, there are differences in the likelihood of being vaccinated on schedule in different racial and ethnic groups. A study was carried out in Chicago in 1990 in public schools with predominantly white, predominantly black, or predominantly Hispanic student bodies (15). Although more than 95% of students had been vaccinated against measles before entering school, there were striking differences in the proportion who had received measles vaccine before the second birthday (measles vaccine is usually recommended for administration at the ages of 12 to 15 months). Approximately 80% of students attending the predominantly white schools had received measles vaccine before their second birthday, and only a small proportion had delayed vaccination until after the age of 4. By contrast, only approximately 50% of students attending predominantly black or Hispanic schools had received measles vaccine before their second birthdays, and nearly one-fourth did not receive it until after the age of 4. Assuming this pattern holds true nationally, it is not surprising that the rate of measles was much higher in preschool black and Hispanic children than in white preschoolers, whereas the disparity was not nearly so great for school-age children.

Although the "regulatory" approach has proved successful in achieving high immunization levels in schoolchildren, to be fully successful, most prevention approaches must be tailored to individual and group needs. The phrase often used is "culturally sensitive and linguistically appropriate." We must also recognize significant variations within groups—the category "Asian/Pacific Islander" includes persons with vastly different cultural backgrounds and languages, and the category Hispanic contains culturally diverse subgroups with very different risks for disease.

Health departments must recognize that they may not have access to or credibility with those who are at highest risk for disease and disability, and thus must involve members of risk groups in planning and implementing programs. They also must explore ways of involving other public and

private entities, such as churches and community-based organizations, that have access to the persons at highest risk.

Unfortunately, current national data systems do not allow us to assess the degree to which health department programs are reaching those at highest risk. Although surveillance data usually denote the race or ethnicity of those with reportable diseases, programmatic data do not commonly denote the race or ethnicity of those being served by prevention programs and may not denote known risk factors. HIV counseling and testing are exceptions, because data provided to the national level indicate both race or ethnicity and risk factors.

What is the Centers for Disease Control doing to address the problems? The National Center for Prevention Services coordinates national programs for the prevention of sexually transmitted diseases (including HIV infection), the elimination of tuberculosis, and immunization, and provides financial and technical assistance to state and local health departments to strengthen the public health system in these program areas.

In the prevention of sexually transmitted diseases and HIV transmission, representatives of minority and community-based organizations (CBOs) are actively involved in discussions of future program directions and in the drafting of program guidance documents. Technical and financial support is provided to 28 national or regional minority organizations to carry out HIV prevention activities, often in the form of technical assistance to their constituent chapters. As an example, with Centers for Disease Control support, the National Council of La Raza has prepared a comprehensive manual for evaluating CBO programs (16). We meet quarterly with representatives of these minority organizations to solicit their counsel.

In addition, since 1988, state health department grantees have been required to cooperate with and provide support to CBOs for HIV prevention. More than 450 CBOs are currently receiving support through this mechanism. The Centers for Disease Control directly funds 99 CBOs in the metropolitan areas that have the highest incidence of AIDS in minority populations. Two-thirds of these CBOs are formally considered minority CBOs; the remainder have substantial minority focus. Finally, seed money is provided through the US Conference of Mayors to another 30 CBOs.

Although many of these CBOs are formally considered minority organizations, the focus is primarily on the high-risk persons within the minority group rather than on the entire group. For example, many interventions target out-of-treatment injection drug users, with recovering addicts being used to provide credible outreach. Other organizations target prostitutes, youth in high-risk situations (such as homeless youth), or men who have sex with men.

In the tuberculosis elimination program, one of the most important and effective developments has been in directly observed therapy of persons with tuberculosis or tubercu-

lous infection (17). To treat tuberculosis, drugs are taken each day or twice a week for 6 months or longer. Many patients are persons who are homeless or who have other problems such as drug or alcohol addiction. Taking medication may not be high on their list of priorities. Current federal support is primarily directed to hiring outreach workers, often from the community affected by tuberculosis, who deliver the treatment to patients and watch them take it. This has resulted in marked improvements in rates of completion of therapy and cure. It is estimated that at least 20% of all patients with tuberculosis would benefit from directly observed therapy; approximately 10 to 15% of patients are currently receiving this therapy (18).

In the immunization program, studies are under way to try to identify interventions that would ensure completion of vaccinations on schedule. Data indicate that nearly 90% of children receive at least one dose of vaccine before their first birthday. The problem, therefore, is to ensure that they return for all needed doses. Obviously, it would be useful to reduce the number of visits (and doses) needed to provide full protection, and a major initiative is under way to develop vaccines that would include more antigens and require fewer doses and visits. In the meantime, we are trying to remove some of the barriers including limited clinic hours, provision of vaccinations only by appointment rather than on a walk-in basis, requirements that vaccinations be given only after a comprehensive evaluation (which may not be available for several weeks), failure to administer the full range of needed vaccines on a given visit, and decisions not to vaccinate a child because of false contraindications such as minor respiratory illness (14). We are also working with CBOs and other components of the private sector to reduce barriers, improve access, and increase parental demand for immunization services.

FUTURE NEEDS

For the future, to ensure effective disease prevention in the entire community and specifically in racial and ethnic minority groups, several factors are important:

First and foremost, resources are needed to support and strengthen local health departments. This is not just a federal task; it requires key contributions from the state and local levels.

Second, development of data systems is needed to measure not only the magnitude of the problem but also the degree to which programs are meeting the needs of racial and ethnic minority groups.

Third, involvement of those most affected is needed in the planning and the implementation of our programs. Health departments must increase collaboration with community and religious groups and the private sector.

Fourth, development of new biomedical, behavioral, and social interventions is essential. We obviously need new and improved vaccines, tuberculosis drugs, and AIDS treatments. However, behaviors and social situations, not just microorganisms, are key to our problems and we must develop behavioral interventions that are effective and acceptable as well as improving overall social conditions.

Fifth, good will and open minds are critical. Polarized and dogmatic approaches are more likely to exacerbate than alleviate current problems.

Finally, persistence is essential. Effective prevention requires continued effort and evaluation, with a commitment and willingness to keep at it until we succeed.

Aare Ilves and Ronald Teske played major roles in the studies of socioeconomic status and disease in New York.

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REFERENCES

1. US Bureau of Census. Current Population Survey, March 1991; Washington DC, 1991.
2. Serfling RE, Sherman IL. Attribute Sampling Methods for Local Health Departments. 1965. Public Health Service Publication no. 1230. Atlanta, GA: Communicable Disease Center.
3. Waldrop RH. Community Block Survey and Socioeconomic Stratification. Department of Health, Education and Welfare, Public Health Service. Atlanta, GA: National Communicable Disease Center; 1968.
4. Shackelford MR, Dyal WW, Waldrop RH. Collection and Use of Mortality and Morbidity Data in Community Evaluation by Social Strata. Department of Health, Education and Welfare, Public Health Service. Atlanta, GA: National Communicable Disease Center; July 1968.
5. Waldrop RH. Socioeconomic Stratification in Community Health. Department of Health, Education and Welfare, Public Health Service. Atlanta, GA: Centers for Disease Control; April 1971.
6. Brown WG, Peavy V. Community Stratification: Techniques of Community Health Analysis. Revised. Department of Health, Education and Welfare, Public Health Service. Atlanta, GA: Centers for Disease Control; 1973.
7. Centers for Disease Control. Sexually Transmitted Disease Surveillance 1989. October 1990. Atlanta, GA: Centers for Disease Control.
8. Rolfs RT, Goldberg M, Sharrar RG. Risk factors for syphilis, cocaine use, and prostitution. *Am J Public Health*. 1990;80:853-7.
9. Centers for Disease Control. HIV/AIDS Surveillance Report. October 1991:1-18. Atlanta, GA: Centers for Disease Control.
10. Jereb JA, Kelly GD, Dooley SW Jr, Cauthen GM, Snider DE Jr. Tuberculosis morbidity in the United States: Final data, 1990. *MMWR*. 1991;40(No. SS-3):23-7.
11. Barry MA, Shirley L, Grady MT, et al. Tuberculosis infection in urban adolescents: Results of a school-based testing program. *Am J Public Health*. 1990;80:439-41.
12. Stead WW, Senner JW, Reddick WT, Lofgren JP. Racial differences in susceptibility to infection by *Mycobacterium tuberculosis*. *N Engl J Med*. 1990;322:422-7.

13. Rice RJ, Roberts PL, Handsfield HH, Holmes KK. Sociodemographic distribution of gonorrhea incidence: Implications for prevention and behavioral research, *Am J Public Health*. 1991;81:1252-8.
14. National Vaccine Advisory Committee. The measles epidemic: The problems, barriers, and recommendations, *JAMA*. 1991;266:1547-52.
15. Centers for Disease Control. Update: Measles outbreak—Chicago, 1989, *MMWR*. 1990;39:317-9, 325-6.
16. McKay EG, Lopez DA. Evaluating HIV/STD Education and Prevention Programs: An Introduction. Washington, DC: National Council of La Raza; 1991.
17. McDonald RJ, Memon AM, Reichman LB. Successful supervised ambulatory management of tuberculosis treatment failure, *Ann Int Med*. 1982;96:297-302.
18. Hinman AR, Hughes JM, Snider DE Jr, Cohen ML. Meeting the challenge of multidrug-resistant tuberculosis: Summary of a conference, *MMWR*. 1992;41(no. RR-11):49-57.

POPULATION DIFFERENCES IN SUSCEPTIBILITY TO AIDS: AN EVOLUTIONARY ANALYSIS

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Abstract—Previously we have reported population differences in sexual restraint such that, higher socio-economic status > lower socio-economic status, and Mongoloids > Caucasoids > Negroids. This ordering was predicted from a gene-based evolutionary theory of r/K reproductive strategies in which a trade-off occurs between gamete production and social behaviors such as intelligence, law-abidingness, and parental care. Here we consider the implications of these analyses for sexual dysfunction, including susceptibility to AIDS. We conclude that relative to Caucasians, populations of Asian ancestry are inclined to a greater frequency of inhibitory disorders such as low sexual excitement and premature ejaculation and to a lower frequency of sexually transmitted diseases including AIDS, while populations of African ancestry are inclined to a greater frequency of uninhibited disorders such as rape and unintended pregnancy and to more sexually transmitted diseases including AIDS.

Key words—Africa, AIDS, evolution, race, sexuality

EPIDEMIOLOGY

The current HIV-1 pandemic started during the mid-1970s but was not recognized until 1981 when it was labeled the acquired immunodeficiency syndrome (AIDS). As Mann and Chin [1] describe, the discovery of the HIV-1 virus in 1983, and wide availability of diagnostic assays for antibodies to HIV-1 since 1985 have led to a picture of the worldwide extent and distribution of the disease. As of 1 July 1988, a total of 100,410 cases of AIDS had been reported to the World Health Organization (WHO) from 138 countries—45 in Africa, 40 in the Americas, 28 in Europe, and 25 in Asia and Oceania. Taking into account underreporting and inherent delays in manifestation, Mann and Chin estimate that there has been a cumulative total of 250,000 cases of AIDS to date and that 5–10 million persons are infected with HIV-1 worldwide.

While the modes of transmission are universally the same—through sex and blood and from mother to fetus—the virus has entered and spread within various populations and subpopulations at different times and rates. Both intra-national and international epidemiological studies reveal that for AIDS and HIV-1 seroprevalence, Mongoloids < Caucasoids < Negroids [1–5]. While the reporting of AIDS cases from Africa and the Caribbean has been delayed, partly due to the reluctance of many governments until 1987 to officially acknowledge their existence [6, 7], it has now become clear that relative to other populations these predominantly Negroid countries have an enormous AIDS problem with up to 25% of the 20–40-year age group in some urban areas infected (including women of childbearing age), and with up to 90% of the female prostitutes seropositive [1, 4, 5, 8]. A new AIDS related virus, HIV-2, has also been isolated in West Africa where estimates

of the seroprevalence rate in the general population range from 0.3 to 17%, with up to 64% of prostitutes being seropositive [4].

In African and Caribbean countries the AIDS virus is transmitted predominantly through heterosexual intercourse (Fig. 1). The age and sex distributions of HIV infection rates is similar to that of other sexually transmitted diseases (STDs) with higher prevalence among younger sexually active women [4, 5, 8]. At the other extreme, it is a characteristic feature of AIDS in China and Japan that most sufferers are hemophiliacs [5], accounting, for example, for 34 of Japan's 59 officially confirmed AIDS patients [9]. The Japanese Ministry of Health and Welfare estimates that about 40% of Japan's hemophiliacs, or 2000 people, are infected with the AIDS virus. The prime infection route is strongly suspected to have been blood plasma imported from the United States for manufacture of blood coagulants [5, 9]. An intermediate amount of HIV infection is apparent in Europe and the Americas where to date it has occurred predominantly among homosexual men and intravenous drug abusers [1, 4, 5], although now may be breaking out into the heterosexual population in several countries, including Belgium [10], Cuba [11] and the U.S.A. [12, 13].

A pattern of whites being intermediate to black and Oriental populations is also found *within* the United States (Fig. 2). As of 4 July, 1988, while blacks amount to less than 12% of the U.S. population they disproportionately account for 26% of adult and 53% of pediatric AIDS cases [3, 14]. Whites amount to over 80% of the population and account for 59% of adult and 23% of child AIDS cases, with Hispanic populations being intermediate [3, 14]. Oriental populations do not exist in the AIDS figures, including those from California and Hawaii. Confirmation of the U.S. racial pattern is found from the results of testing more than 1.2 million military applicants and blood donors. These studies show that black and Hispanic applicants have HIV-1 seroprevalence rates

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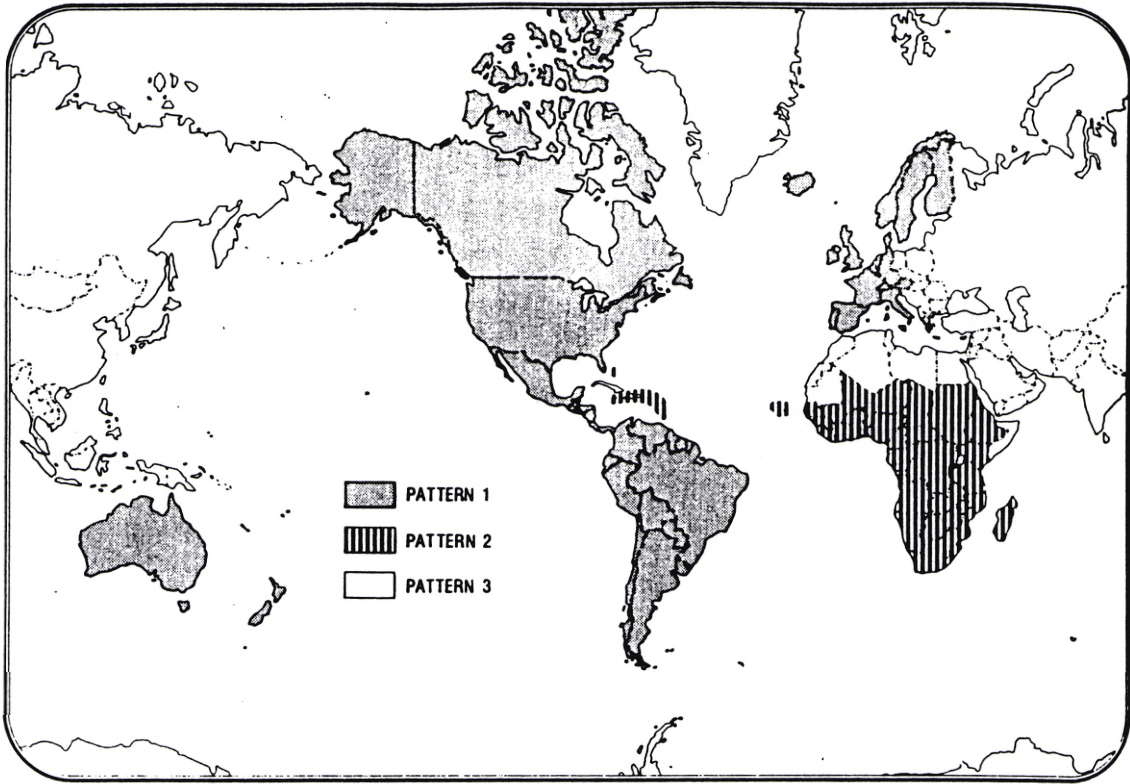


Fig. 1. Three infection patterns of the AIDS virus are apparent worldwide. Pattern 1 is found in North and South America, Western Europe, and Australasia where 90% of the cases are homosexual males or users of intravenous drugs. Pattern 2 is found in Africa and the Carribean where the primary mode of transmission is heterosexual sex and the number of infected females and males is approximately equal. Pattern 3 is typical of the rest of the world where relatively few cases have been reported [4, 5].

three to ten times higher than white applicants [3]. Blood samples taken from umbilical cords after birth in inner city (black) rather than suburban (white) hospitals confirm the differentials. In some areas of New York City and Boston, 1 in 60 babies is born with AIDS antibodies [15].

The AIDS epidemic is considered by many to have originated in Africa [4–7, 16, 17], from where it spread worldwide (Fig. 3), as will be discussed shortly. Evidence for the African origin arises from several converging sources. First, more HIV-related viruses are found in African primates, a possible

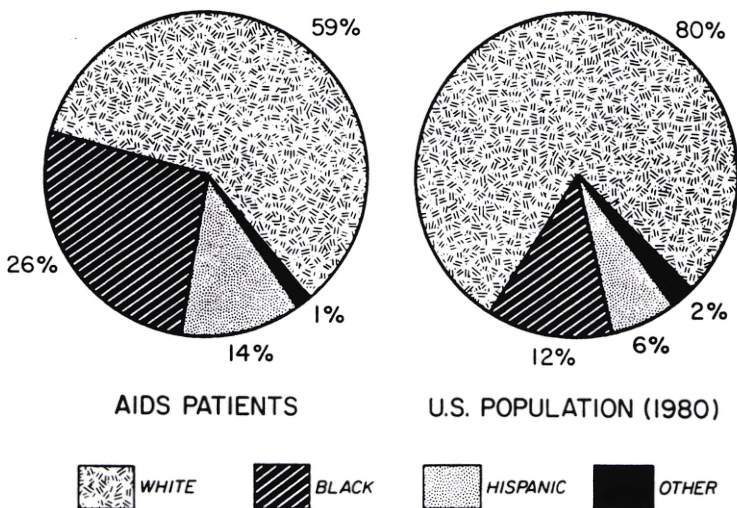


Fig. 2. Racial and ethnic classification of U.S. adult AIDS cases shows a disproportionate fraction of them among blacks and Hispanics. The figures reflect the higher reported rates of AIDS in black and Hispanic intravenous drug abusers and their sex partners [14].

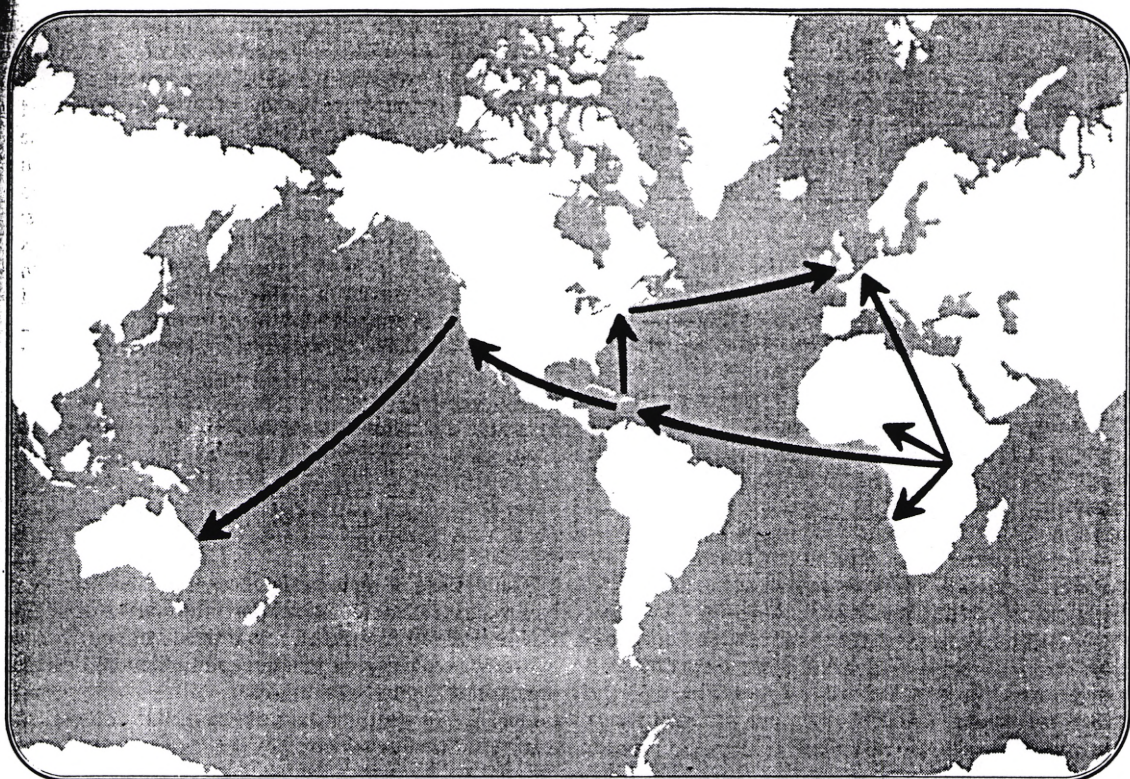


Fig. 3. Probable origin and spread of the AIDS virus worldwide [16].

origin of the human virus, than in Asian species. Their long standing existence is shown, for example by the African green monkey having evolved mechanisms to keep the pathogen from causing disease, a process taking many generations. The virus wreaks havoc in newly exposed Asian monkeys [18].

Other evidence for an African origin is that the HIV-1 virus has been found in blood stored from 1959 in Zaire but not from blood stored at that time in Europe or North America [4, 8]. From the late 1960s and early 1970s, serum samples originating in Africa have been found to show a high incidence of seropositivity. No serum samples stored in the United States prior to 1978 have been found to be seropositive. Moreover, isolates of HIV-1 from Africans appear more heterogeneous genetically and antigenetically compared with isolates from Europeans and Americans [19], with novel forms, such as HIV-2, being discovered [20]. Variation is generally greater the earlier the genetic origin. Judging by its strain diversity, some estimate that it may have been in the African population for between 25 and 100 years [21].

Retrospective diagnostic studies provide additional evidence for the African origin. A marked increase of AIDS indicator diseases (chronic diarrhea, and generalized Kaposi's sarcoma) was diagnosed in Central Africa in the late 1970s where AIDS had been known locally as 'slim' disease [8]. Isolated cases of AIDS in Africans have also been retrospectively diagnosed in Europe in the 1970s [4]. Cases retrospectively diagnosed as AIDS were also recorded in Haiti before the U.S.A., and this may have been due to the fact that migrant Haitian workers spent periods of time in

Central Africa in the 1960s and 1970s (see Fig. 3, Ref. [16]). In the 1970s Haiti was popular as a holiday resort for homosexual men from the U.S.A. [16]. Subsequently many homosexual patients in Europe and Australasia appear to have contracted their infection in the U.S.A. HIV-2 now seems to be spreading from West Africa to Central Africa, Europe and to the United States [4]. One noted transmission route from Africa to the Western Hemisphere may be via the large number of Cuban military and health care advisors, some of whom became refugees in the U.S. [11].

RACIAL DIFFERENCES IN SEXUAL BEHAVIOR

This is the third paper in a series we have written on racial differences in sexual behavior. In our first, we reviewed differences in sexual restraint such that Orientals > whites > blacks [22]. Restraint was indexed in numerous ways having in common a lowered allocation of bodily energy to sexual functioning. We found that the same racial pattern occurred with gamete production [dizygotic (two egg) twinning frequency per 1000: Mongoloids <4; Caucasoids 8; Negroids >16], intercourse frequencies (premarital, marital, extramarital), developmental precocity (age at first intercourse, age at first pregnancy, number of pregnancies), primary sexual characteristics (size of penis, vagina, testis, ovaries), secondary sexual characteristics (salient voice, muscularity, buttocks, breasts), and biologic control of behavior (periodicity of sexual response, predictability of life history from onset of puberty), as well as in androgen levels and sexual attitudes.

Table 1. Proportion of population aged 11–21 experiencing premarital coitus [22, 23]

Population	Percentage sexually experienced		
	Males	Females	Combined
Asians	12	5	9
Europeans	46	35	40
Africans	74	53	64

Consider, for example, the estimates of intercourse frequency in marriage where, for couples in their 20s, the average frequency per week approximated: for Orientals, 2; for whites, 4; and for blacks 5. Consider also the percentage of adolescents who reported themselves to be sexually active. We categorized the 27 countries from a World Health Organization Study of the extent of premarital coitus among young people from around the world [23] by primary racial composition and averaged the figures. As can be seen in Table 1, the results showed that African adolescents are more sexually active than Europeans who are more sexually active than Asians. While some variation occurred from country to country, consistency was found within groups. Thus Koreans and Japanese were similar to each other and different from Israelis, Swedes, and white Americans, who, in turn, were similar to each other but different from Kenyans, Nigerians, and black Americans. As is typical of such surveys, young men report a greater degree of sexual experience than young women [24]. It is clear from Table 1, however, that the population differences are replicable across sex, with the men of the more restrained group having less experience than the women of the less restrained. A confirmatory study was carried out in Los Angeles which held the setting constant and fully sampled the ethnic mix [25]. Of the 594 adolescent and young adults sampled, 20% were Oriental, 33% were white, 21% were Hispanic, and 19% were black. The average age at first intercourse was 16.4 for Orientals and 14.4 for blacks, with whites and Hispanics intermediate, and the percentage sexually active was 32% for Orientals and 81% for blacks, with whites and Hispanics intermediate.

In the second study we examined whether the racial differences in sexual behavior were more pronounced than those associated with socio-economic status (SES). Many commentators attribute racial differences to SES [26], and SES differences in sexual behavior have been observed to parallel the racial differences [27]. To investigate the issue, therefore, we analyzed data from the Kinsey Institute for Sex Research and found that, in terms of sexual restraint, college-educated whites > noncollege-

educated whites > college-educated blacks on measures such as speed of occurrence of premarital, marital, and extramarital sexual experiences, number of sexual partners, frequency of intercourse, speed and incidence of pregnancy, and rapidity of the menstrual cycle [28]. These results have been confirmed by Weinberg and Williams [29] who reanalyzed evidence from three independent sources: the original Kinsey data which formed the basis of our studies; a 1970 National Opinion Research Center poll of sexual attitudes; and a study carried out in San Francisco. All three reanalyses showed the predicted racial effects on sexuality while holding education and social class constant. As such the data suggest that race is a more powerful predictor of sexual behavior than educational level or social class.

RACIAL DIFFERENCES IN r/K REPRODUCTIVE STRATEGIES

The pattern of racial differences in sexual behavior had been predicted from an evolutionary theory of r/K reproductive strategies in which a trade-off that exists between egg production and parental care is postulated to underlie a suite of life history attributes [30–35]. At the K end of the continuum organisms produce very few offspring but invest a large amount of care in each. At the r end, organisms produce a large number of offspring but provide little or no parental care. As can be seen in Fig. 4, oysters producing 500 million eggs a year exemplify the r -strategy, while the great apes, producing only one infant every 5 or 6 years, exemplify the K -strategy.

Evidence from comparative studies and selective breeding experiments on species ranging from dandelions to fish to mice to men, indicates that these reproductive strategies are correlated with other features of the organism's life history [34]. These are summarized in Table 2. It can be seen that, in terms of *Family Characteristics*, r and K strategists differ in terms of litter size (number of offspring produced at one time), birth spacing, total number of offspring, rate of infant mortality, and degree of parental care. In regard to *Individual Characteristics*, r and K strategists differ in rate of physical maturation, sexual precocity, life span, reproductive effort, energy use, and intelligence. Finally, in terms of *Population and Social System Characteristics*, they differ in their treatment of the environment, the stability of their population size, their ability to compete under scarce resources, and their degree of social organization and altruism.

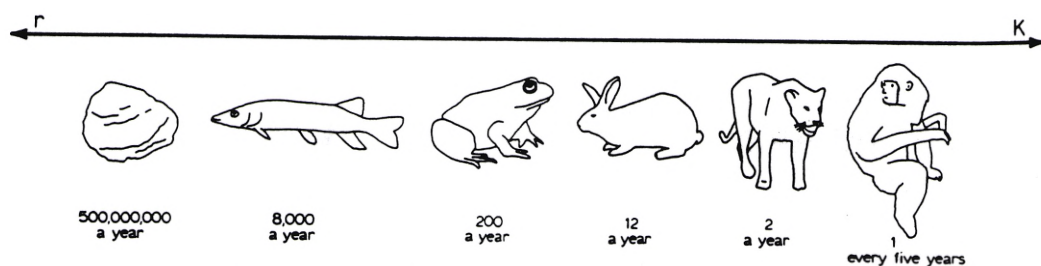


Fig. 4. The r/K continuum of reproductive strategies balancing egg output with parental care [32].

Table 2. Some life history, social behavior, and physiological differences between *r*- and *K*-strategies [34]

<i>r</i> -Strategist	<i>K</i> -Strategist
<i>Family characteristics</i>	
Large litter size	Small litter size
Short spacing between births	Long spacing between births
Many offspring	Few offspring
High rate of infant mortality	Low rate of infant mortality
Low degree of parental care	High degree of parental care
<i>Individual characteristics</i>	
Rapid rate of maturation	Slow rate of maturation
Early sexual reproduction	Delayed sexual reproduction
Short life	Long life
High reproductive effort	Low reproductive effort
High energy utilization	Efficient energy utilization
Low intelligence	High intelligence
<i>Population characteristics</i>	
Opportunistic exploiters of environment	Consistent exploiters of environment
Dispersing colonizers	Stable occupiers of habitat
Variable population size	Stable population size
Competition variable, often lax	Competition keen
<i>Social system characteristics</i>	
Low degree of social organization	High degree of social organization
Low amounts of altruism	High amounts of altruism

Primates are all relatively *K*-strategists, and humans are the most *K* of all. As depicted in Fig. 5, the order primates display a natural scale going from lemur to macaque to gibbon to chimp to humans, in which there is a consistent trend toward *K* with progressive prolongation of gestation periods and life phases [35]. Note the proportionality of the four indicated phases. The postreproductive phase is restricted to humans. With each step in the natural scale, populations devote a greater proportion of their reproductive energy to subadult care, with increased investment in the survival of offspring.

As a species, humans are at the *K* end of the continuum, although some people are postulated to be more *K* than others [30]. The more *K* a person is, the more likely he or she is expected to come from an intact family, with more intensive parental care, with fewer and more widely spaced offspring, and with a lower incidence of multiple birthing and infant mortality. *K*s are expected to have a longer gestation period, a higher birthweight, a more delayed sexual maturation, a lower sex drive, and a longer life. Moreover, the *K* person is inclined to be more intelligent, altruistic, law-abiding, and behaviorally

restrained [30]. Thus diverse organismic characteristics, not otherwise relatable, are presumed to covary along the *K* dimension. Evidence for the expected covariation among the *K* attributes has been provided [30-41].

Racial differences in *r/K* sexual strategies were predicted because human populations are known to differ in egg production. While the monozygotic twinning rate is nearly constant at about 3.5/1000 in all groups, the rate per 1000 of dizygotic twins (the *r*-strategy, caused by the production of two eggs at once, see Ref. [39]), among Mongoloids is 4, among Caucasoids, 8, and among Negroids, 16, with some African populations having rates as high as 57/1000 [42]. Moreover, the pattern of racial differences observed to occur in sexuality has also been found on numerous other indices of *K*. Across ages, samples, countries, and time periods, measures made of health (infant mortality, illness, longevity), brain size and intelligence (cranial capacity, brain weight, test scores), maturation rate (age to hold head erect, age to walk alone, age of death), social organization (marital stability, mental disorder, law-abidingness), and temperament (activity level, anxiety, sociability), all suggest that, on average, Mongoloids are more *K* than Caucasoids, who, in turn, are more *K* than Negroids [40, 41]. These findings are summarized in Table 3.

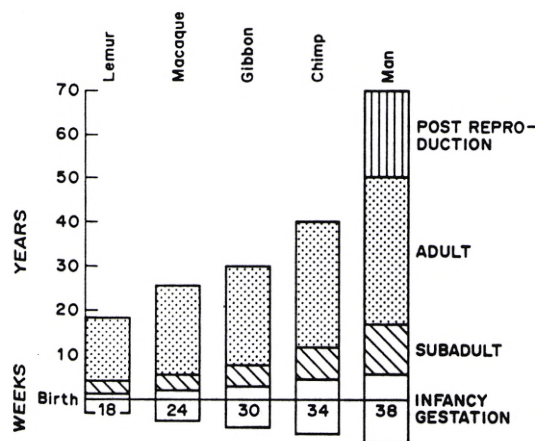


Fig. 5. Progressive prolongation of life phases and gestation in primates [35].

IMPLICATIONS OF *r/K* STRATEGIES FOR SEXUAL DYSFUNCTION

The racial differences in sexual behavior translate into consequences. It is well established that teenage fertility rates in both developed and developing countries show the expected ranking of black > white > Oriental [23, 43]. The racial differences in sexuality also manifest themselves in psychological phenomena. In Ford and Beach's survey [44], Oriental groups were the most likely to endorse beliefs concerning the weakening effect of intercourse. A review by Vernon led him to conclude that both the Chinese and the Japanese were not only less experienced in premarital sex, but were also less permissive and less concerned

Table 3. Ranking of populations on *r/K* associated attributes [40, 41]

	Mongoloids	Caucasoids	Negroids
<i>Brain weight and intelligence</i>			
Cranial capacity	1448 cm ³	1408 cm ³	1334 cm ³
Brain weight at autopsy	1351 g	1336 g	1286 g
Millions of 'excess neurons'	8900	8650	8550
IQ test scores	107	100	85
<i>Maturation rate</i>			
Gestation time	?	Medium	Fast
Skeletal development	?	Medium	Fast
Age of walking	Slow	Medium	Fast
Age of first intercourse	Slow	Medium	Fast
Age of first pregnancy	Slow	Medium	Fast
Brain weight decline begins	Age 35	Age 25	?
Life-span	Long	Medium	Short
<i>Personality and temperament</i>			
Activity level	Low	Medium	High
Aggressiveness	Low	Medium	High
Cautiousness	High	Medium	Low
Dominance	Low	Medium	High
Impulsivity	Low	Medium	High
Sociability	Low	Medium	High
<i>Reproductive effort</i>			
Multiple birthing rate	Low	Medium	High
Size of genitalia	Small	Medium	Large
Secondary sex characteristics	Small	Medium	Large
Intercourse frequencies	Low	Medium	High
Permissive attitudes	Low	Medium	High
Sexually transmitted diseases	Low	Medium	High
Androgen levels	Low	Medium	High
<i>Social organization</i>			
Law abidingness	High	Medium	Low
Marital stability	High	Medium	Low
Mental health	High	Medium	Low

with sexual display than Caucasians [45]. Other studies find similar relationships with measures made of frequency of sexual fantasy: whereas 52% of British female university students 'think about sex everyday', only 1% of Japanese female students did so [46].

It has been argued that, within the constraints allowed by the total spectrum of cultural alternatives, people create norms and environments maximally compatible with their genotypes [47, 48]. This would explain why in China and Japan clothing styles have often been chosen to flatten the breasts and buttocks in an explicit attempt 'to deanimalize' [49, p. 107], with an opposite clothing style often chosen in Africa [49]. Moreover, in Africa dances have been invented which emphasize undulating rhythms and mock copulation. Underlying dispositions affect many aspects of lifestyle, including smoking and dietary preferences, friendship and mate choice, and vocational and leisure pursuits. Thus even ostensibly 'environmental' influences may have a genetic component [50].

Inhibited sexuality

Although good epidemiological data are not available with respect to the distribution of relatively inhibited and antihedonic sexuality, the evidence inclines to the view that the more *K* dominated cultures and populations are less pro-sexual than the less *K*. Money [51-53] provides several examples. North European cultures, for example, have often invented antimasturbatory and antisexual ideologies. The Victorian ideals originating in the early eighteenth century, aimed at total abstinence or, if married, extreme continence [51, 52]. Graham Crackers, Kellogg's Cornflakes, Granola,

and other breakfast cereals began as health foods aimed at preventing masturbation and 'sexual degeneracy'. It was argued that good food, physical fitness and sexual abstinence would help the individual resist disease, including the deadly cholera epidemic. Much of the emphasis against sex derived from a belief in the weakening effects of the loss of semen.

Oriental populations have long held beliefs in the weakening effects of semen loss. Physically or psychiatrically ill Chinese patients often refrain from sexual intercourse for fear that the loss of semen may further impair their health, beliefs which date back to Taoist physicians 2000 years ago [54]. In a review of sex therapy in Britain, it was found that while sex-stress led to premature ejaculation amongst Asian patients, this problem was virtually absent among blacks [55]. An unusual 'inhibited' disorder, *Koro*, meaning turtle's head, refers to a phobic reaction in which, with increasing age, patients fear that their penis is shrinking [53]. Although isolated cases have been found from countries throughout the world, it is more prevalent in China and other Asian countries.

Uninhibited sexuality

Rape is considered one of the most serious of criminal offences. Oriental populations are completely underrepresented in such crimes, as they are in crime generally, both as perpetrators and as victims [56]. Although some of the arrest statistics may be biased against blacks, the figures do show that blacks are substantially overrepresented in such crimes. In the United States blacks are about one-eighth of the population but accounted, in 1980, for about one-half of all those arrested for rape [56]. Among U.S. adolescents the overrepresentation of blacks in crime is most marked for sexual offences

[57]. Across all criminal offences in 1980 and 1981 committed by adolescents, 24% of the offenders were black; for sexual offences, however, 35% were black; for forcible rape, 58% were black. Black sex offenders, compared to white sex offenders, are also more likely to use force in the commission of the offence and to engage in vaginal intercourse with their victims [58]. Often the victims of sexual assault are also black: a large study carried out in Philadelphia on the sexual abuse of children aged 2–12, showed that 82% were black and 18% were white [59].

The prevalence of sexually transmitted diseases (STDs) in different populations provides another estimate of under-controlled behavior. The data is consistent in showing that for a range of STDs, Orientals < whites < blacks. The World Health Organization Technical Report [60], for example, examined the world wide prevalence of syphilis, including congenital syphilis, finding very low levels in China and Japan, and very high levels in Africa, with European countries intermediate. Other studies find comparable results [61–65]. Africa is known to be differentiated from other areas of the world in having STDs as the major cause of infertility [61]. At the other extreme, claims have been made that the People's Republic of China has virtually eradicated venereal disease through the elimination of prostitution and the presence of occupying soldiers [62]. Similarly the incidence of STDs such as herpes in Tokyo, Japan, is one-tenth of the incidence in Western countries [64]. The racial pattern found worldwide in STDs is also found *within* the United States. Thus U.S. blacks have substantially larger amounts of syphilis [66], including congenital syphilis [67], gonorrhea [68], and hepatitis B [69] than do U.S. whites.

IMPLICATIONS FOR SUSCEPTIBILITY TO AIDS

Populations made up of less K individuals may be particularly susceptible to AIDS for a variety of related reasons (see Tables 1–3 for review). Most obvious will be that the less K individuals will be drawn to have sexual coitus with more numerous partners. As reviewed above, with marital intercourse during the early 20s, surveys indicate that Oriental populations have a mean intercourse frequency 50% lower than whites, while black populations have one 25% higher; and whereas only 30% of white university students in the U.S. have had intercourse with prostitutes, 50% of black university students have [22]. Similarly, actual and future-expected extramarital intercourse is about double in black university graduates than in whites. Since most of these surveys are based on atypical black populations (the most elite), it is likely that they are underestimates of the real black–white differences [28]. For example, more than a five-fold difference is found in the range of sexual activity between white students and white nonstudents attending an STD clinic in Arizona, and for white and black heterosexuals aged 26 attending the STD clinic, the number of lifetime partners for whites is 29, while for blacks it is 42 [69].

That number of sexual partners leads to a risk of AIDS is shown by its clear relation to other STDs

[70], as well as to AIDS itself [8, 71]. For example, in Africa, studies have found that one-third of AIDS patients reported having at least one sexually transmitted disease during the 3 years preceding their illness [8]. As reviewed above, the races differ substantially in current prevalence of STDs. Many studies in sub-Saharan Africa strongly reinforce the supposition that frequency of sexual contact is the primary factor governing the transmission of HIV there [5].

Sexual precocity also differentially inclines the populations to risk of AIDS. Many studies have reported that in speed of sexual experience and pregnancy, blacks > whites > Orientals. One U.S. survey, for example, found that 60% of 11-year-old black boys had reached the stage of accelerated penis growth in contrast to the white norm of 50% of 12.5-year-olds [72]. This genital stage significantly predicted onset of sexual interest, with 2.2% of the black boys experiencing intercourse by age 11. While some surveys find that Oriental girls enter puberty as early as whites [73], others suggest that in both physical development and onset of interest in sex, the Japanese, on the average, lag 1.5–2 years behind their American counterparts [74]. In Rushton and Bogaert's analyses of the Kinsey data, black respondents, compared to white respondents, left home earlier, experienced a variety of premarital, marital, and extramarital sexual events earlier, and had a greater incidence of pregnancy at a faster rate [22, 28].

Lowered levels of intelligence must also be considered a risk factor. Observation of contingent danger may be less, both in terms of acquiring the disease, and in transmitting it to others. There are many problems in Africa in educating people to avoid intercourse with prostitutes, or other at-risk behavior such as scarification, tattooing, ear piercing, male or female circumcision, blood-brotherhood ceremonies, etc. [8]. In the U.S. it is becoming clear that drug addicts who actively seek out heroin with street 'brand names' such as 'death wish' and 'suicide' are not likely to readily modify their at-risk behavior [74]. It is conservatively estimated that there are 100,000 addicts in New York alone who carry the AIDS virus [74], and in some samples, seroprevalence among Afro-Americans has soared to African proportions [3, 74]. Voluntary self-exclusion from blood transfusion services and from promiscuous intercourse seems unlikely.

Social organizational capacity appears to differentiate the races and to be a salient feature of groups differing in K . Less K populations generate decentralized organizations with weak power structures in which the important lines of communication are perceived to be the face-to-face ones, in contrast to K generated centralized hierarchies in which internal communication networks are highly regulated [75]. It is widely accepted that organizational problems are one of the impediments operating in Africa [8]. At the opposite extreme, China has been able to implement for one-quarter of the world's population, a single-child family within one generation (along with, as mentioned, the virtual eradication of venereal disease). The quick marshalling of self-help groups in response to the AIDS threat in the white middle-class

homosexual community of San Francisco has similarly been contrasted with the lack of organization among black intravenous drug users in New York [74].

Stable social organization also depends on individuals adhering to rules, a construct which can be indexed through marital functioning, mental durability, and law abidingness. Marital stability, for example, can be assessed by rate of divorce, out of wedlock birthing, child abuse, and delinquency. On each of these measures, the rank ordering within the U.S. population is Mongoloid > Caucasoid > Negroid [40, 76]. Moreover, in other parts of the world there is evidence that the impact of migration and technological development has detrimentally affected African social structure more than European, and European more than Oriental [76-78].

DISCUSSION

The ultimate aim of science is causally to explain the world around us, rather than only to describe it. The *r/K* theoretical framework orders much of the data reviewed, along with its patterning and its heritable nature. One objection that may be made to the account that we have presented concerns the nature of causality. Many will want to argue that the differences that have been observed are due to cultural, socio-economic and other environmental factors, and that the diffusion of AIDS has more to do with communication networks than with levels of sexual activity in ethnic groups. Certainly many factors are involved and we are not advocating an exclusive theory. We are aware, for example, of the evidence for socialization effects on many of the variables. Within the United States black males learn early that assertive sexuality and sexual prowess are means of gaining status as well as gratification [79, 80], while in Oriental populations restraint is generally valued [45]. Such explanations, however, do not order the data on the physical variables such as the duration of the menstrual cycle, the size of the penis, nor the worldwide differences in dizygotic twinning rate [39, 42]. Nor do they take into account the evidence that many of the variables, including strength of the sex drive [81, 82] and the tendency to double ovulate [42] are found to be heritable. From the *r/K* perspective, the fact that across populations gamete production correlates negatively with brain size and that both covary with the suite of life-history variables shown in Table 3, as well as dovetailing with evolutionary theory and the behavior of other animals [30-35] makes it reasonable to suggest that the racial group differences in susceptibility to AIDS belong in a broader perspective than has been considered to date.

The importance of culturally influenced diffusion networks is not to be denied (Figs 1 and 3). These may be expected to interact, however, with genetically based dispositions. An example of such interlacing from an *r/K* perspective comes from examining male versus female differences in transmission rates of AIDS among white homosexuals. These differentials are understandable from an analysis of the cultural norms generated from underlying male/female differences in sexual preferences [24]. When

the necessities to compromise required by the presence of the opposite sex are removed, males and females are freer to construct those behavior patterns most compatible with their genotypes. Thus homosexual male culture is typically *r*-like and promiscuous, often involving large numbers of sexual partners in a detached manner and emphasizing youthful attractiveness. Female homosexual culture, on the other hand, is more typically *K* like, emphasizing stable, long-term monogamous relationships with a supportive set of social norms.

If the analysis presented here is correct, several predictions are possible about the future global pattern of the pandemic. Of those countries which have still to report sizeable AIDS cases, or otherwise where the epidemiology is not yet known, we would predict the virus to spread most in the more *r*-strategy groups. For example, in racially diverse Caribbean countries such as Guyana and Trinidad, East Indians are predicted to equal whites (both are Caucasoid samples) and to be more at risk than Orientals but less at risk than Negroes. Countries with large black populations should be more at risk than those with smaller black populations (e.g. Brazil > Argentina). To reiterate, these predictions follow from the view that epigenetic rules incline *r*-strategy individuals to those co-factors placing them at risk, including not only multiple sexual partners and concomitant risk of other STDs, but also to drug abuse, criminality, poor education, and generally poorer health and social organization.

Recent support for our predictions of race differences in heterosexual transmission rates is available from both Europe and the United States. For 28 European countries reporting to the WHO Collaborating Centre in Paris as of 30 September 1987, we calculated that of the 524 cases known to be transmitted heterosexually (5% of total), 40% were from a person of African or Caribbean origin. For data from the U.S. reported to the Centers for Disease Control as of 14 November 1988, we calculated that of 3359 cases transmitted heterosexually (4% of total), 65% were black.

As many editorials from medical authorities make clear, the single most important recommendation to be given to avoid AIDS is to choose one's sexual partners with great care; ideally limiting oneself to a monogamous relationship with a person from a low risk group after having him or her test negatively for AIDS [13, 83]. Even within high-risk groups, the data is consistent in showing that those who are most sexually active are the ones most at risk. For example, one study contrasted Africans with AIDS living in Rwanda and Belgium with those without AIDS, matched for age, income, ethnic and geographic origin, finding the former were more likely to frequent prostitutes (81% vs 34%, $P < 0.001$) and have a greater number of regular partners a year (means = 32 vs 3, $P < 0.001$) than the latter [71]. Frequent contact with prostitutes, along with a history of sexually transmitted diseases, has been confirmed in studies of other African populations [84].

Some might find disagreeable our approach to race differences in the sensitive area of sexual behavior and AIDS, and particularly to our linking them to

genetically based evolutionary processes. It may be useful to remember that even if genetic predispositions are operating this does not deny the importance of environmental influences. Distal genetic effects are necessarily mediated by proximate neuro-endocrine and psychosocial systems which have independent effects on phenotypic behavior, and provide potential mechanisms for intervention and alleviation of suffering.

In short, we have argued that members of some populations are more drawn than are members of other populations to those activities that put them at risk for AIDS. Calls are currently being made for healthy monogamous women who do not use intravenous drugs, along with people over the age of 65 to donate blood 3-4 times annually. Such donors are statistically unlikely to become afflicted with serum hepatitis, or retrovirus-associated immune deficiency syndromes unless they have themselves received transfusions of blood or blood products. Just as some populations are recognized as 'not-at-risk', recognizing that other populations may be at special risk may increase opportunities for prediction and prevention.

REFERENCES

- Mann J. M. and Chin J. AIDS: a global perspective. *New Engl. J. Med.* **319**, 302-303, 1988.
- Barnes D. M. AIDS: statistics but few answers. *Science* **236**, 1423-1425, 1987.
- Curran J. W., Jaffe H. W., Hardy A. M., Morgan W. M., Selik R. M. and Dondero T. J. Epidemiology of HIV infection and AIDS in the United States. *Science* **239**, 610-616, 1988.
- Piot P., Plummer F. A., Mhalu F. S., Lamboray J-L., Chin J. and Mann J. M. Aids: an international perspective. *Science* **239**, 573-579, 1988.
- Mann J. M., Chin J., Piot P. and Quinn T. The international epidemiology of AIDS. *Scient. Am.* **258**, 82-89, 1988.
- Norman C. Politics and science clash on African AIDS. *Science* **230**, 1140-1142, 1985.
- Dickson D. Africa begins to face up to AIDS. *Science* **238**, 605-607, 1987.
- Quinn T. C., Mann J. M., Curran J. W. and Piot P. AIDS in Africa: an epidemiologic paradigm. *Science* **234**, 955-963, 1986.
- Swainbanks D. Japanese AIDS scandal over trials and marketing of coagulants. *Nature* **331**, 552, 1988.
- Bonneux L., van der Stuyt P., Taelman H., Cornet P., Goilav C., van den Groen G. and Piot P. Risk factors for infection with human immunodeficiency virus among European expatriates in Africa. *Br. med. J.* **297**, 581-583, 1988.
- Gordon A. M. HIV infection in Cuba (and reply). *J. Am. med. Ass.* **258**, 3387, 1988.
- Goedert J. J., Eyster M. E., Biggar R. J. and Blattner W. A. Heterosexual transmission of human immunodeficiency virus: association with severe depletion of T-helper lymphocytes in men with hemophilia. *AIDS Res. Human Retroviruses* **3**, 355-361, 1987.
- Masters W. H., Johnson V. E. and Kolodny R. C. *Crisis: Heterosexual Behavior in the Age of AIDS*. Little, Brown, New York, 1988.
- Heyward W. L. and Curran J. W. The epidemiology of AIDS in the U.S. *Scient. Am.* **258**, 72-81, 1988.
- Donegan S. P., Edelin K. C. and Craven D. E. HIV seroprevalence rate at the Boston City hospital. *New Engl. J. Med.* **319**, 653, 1988.
- Farthing C. F., Brown S. E., Staughton R. C. D., Cream J. J. and Muhlemann M. *A Colour Atlas of AIDS (Acquired Immunodeficiency Syndrome)*. Wolfe Medical Publications, London 1986.
- Newmark P. AIDS in an African context. *Nature* **324**, 611, 1986.
- Essex M. and Kanki P. J. The origins of the AIDS virus. *Scient. Am.* **258**, 64-71, 1988.
- Benn S., Rutledge R., Folks T., Gold J., Baker L., McCormick J., Feorino P., Piot P., Quinn T. and Martin M. Genomic heterogeneity of AIDS retroviral isolates from North America and Zaire. *Science* **230**, 949-951, 1985.
- Barin F., M'Boup S., Denis F., Kanki P., Allan J. S., Lee T. H. and Essex M. Serological evidence for virus related to simian T-lymphotropic retrovirus III in residents of West Africa. *Lancet* **1985-II**, 1387, 1985.
- Steel M. Fourth international AIDS conference: report. *Lancet* **1988-II**, 54-55, 1988.
- Rushton J. P. and Bogaert A. F. Race differences in sexual behavior: testing an evolutionary hypothesis. *J. Res. Person.* **21**, 529-551, 1987.
- Hofmann A. Contraception in adolescence: a review. 1. Psychological aspects. *Bull. Wld Hlth Org.* **63**, 151-162, 1984.
- Symons D. *The Evolution of Human Sexuality*. Oxford University Press, New York, 1979.
- Moore D. S. and Erickson P. I. Age, gender, and ethnic differences in sexual and contraceptive knowledge, attitudes, and behaviors. *Family Commun. Hlth* **8**, 38-51, 1985.
- Lewontin R. C., Rose S. and Kamin L. J. *Not In Our Genes*. Pantheon, New York, 1984.
- Weinrich J. D. Human sociobiology: pair bonding and resource predictability (effects of social class and race). *Behav. Ecol. Sociobiol.* **2**, 91-118, 1977.
- Rushton J. P. and Bogaert A. F. Race versus social class differences in sexual behavior: a follow-up test of the r/K dimension. *J. Res. Person.* **22**, 259-272, 1988.
- Weinberg M. S. and Williams C. J. Black sexuality: a test of two theories. *J. Sex Res.* **25**, 197-218, 1988.
- Rushton J. P. Differential K theory: the sociobiology of individual and group differences. *Person. Individ. Diff.* **6**, 441-452, 1985.
- Wilson E. O. *Sociobiology: The New Synthesis*. Harvard University Press, Cambridge, Mass., 1975.
- Johanson D. C. and Edey M. A. *Lucy: The Beginnings of Humankind*. Simon & Schuster, New York 1981.
- Eisenberg J. F. *The Mammalian Radiations: An Analysis of Trends in Evolution, Adaptation, and Behavior*. University of Chicago Press, Chicago, Ill., 1981.
- Pianka E. R. On r - and K -selection. *Am. Natural.* **104**, 592-597, 1970.
- Lovejoy C. O. The origin of man. *Science* **211**, 341-350, 1981.
- Ellis L. Criminal behavior and r/K selection: an extension of gene-based evolutionary theory. *Person. Individ. Diff.* **9**, 697-708, 1988.
- Rushton J. P. Differential K theory and race differences in E and N. *Person. Individ. Diff.* **6**, 769-770, 1985.
- Rushton J. P. An evolutionary theory of health longevity, and personality: sociobiology and r/K reproductive strategies. *Psychol. Rep.* **60**, 539-549, 1987.
- Rushton J. P. Toward a theory of human multiple birthing: sociobiology and r/K reproductive strategies. *Acta genet. Med. gemellol.* **36**, 289-296, 1987.
- Rushton J. P. Race differences in behaviour: a review and evolutionary analysis. *Person. Individ. Diff.* **9**, 1009-1024, 1988.

41. Rushton J. P. The reality of racial differences: a rejoinder with new evidence. *Person. Individ. Diff.* **9**, 1035-1040, 1988.
42. Bulmer M. G. *The Biology of Twinning in Man*. Clarendon Press, Oxford, 1970.
43. Westoff C. F., Calot G. and Foster A. D. Teenage fertility in developed nations: 1971-1980. *Family Plann. Perspect.* **15**, 105-110, 1983.
44. Ford C. S. and Beach F. A. *Patterns of Sexual Behavior*. Harper & Row, New York, 1951.
45. Vernon P. E. *The Abilities and Achievements of Orientals in North America*. Academic Press, New York, 1982.
46. Iwawaki S. and Eysenck H. J. Sexual attitudes among British and Japanese Students. *J. Psychol.* **98**, 289-298, 1978.
47. Lumsden C. J. and Wilson E. O. *Genes, Mind and Culture: The Coevolutionary Process*. Harvard University Press, Cambridge, Mass., 1981.
48. Rushton J. P., Littlefield C. H. and Lumsden C. J. Gene-culture coevolution of complex social behavior: Human altruism and mate choice. *Proc. Natn. Acad. Sci. U.S.A.* **83**, 7340-7343, 1986.
49. Freedman D. G. *Human Sociobiology*. Free Press, New York, 1979.
50. Plomin R., Loehlin J. C. and DeFries J. C. Genetic and environmental components of "environmental" influences. *Dev. Psychol.* **21**, 391-402, 1985.
51. Money J. Food, fitness and vital fluids: sexual pleasure from Graham Crackers to Kellogg's Cornflakes. *Br. J. Sex. Med.* **11**, 127-130, 1984.
52. Money J. *The Destroying Angel*. Prometheus, New York, 1986.
53. Money J. and Anecillo C. Body image pathology: Koro, the shrinking penis syndrome in transcultural sexology. *Sex. Marital Ther.* **2**, 91-100, 1987.
54. Lieh-Mak F. and Ng M. L. Ejaculatory incompetence in Chinese men. *Am. J. Psychiat.* **138**, 685-686, 1981.
55. Cole M. Sex therapy—A critical appraisal. *J. Psychiat.* **147**, 337-351, 1985.
56. Wilson J. Q., and Herrnstein R. J. *Crime and Human Nature*. Simon & Schuster, New York, 1985.
57. Davis G. E. and Leitenberg H. Adolescent sex offenders. *Psychol. Bull.* **101**, 417-427, 1987.
58. Kirk S. A. The sex offenses of blacks and whites. *Archs Sex. Behav.* **4**, 295-302, 1975.
59. Peters J. J. Children who are victims of sexual assault and the psychology of offenders. *Am. J. Psychother.* **30**, 398-421, 1976.
60. World Health Organization Technical Report. Treponemal infections: Report of a WHO Scientific Group. Series No. 674. WHO, Geneva, 1982.
61. Cates W., Farley T. M. M. and Rowe P. J. Worldwide patterns of infertility: is Africa different? *Lancet* **1985-II**, 596-598, 1985.
62. Shulman A. G. Absence of venereal disease in the People's Republic of China. *West. J. Med.* **130**, 469-471, 1979.
63. Brown S. T., Zacarias F. R. K. and Aral S. O. STD control in less developed countries: the time is now. *Int. J. Epidemiol.* **14**, 505-509, 1985.
64. Hasegawa T., Izumi S., Kurihara S., Ishizuka Y., Ho Y., Takechi A. and Tsuchiya M. Incidence of herpes infection of the uterine cervix observed in cytologic specimens in the Tokyo Metropolitan Area. *Acta cytol.* **29**, 363-366, 1985.
65. Osoba A. O. Sexually transmitted diseases in tropical Africa: a review of the present situation. *Br. J. Ven. Dis.* **57**, 89-94, 1981.
66. Fichtner R. R., Aral S. O., Blount J. H., Zaidi A. A., Reynolds G. H. and Darrow W. W. Syphilis in the United States: 1967-1979. *Sexually Transmitted Dis.* **10**, 77-80, 1983.
67. Mascola L., Pelosi R., Blount J. H., Binkin N. J., Alexander C. E. and Cates W. Congenital syphilis: why is it still occurring? *J. Am. med. Ass.* **252**, 1719-1722, 1984.
68. Potterat J. J., Rothenberg R. B., Woodhouse D. E., Muth J. B., Pratts C. I. and Fogle J. S. II Gonorrhea as a social disease. *Sexually Transmitted Dis.* **12**, 25-32, 1985.
69. Alter M. J., Ahtone J., Weisfuse L., Starko K., Vacalis D. and Maynard J. E. Hepatitis B virus transmission between heterosexuals. *J. Am. med. Ass.* **256**, 1307-1310, 1986.
70. Brandt A. M. The syphilis epidemic and its relation to AIDS. *Science* **239**, 375-380, 1988.
71. Clumeck N., van de Perre P., Carael M., Rouvroy D. and Nzaramba D. Heterosexual promiscuity among African patients with AIDS. *New Engl. J. Med.* **313**, 182, 1985.
72. Westney O. E., Jenkins R. R., Butts J. D. and Williams I. Sexual development and behavior in black preadolescents. *Adolescence* **19**, 557-568, 1984.
73. Eveleth P. B. and Tanner J. M. *Worldwide Variation in Human Growth*. Cambridge University Press, 1976.
74. Asayama S. Adolescent sex development and adult sex behavior in Japan. *J. Sex Res.* **11**, 91-112, 1975; Booth W. AIDS and drug abuse: no quick fix. *Science* **239**, 717-719, 1988.
75. Jones E. A. Innovation and *r* and *K* selection. *J. Soc. Biol. Struct.* **11**, 101-105, 1988.
76. Garbarino J. and Ebata A. The significance of ethnic and cultural differences in child maltreatment. *J. Marriage Family* **45**, 773-783, 1983.
77. Kulin H. E. Adolescent pregnancy in Africa: a programmatic focus. *Soc. Sci. Med.* **26**, 727-735, 1988.
78. Zhangling W. Chinese family problems: research and trends. *J. Marriage Family* **45**, 943-948, 1983.
79. Johnson L. B. Sexual behavior of southern blacks. In *The Black Family: Essays and Studies* (Edited by Staples R.), 2nd edn. Wadsworth, Belmont, Calif., 1978.
80. Staples R. The black dating game. In *The Black Family: Essays and Studies* (Edited by Staples R.), 2nd edn. Wadsworth, Belmont, Calif., 1978.
81. Eysenck H. J. *Sex and Personality*. Open Books, London, 1976.
82. Martin N. G., Eaves L. J. and Eysenck H. J. Genetic, environmental and personality factors influencing the age of first sexual intercourse in twins. *J. biosoc. Sci.* **9**, 91-97, 1977.
83. Hearst N. and Hulley S. B. Preventing the heterosexual spread of AIDS. *J. Am. med. Ass.* **259**, 2428-2432, 1988.
84. Simonsen J. N., Cameron D. W., Gakinya M. N., Ndinya-Achola J. O., D'Costa L. J., Karasira P., Cheang M., Ronald A. R., Piot P. and Plummer F. A. Human immunodeficiency virus infection among men with sexually transmitted diseases: Experience from a center in Africa. *New Engl. J. Med.* **319**, 274-278, 1988.

Report

AIDS Cost and Services Utilization Survey

Patterns of Health Care Use Among HIV-Infected Adults: Preliminary Results

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Introduction

Despite the attention generated by the epidemic of the human immunodeficiency virus (HIV), data on the use of health care services by HIV-infected persons have been limited. Research has often focused on subpopulations, such as persons who have developed acquired immunodeficiency syndrome (AIDS), or has been limited to persons using services in a particular geographic area, in a particular institution, or within service networks that have received funding through a particular source. For research that has been conducted beyond these confines, no analyses have examined the full spectrum of health care services used.

The AIDS Cost and Services Utilization Survey (ACSUS) is the first multisite study that examines a comprehensive array of health care and support services used by HIV-infected persons. In addition to these strengths, ACSUS is an improvement on previous research because it is longitudinal in design. Although the design of ACSUS does not allow unbiased national estimates of use, the data do support important analyses of differences within the study population in use patterns across various respondent characteristics, such as race, exposure group, insurance coverage, and stage of illness.

This report presents preliminary results from the first ACSUS interview (referred to as Time 1). Controlling for self-reported disease stage, utilization is examined for seven selected types of health care services: hospital care, nursing home care, formal and informal home care, ambulatory medical visits, use of azidothymidine (AZT), psychological counseling, and dental services.

Background

Since monitoring of the HIV epidemic began, treatment patterns for the disease and the demographic composition of the HIV-positive population have continued to evolve. Prophylactic therapy, coupled with better medical management of opportunistic infections, has extended the clinically relevant spectrum of the disease and may increase length of survival among HIV-infected persons (Creagh-Kirk, Doi, Andrews, et al., 1988; Fischl, Richman, Grieco, et al., 1987; Volberding, Lagakos, Koch, et al., 1990; Graham, Zeger, Park, et al., 1992). As a result, the health care demands of the HIV-positive person are becoming similar to the demands of those patients suffering from chronic diseases, with an increased reliance on medical

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management in the outpatient setting and the use of long-term care services.

In addition to the changing treatment patterns and service demands, the HIV epidemic now extends to a greater representation of the disadvantaged: racial and ethnic minorities, females, injecting drug users (IDUs), the poor, and the uninsured and underinsured. Compared with homosexual or bisexual white males, these persons are more likely to be covered by Medicaid or be uninsured and thus are more likely to have problems gaining access to health care services (Green and Arno, 1990).

Several studies have shown that the health care use of disadvantaged HIV-infected persons differs from that of HIV-infected homosexual or bisexual white males. For example, Mor, Fleishman, Dresser, et al. (1992) found that minorities had higher emergency room use than white persons, IDUs had higher emergency room use than non-IDUs, and females had higher emergency room use than males. The converse was true for outpatient physician use (i.e., there was higher use among white persons than minorities, among non-IDUs than IDUs, and among males than females). The authors also found that IDUs were more likely than other exposure groups to report a hospital admission. Some case studies have shown that females report into the medical care system at more advanced stages of the disease than do males (Young and Pierce, 1990; Ribble, Marte, Tiersten, et al., 1989). Females also have been shown to receive substantially fewer services than males, and male IDUs have been shown to receive fewer services than non-IDU homosexual or bisexual males (Wells, Juday, Mohr, et al., 1992). Lower use of AZT among disadvantaged groups also has been found (Stein, Piette, Mor, et al., 1991; Rosenberg, Gail, Schrager, et al., 1991).

A greater understanding of the factors influencing patterns of health care use can help policymakers design appropriate strategies that reach out to those least likely to receive effective treatment. The more frequently these changing patterns of use can be monitored, the more likely it is that health policies will be effective.

Methodology

The data presented here reflect the answers of 1,949 adult and adolescent respondents to the first ACSUS interview (Time 1). Time 1 achieved a response rate of approximately 95 percent. For a detailed description of the study design, see Berk, Maffeo, and Schur (1993).

Table 1 presents the distribution of respondents by demographic and clinical characteristics. Illness stage was divided into three categories: those who reported no HIV-related symptoms (asymptomatic); those who reported at least one HIV-related symptom but no AIDS-defining conditions or diseases (HIV-symptomatic); and those who reported at least one AIDS-defining condition or disease (AIDS). In general, these disease stages were consistent with the Centers for Disease Control stages used in 1987: CDC I and II, CDC III, and CDC IV, respectively. Persons who reported only herpes or thrush, which may be considered AIDS defining if chronic or accompanied by other opportunistic infections, were included in the HIV-symptomatic category. This was because many persons reported having nonchronic herpes conditions or thrush and no other opportunistic infection.

All data are self-reported and therefore should be interpreted with caution. For the most part, this report presents the responses to questions about whether a service was received during the reference period and does not examine the intensity of service use. The reason for this focus is to minimize recall error, which is less likely for reporting whether a service was received in recent months than for reporting service intensity.

However, respondents were selected from HIV-positive persons reporting to an ambulatory care setting or receiving care as an inpatient, and most were receiving care in major medical centers. This has profound analytic implications and also influenced the way results have been presented in this report. Because of this sample design, nearly all persons reported visiting an ambulatory medical provider during the reference period. Thus, for ambulatory visits only, preliminary estimates of the intensity of use (i.e., number of visits) and the location of visits are presented.

Table 1. Number and percent distribution of respondents to ACSUS Time 1 Questionnaire, by stage of illness¹ and respondent characteristics: 1991

Respondent characteristic	Asymptomatic		HIV-symptomatic		AIDS	
	Number	Percent	Number	Percent	Number	Percent
All groups	422	20.7	843	43.3	678	34.8
Race or ethnicity						
White	138	32.7	388	46.0	280	41.3
Black	123	29.2	239	28.4	213	31.4
Hispanic	152	36.0	202	24.0	172	25.4
Other	9	2.1	14	1.7	13	1.9
Exposure						
Homosexual or bisexual male ²	224	53.1	475	56.4	360	53.1
Male IDU	52	12.3	149	17.7	153	22.6
Other male	46	10.9	62	7.4	57	8.4
Female	100	23.7	154	18.3	105	15.5
Income in previous month						
\$500 or less	208	49.3	377	44.7	341	50.3
\$501-\$1,150	84	19.9	182	21.6	203	29.9
\$1,151-\$3,000	82	19.4	182	21.6	94	13.9
\$3,001 or more	46	10.9	97	11.5	36	5.3
Employment status						
Employed	203	48.1	357	42.4	115	17.0
Unemployed	217	51.4	486	57.7	563	83.0
Insurance coverage						
Private	141	33.4	296	35.1	189	27.9
Public ³	177	41.9	420	49.8	425	62.7
None	97	23.0	113	13.4	52	7.7

¹Stage of illness was unknown for 6 respondents.

²Includes male respondents indicating transmission via sex with male IDU.

³Includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials.

Note: Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness. IDU is injecting drug user.

Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

Interviews were conducted from the end of March through mid-August 1991. Respondents were asked about medical and support services received since March 1, 1991. Data were not adjusted for different lengths of reference period among the respondents, with the exception of ambulatory medical visits. These data were standardized to a 3-month period by multiplying each observation by 90 days and dividing by the number of days between March 1 and the interview date. Although roughly 80 percent of all interviews were completed within 3 months following the reference date, the variation among the respondents in the length of the reference period may affect the results presented.

In the next section, descriptive statistics on health care utilization are presented by respondent characteristics. No statistical tests were performed for the descriptive comparisons presented. Because the ACSUS design did not use probability sampling techniques, no rigorously defensible method for computing standard errors exists. Moderate or low differences in use patterns among the various patient groups examined should be interpreted with caution. Also, no multivariate analyses were done to determine which characteristics are most likely to affect the probability of service use. Clearly, some of the characteristics that appear to be associated with health care use may, under a more rigorous statistical examination, be shown to be a function of more

complex interactions among patient characteristics. In addition, analyses of subsequent interviews in this longitudinal survey may reveal changes in patterns over time.

Variation in Health Care Use

Hospital Stays

As expected, the proportion of persons hospitalized increased with the progression of disease. Approximately 8 percent of asymptomatic persons reported at least one stay in a hospital during the reference period, compared with 11 percent reporting at least one HIV-related symptom and 30 percent who had AIDS (summary ACSUS statistics not shown).

Regardless of disease stage, a higher proportion of black, low-income, and unemployed persons reported hospital use than did those in other race or ethnicity, income, or employment status categories (Figure 1). Among those in early stages of the disease, black persons were roughly three times more likely to report a hospital stay than either white or Hispanic persons. These findings differ from those for the general population, where black persons are not more likely than white persons to report a hospitalization (National Center for Health Statistics, 1990).

Both income and employment status may be proxies for the severity of illness of HIV-infected persons. As one becomes more ill, the ability to earn a living declines. Low-income persons may also have fewer alternatives to hospitalization (such as the ability to obtain home care or arrange a stay in a hospice) than higher income persons have. In general, they are more likely than those with higher incomes to report a hospital stay (National Center for Health Statistics, 1990), and this appears to hold true among HIV-infected persons.

Public insurance coverage (as opposed to private coverage or no coverage) was associated with a higher likelihood of reporting a hospital stay for persons in early stages of the disease. However, for those with AIDS, a slightly lower proportion of persons with public than private insurance reported a hospital stay (29 versus 34

percent). Although the differences were surprisingly slight, the uninsured were consistently least likely to report a hospital stay. In general, the influence of respondent characteristics on use of hospital services is more marked in the early stages of the disease.

Nursing Home Stays

Overall, the proportion of HIV-infected persons reporting a stay in a nursing home was low, less than 2 percent. At any given time, 6 percent of the nonelderly disabled and 21 percent of the elderly who need long-term care are institutionalized (Pepper Commission, 1990). The low rate of nursing home use among the HIV infected is consistent with treatment patterns that have favored the use of home care over institutional long-term care (Stone, White, Wells, et al., 1992). Long-term care facilities have also been reluctant to provide beds for persons infected with HIV because of, among other reasons, the high skilled nursing and infection control costs, low Medicaid reimbursement, and fear of loss of other referrals (Taravella, 1990).

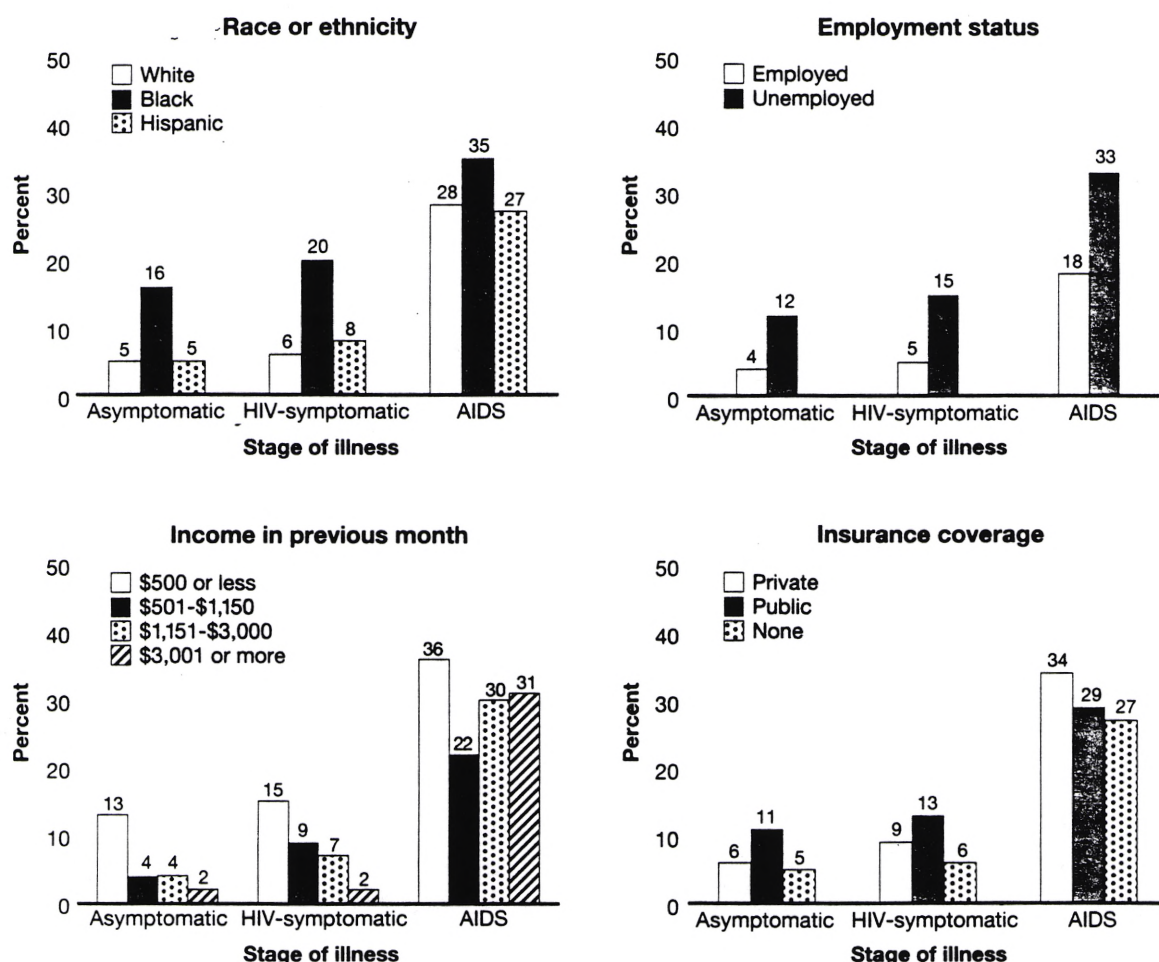
Formal and Informal Home Care

In contrast to nursing home use, a substantially higher proportion of HIV-infected persons reported the use of either informal or formal care at home (Figure 2). Forty-six percent of persons with AIDS received some informal care in the home, and 26 percent received some formal home care. A somewhat surprising finding is the high proportion of asymptomatic persons who used some sort of informal home care (21 percent).

Informal home care sources include buddy advocates, persons living with the respondent, and friends or family not living with the respondent. Formal home care sources include services provided by a physician, nurse, nurse's aide, social worker, case manager or case worker, therapist, hospice, laboratory technician, or paid worker (including cleaning assistance). The primary distinction between these two types of care is whether or not the caregiver received payment from any source for the services.

As is true for the general population, informal caregiving is a vital component of the HIV

Figure 1. Percent of HIV-infected persons reporting a hospital stay, by stage of illness and respondent characteristics: 1991



Note: Public insurance coverage includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials. Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness.

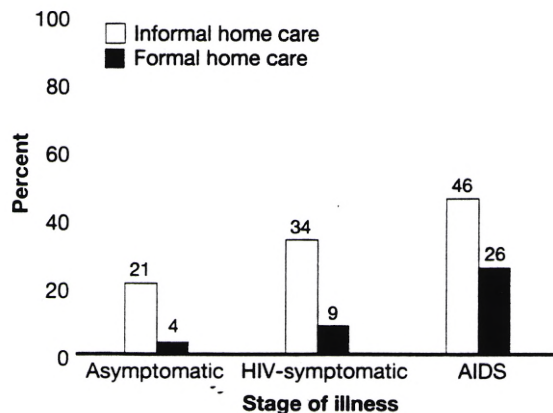
Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

health care delivery system, comprising the majority of home care services provided. Figure 3 presents differences in informal home care use across respondent characteristics. Whereas white persons, homosexual or bisexual males, persons in the highest income category, and those with private insurance were among the least likely to report receiving informal care in the early stages of the disease, they were among the most likely to report use once they had acquired AIDS. About one-half of those persons reported some type of informal home care. Somewhat surprisingly, IDUs, who are

often considered to be socially isolated from friends and family support systems, were among the most likely to report use of informal care. This was true for male IDUs and females, who, if not IDUs themselves, were likely to have been infected through sex with a male IDU.

In Figure 4, patterns of formal home care use are presented by respondent characteristics. In early stages of the disease, white persons, homosexual or bisexual males, those in the higher income categories, employed persons, and those with private insurance were among the lowest users of formal home care. Patterns

Figure 2. Percent of HIV-infected persons reporting informal or formal home care, by stage of illness: 1991



Note: Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness.

Source: Agency for Health Care Policy and Research: Data from responses to Time I Questionnaire, AIDS Cost and Services Utilization Survey.

of use changed somewhat among persons who reported AIDS-defining conditions. For example, at this stage, white persons were more likely than black persons to report use, and persons with private insurance, which rarely funds home care services, were about as likely as those with public insurance to report use. However, differences by insurance coverage and employment status remained large. Persons who were unemployed were more than three times more likely to report use than were persons who had a job, and persons with either private or public insurance were roughly two times more likely to report use than were the uninsured.

Regardless of disease stage, individuals with some sort of public insurance were among the most likely to report formal home care use. Females were also among the most likely users of formal home care. This may reflect circumstances where females are less likely than males to have fallback sources of care in the home. However, females were also more likely than males to be covered by Medicaid.

Ambulatory Medical Services

Ambulatory medical visits have been defined to include visits to a private doctor's office, a hospital emergency room, a hospital clinic or

outpatient department, and any other medical clinic. Although most people reported slightly more than 3 visits (the mode), a few reported more than 90 visits during a 3-month period. Overall, the median number of ambulatory medical visits in 3 months was 3.5 for asymptomatic persons, 4.2 for HIV-symptomatic persons, and 5.3 for persons with AIDS.

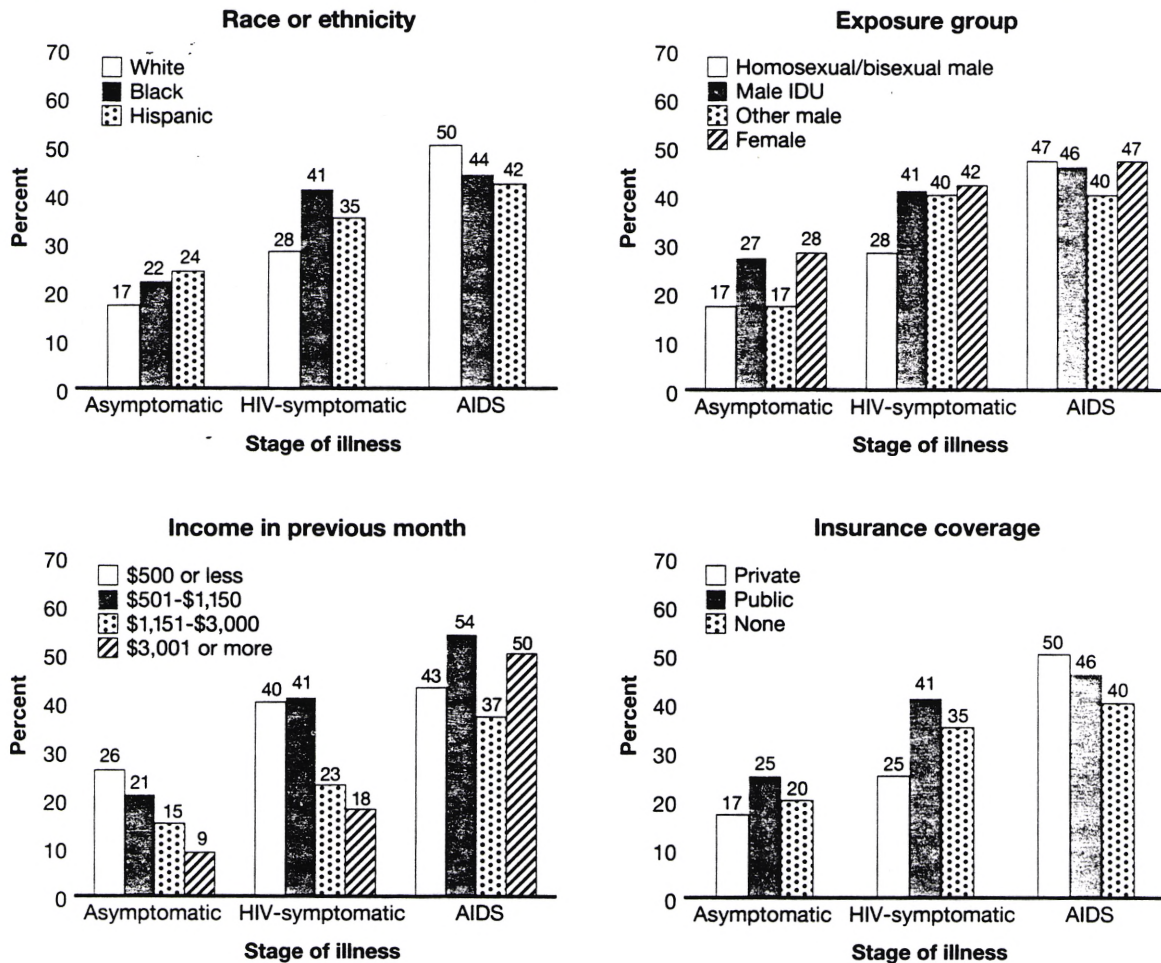
Somewhat surprisingly, the median number of visits is quite similar across respondent groups in the early stages of the disease (Figure 5). Once persons had AIDS, however, a greater disparity by respondent characteristics was evident. In contrast to their comparison groups, use was highest among white persons, homosexual or bisexual males, persons in the highest income category, and the privately insured.

Despite similarities in the number of reported ambulatory medical visits, the site (i.e., location) where services were received varied substantially by respondent characteristics. Without controlling for disease stage, these differences are reported in Figure 6. Emergency room use was proportionately higher among black persons relative to white persons, IDU males and females relative to homosexual or bisexual males, persons in the lowest income category relative to those earning more, persons with public or no insurance relative to those with private insurance, and the unemployed relative to those working. In contrast, a high proportion of white persons, homosexual or bisexual males, persons in the highest income category, persons with private insurance, and the employed reported receiving care in a private physician's office at some time during the reference period.

Use of AZT

Overall, 59 percent of persons reporting no HIV-related symptoms, 65 percent of those reporting HIV-related symptoms but not AIDS, and 68 percent of those reporting AIDS indicated they had used AZT at some time during the reference period. In contrast to previous studies, where a wide variation in the use of this type of prophylactic drug therapy was found across socioeconomic and exposure groups (Moore, Hidalgo, Sugland, et al., 1991; Rosenberg, Gail, Schrager, et al., 1991; Stein,

Figure 3. Percent of HIV-infected persons reporting informal home care, by stage of illness and respondent characteristics: 1991



Note: Homosexual or bisexual male includes male respondents indicating transmission via sex with male IDU. Public insurance coverage includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials. Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness. IDU is injecting drug user.

Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

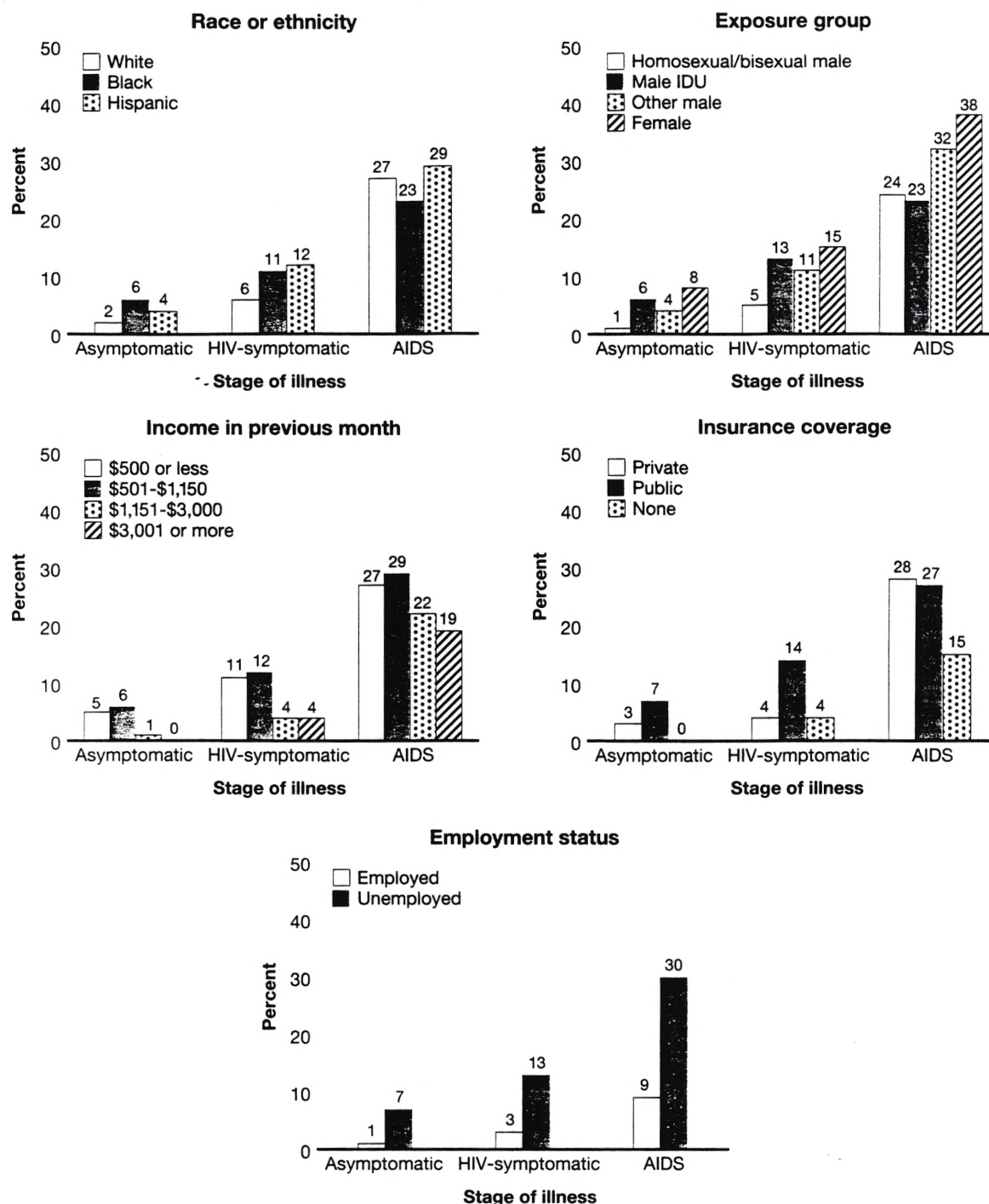
Piette, Mor, et al., 1991), ACSUS data show very little variation in use by respondent characteristics (Figure 7).

General insurance coverage, regardless of type, appears to be the characteristic most clearly associated with AZT use, even though specific coverage of AZT use was not examined. This association is most marked among asymptomatic persons and persons with AIDS. Among asymptomatic persons, 62-73 percent of persons with some type of insurance coverage but only 34 percent of the uninsured received AZT; among those with AIDS, 64-71 percent of

the insured but only 48 percent of the uninsured received AZT.

A somewhat unexpected trend is evident among persons in the highest income category and those with private insurance: a higher proportion of persons in the early stages of the disease used AZT than did persons with AIDS. A speculative explanation for this result is that these persons were among the first to seek early treatment in response to the early promising findings on AZT, but have also been among the first to experience adverse effects. The toxic side effects of this drug are often not tolerated, and

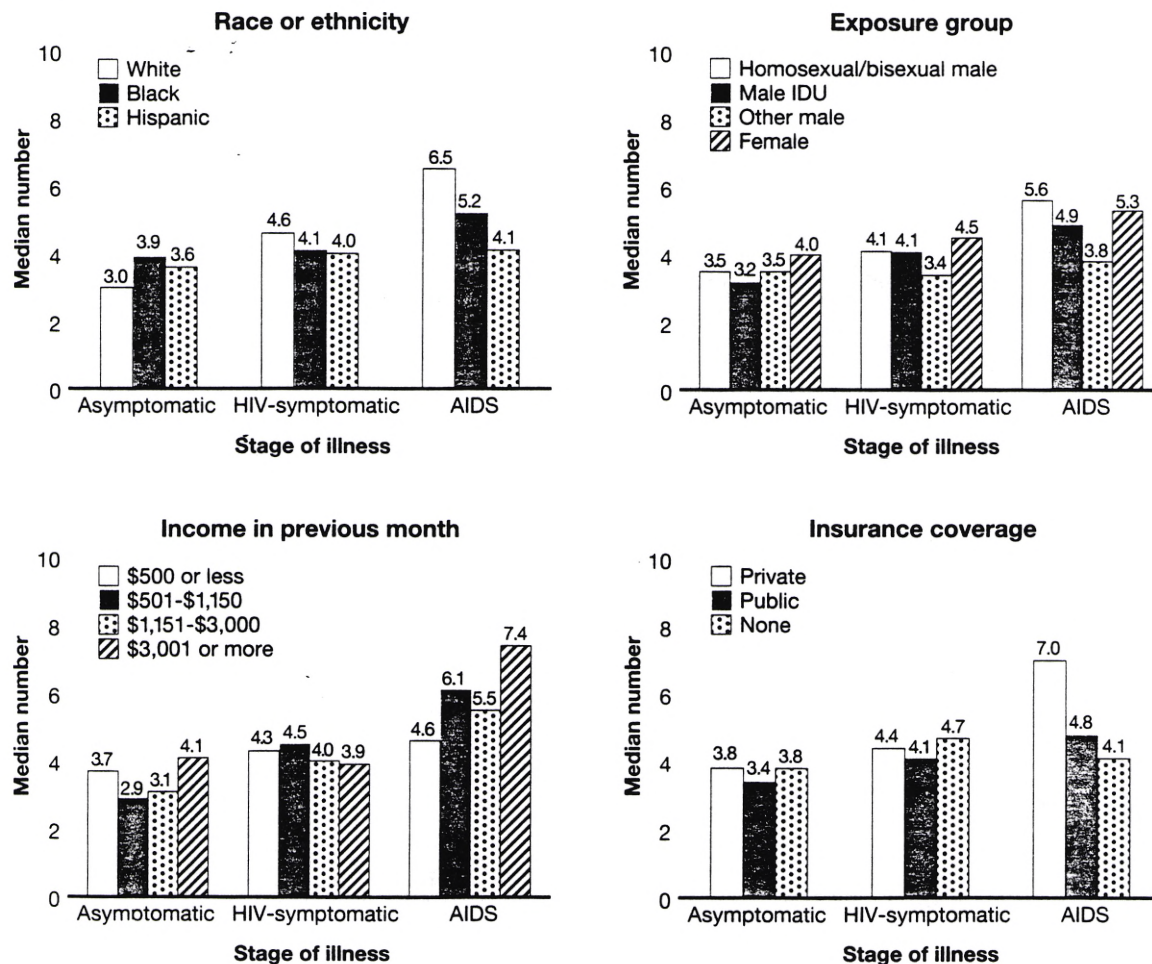
Figure 4. Percent of HIV-infected persons reporting formal home care, by stage of illness and respondent characteristics: 1991



Note: Homosexual or bisexual male includes male respondents indicating transmission via sex with male IDU. Public insurance coverage includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials. Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness. IDU is injecting drug user.

Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

Figure 5. Median number of ambulatory medical visits made by HIV-infected persons during a 3-month period, by stage of illness and selected characteristics: 1991



Note: Homosexual or bisexual male includes male respondents indicating transmission via sex with male IDU. Public insurance coverage includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials. Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness. IDU is injecting drug user.

Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

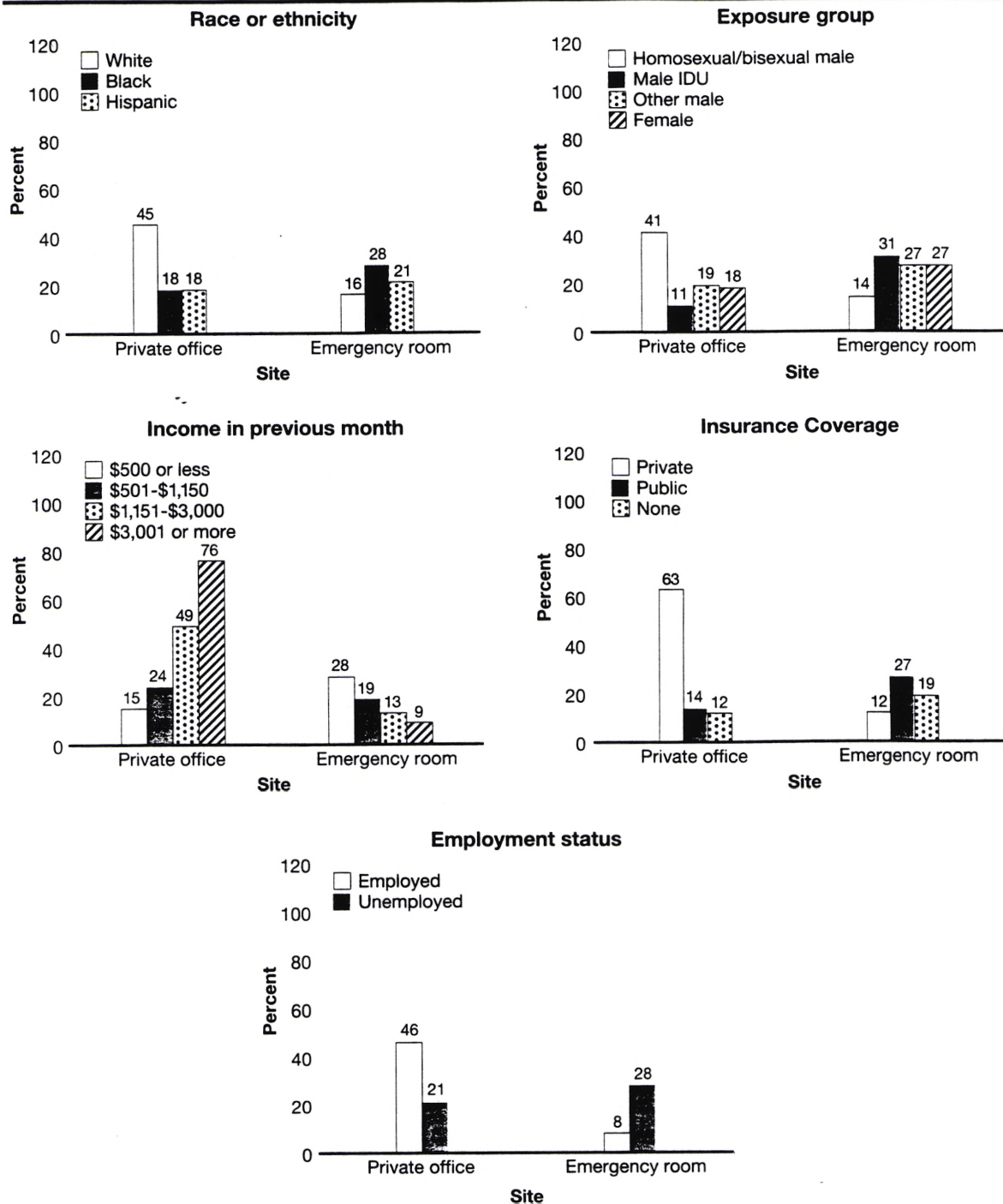
its beneficial effects have been shown to decline when it is used for long periods of time (Larder, Darby, and Richman, 1989). These groups are likely to include the wealthiest patients, who may now have access to AZT substitutes.

Psychological Counseling

The proportion of persons who indicated they had attended a support group or received other psychological counseling or therapy was 21 percent of asymptomatic persons and 29 percent of HIV-symptomatic persons or persons with AIDS.

In general, differences in use patterns by socioeconomic group were most apparent among respondents with AIDS (Figure 8). For those respondents, white persons (41 percent), persons in the highest income category (44 percent), and those with private insurance (39 percent) were the most likely to report use of psychological counseling. (Having private or public insurance did not imply that psychiatric services were specifically covered.) Among HIV-symptomatic persons, variations in the use of psychiatric or mental support by respondent characteristics were slight. In keeping with

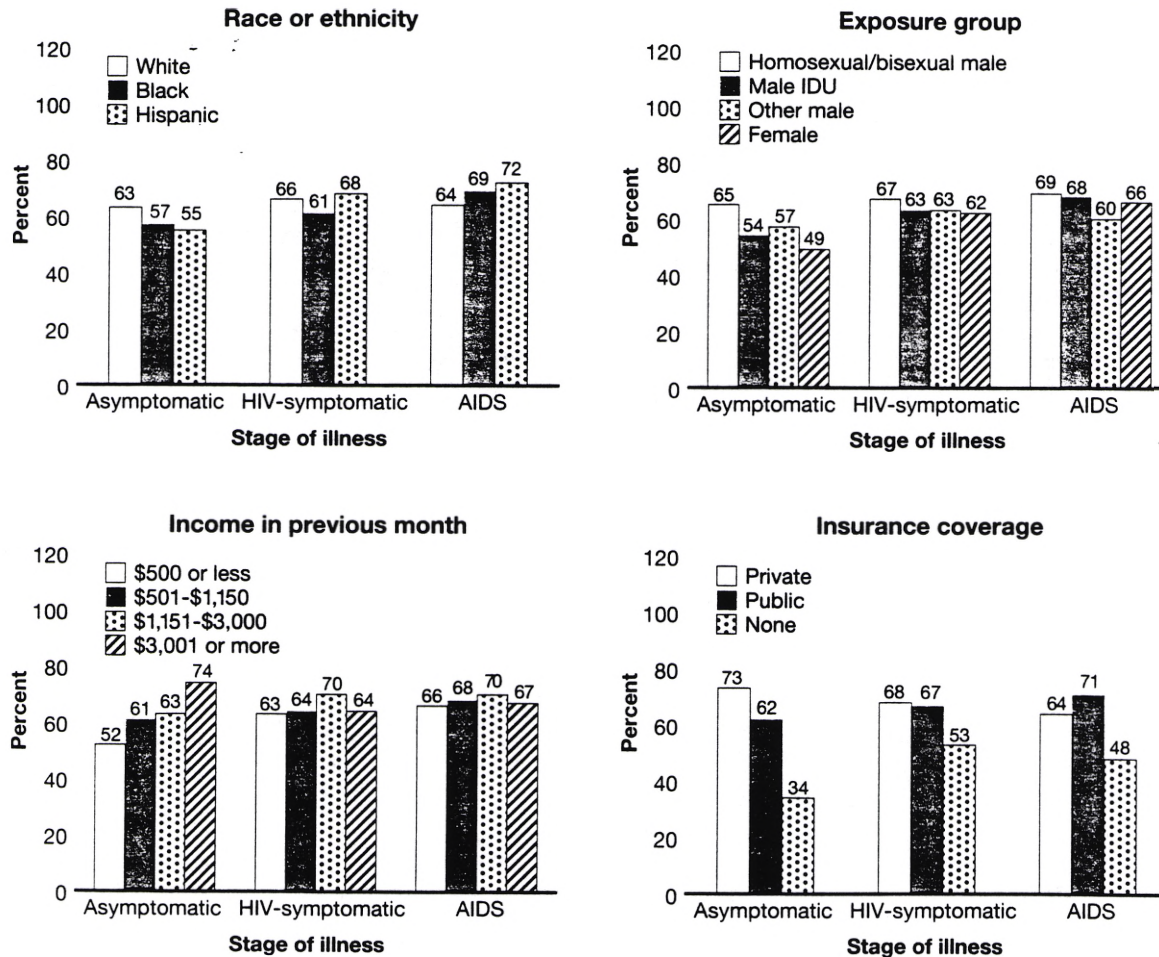
Figure 6. Percent of HIV-infected persons reporting an ambulatory medical visit, by site and respondent characteristics: 1991



Note: Homosexual or bisexual male includes male respondents indicating transmission via sex with male IDU. Public insurance coverage includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials. Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness. IDU is injecting drug user.

Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

Figure 7. Percent of HIV-infected persons reporting use of AZT, by stage of illness and respondent characteristics: 1991



Note: Homosexual or bisexual male includes male respondents indicating transmission via sex with male IDU. Public insurance coverage includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials. Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness. AZT is azidothymidine. IDU is injecting drug user.

Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

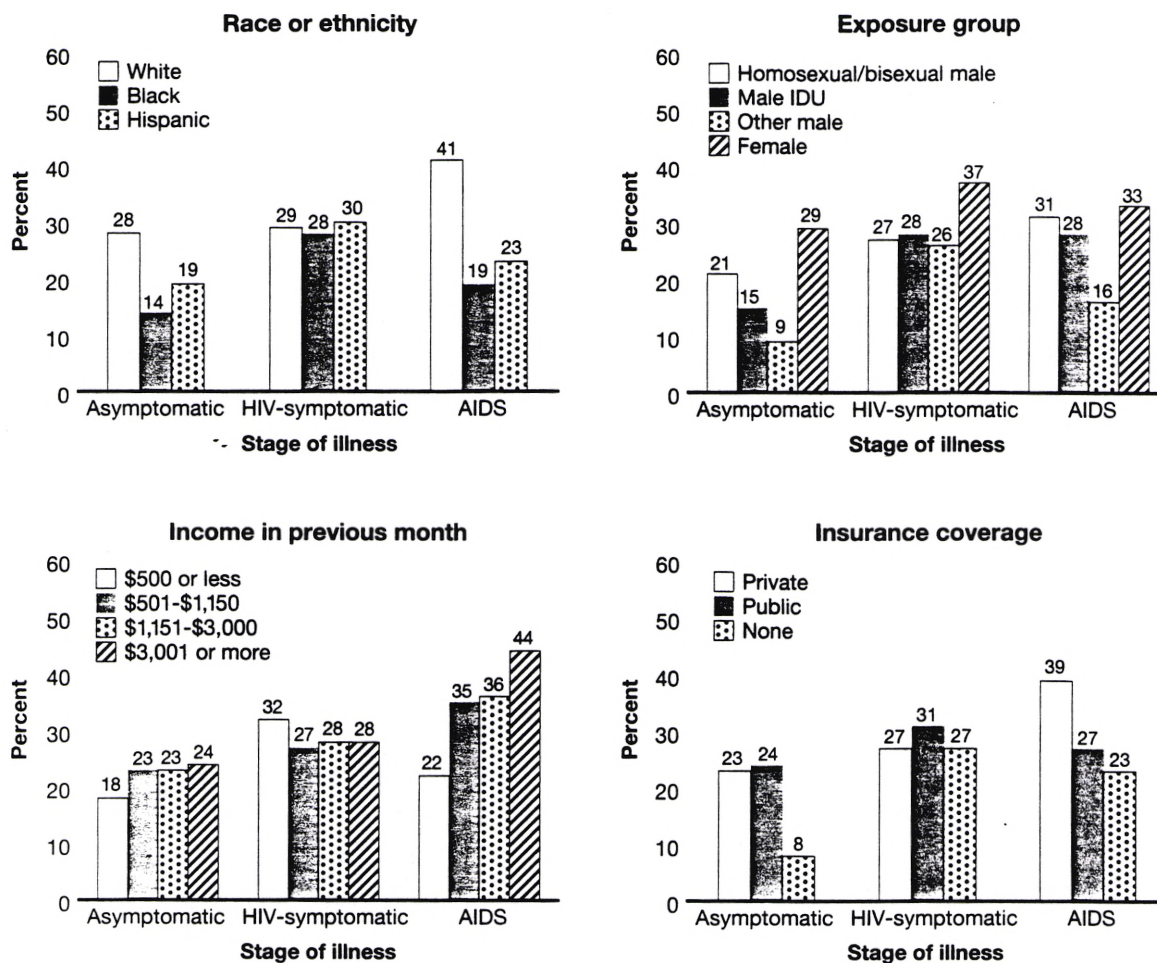
findings among the general population (Wells, Manning, Duan, et al., 1986), HIV-infected females were consistently more likely than were males to report use of psychiatric services. Although the data are not shown here, female IDUs were even more likely than other females to use these services. These findings are in contrast to those from a previous study, in which IDUs were found to make less use of psychological support groups than others with HIV infection (Longstreth, Olopoenia, Phillips, et al., 1990).

Dental Services

Roughly 20 percent of HIV-infected persons reported seeing a dentist, oral surgeon, or other professional dental care provider at least once during the reference period. This proportion varied only slightly by disease stage.

Patterns similar to those presented for the use of psychological counseling were found in the use of dental services (Figure 9). White persons were more likely to report use of these services than were minority groups; overall, they were nearly twice as likely as black persons to report the use of these services. A higher proportion of

Figure 8. Percent of HIV-infected persons reporting receipt of psychological counseling, by stage of illness and respondent characteristics: 1991



Note: Homosexual or bisexual male includes male respondents indicating transmission via sex with male IDU. Public insurance coverage includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials. Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness. IDU is injecting drug user.

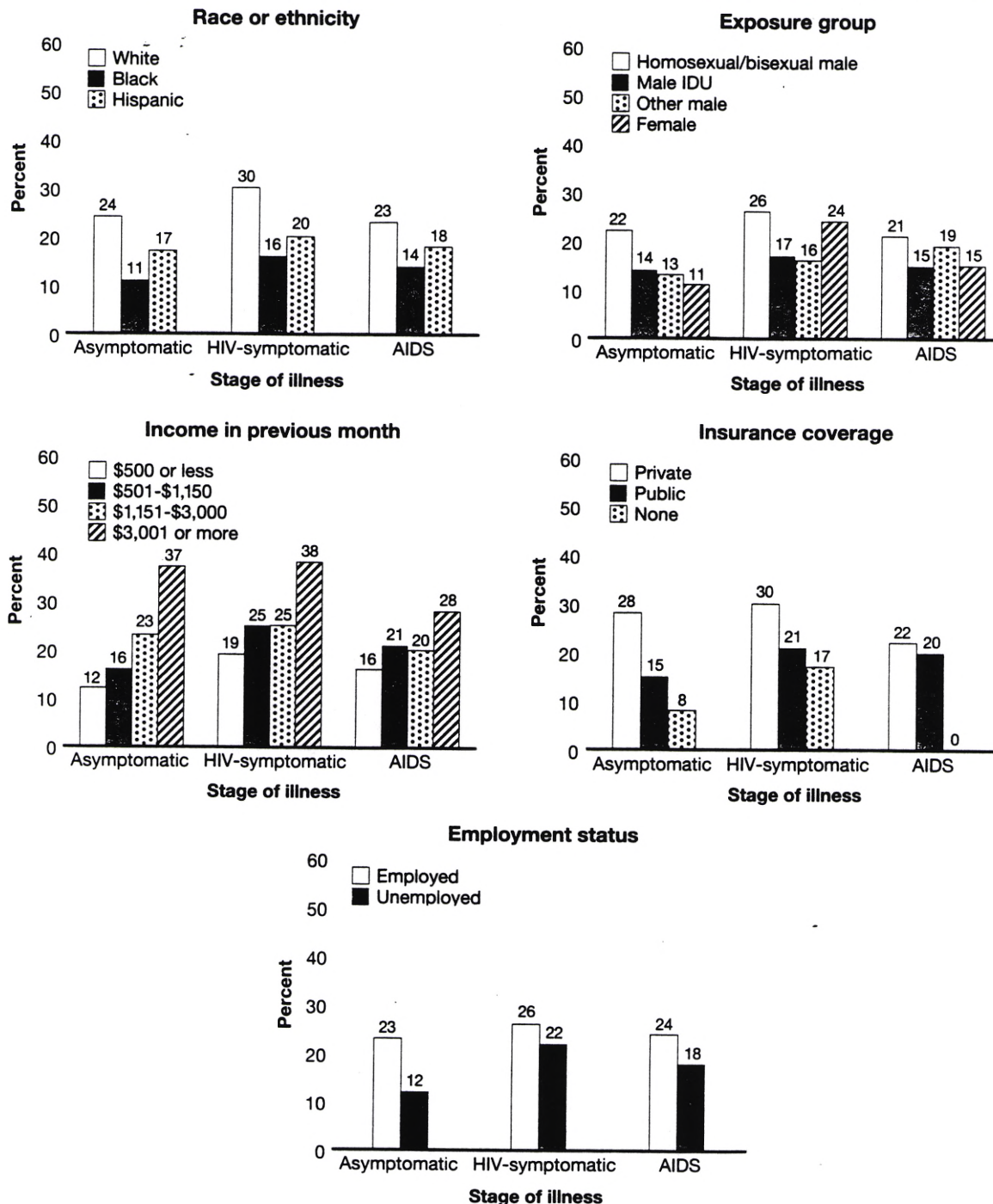
Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

homosexual or bisexual males used dental services than did other exposure categories.

There was a marked correlation between the proportion reporting use of these services and income. Asymptomatic persons in the highest income category were more than three times as likely to use dental care as were those in the lowest income category. This gap narrowed, however, with the progression of the disease. Similarly, asymptomatic persons with a job were more likely to use dental services than were those without, although differences by employment status among those with AIDS were smaller.

There was a strong association between insurance coverage and the use of dental services. (Insurance coverage as defined here is general and does not imply that dental services were covered.) A higher proportion of persons with private or public insurance than persons with no insurance used dental services. This relationship was most marked among asymptomatic persons (28 percent of those with private insurance, 15 percent of those with public insurance, and 8 percent of those with no insurance) and among those with AIDS (22 percent of those with private insurance, 20

Figure 9. Percent of HIV-infected persons reporting use of dental care provider, by stage of illness and respondent characteristics: 1991



Note: Homosexual or bisexual male includes male respondents indicating transmission via sex with male IDU. Public insurance coverage includes Medicaid, other State and local programs, Medicare, CHAMPUS/CHAMPVA (covers retired members of the uniformed services and the spouses and children of active-duty, retired, and deceased members), and clinical trials. Persons were classified by stage of illness according to responses to a self-administered questionnaire listing 4 symptoms and 17 conditions related to HIV illness. IDU is injecting drug user.

Source: Agency for Health Care Policy and Research: Data from responses to Time 1 Questionnaire, AIDS Cost and Services Utilization Survey.

percent of those with public insurance, and 0 percent of those with no insurance).

The complete lack of reported use of these services by uninsured persons in later stages of the disease may indicate problems with access to these services. Zucconi, Dobratz, Weiner, et al. (1990), in a study of HIV-infected persons in Southwestern Pennsylvania, found that AIDS/HIV serostatus was directly related to dental problems but inversely related to use.

Discussion

Traditionally disadvantaged groups clearly differed from other groups in the likelihood of reporting use of certain types of health care services. Similar to research findings from the general population, ACSUS findings show that HIV-infected minorities, male IDUs and females, persons in the lowest income category, and the unemployed appear to use health care services on an emergency basis. With few exceptions, these groups were much more likely than advantaged groups to report a hospital stay or a visit to a hospital emergency room during the reference period. In contrast, white persons and those in the highest income category were the persons most likely to report a visit to a private physician's office, use of psychological counseling, and receipt of dental care services.

Disease stage also influenced patterns of health care use. For example, wide variations across respondent groups in the percentage of persons reporting a hospital stay in early stages of the disease narrowed once persons had experienced AIDS-defining conditions. In contrast, these differences became more apparent in the late stage of the illness for ambulatory medical visits and psychiatric or dental care. In other words, once respondents became very ill, the disadvantaged were almost as likely to report the use of acute care services as those with traditionally better access to health care services; for the more discretionary health care services (such as psychiatric or dental care), however, they were less likely to report use.

Insurance coverage appeared to be a strong factor influencing the use of health care services. Persons without insurance were among

the least likely to report a hospital stay, the use of formal home care, AZT, psychiatric or mental support, or dental care, even though insurance status did not necessarily imply coverage of these particular services. Among persons with AIDS, the uninsured also had the lowest median number of ambulatory visits. Despite the low payment for services commonly found among public programs, public insurance coverage seemed to provide some sort of a safety net. Regardless of disease stage or type of health care service, persons with public insurance, with few exceptions, were more likely to report use than those without insurance were. In the case of formal home care services, among those who had acquired AIDS, persons with public insurance were nearly twice as likely as the uninsured to report use. Publicly insured persons with AIDS were nearly 50 percent more likely than the uninsured to report use.

Despite these findings, which were consistent with previous research, there were some surprising results. For instance, HIV-infected females, who were predominantly black persons and IDUs, did not appear to use ambulatory medical care services less intensively than males did. In fact, for early stages of the disease, the median number of ambulatory visits was fairly homogeneous across respondent groups, with a few exceptions. This homogeneity across respondent groups, however, masked wide individual variation in the number of ambulatory visits reported. IDUs were also among the highest users of informal home care services, a finding that directly contradicts their depiction as socially isolated individuals.

Another surprising finding was the uniformity across respondent groups in the percentage of persons reporting the use of AZT. Although insurance coverage appeared to have the clearest effect, for the most part, variations in the likelihood of use of this drug were relatively small. This finding clearly contradicts previous research (Moore, Hidalgo, Sugland, et al., 1991; Rosenberg, Gail, Schrager, et al., 1991; Stein, Piette, Mor, et al., 1991) that found that minorities, females, and IDUs were much less likely to use AZT. Although this finding may differ from previous findings because it is based on more recent information, reflecting a greater effort to make this life-extending therapy available to a broader spectrum of persons, it is also important to recognize that all of the



participants in ACSUS had already gained access to the medical care system and, in general, were receiving care at major medical centers.

For the most part, this report has not examined differences in the intensity of service use. If subsequent analyses of ACSUS data

reveal that the intensity of use of these critical health care services does not vary substantially once persons have gained access to the medical care system, perhaps one of the greatest challenges will be finding methods to bring traditionally disadvantaged groups into their first contact with the medical care system.

Bibliography

- Berk, M. L., Maffeo, C., and Schur, C. L.: Research Design and Analysis Objectives. *AIDS Cost and Services Utilization Survey (ACSUS) Report, No. 1*. AHCPR Pub. No. 93-0019. Rockville, MD: Agency for Health Care Policy and Research, 1993.
- Creagh-Kirk, T., Doi, P., Andrews, E., et al.: Survival experience among patients with AIDS receiving zidovudine: Follow-up of patients in a compassionate plea program. *Journal of the American Medical Association* 260(20):3009-3015, Nov. 25, 1988.
- Fischl, M. A., Richman, D. D., Grieco, M. H., et al.: The efficacy of azidothymidine (AZT) in the treatment of patients with AIDS and AIDS-related complex: A double-blind, placebo-controlled trial. *New England Journal of Medicine* 317(4):185-191, July 23, 1987.
- Graham, N. M. P., Zeger, S. L., Park, L. P., et al.: The effects on survival of early treatment of human immunodeficiency virus infection. *New England Journal of Medicine* 326(16):1037-1042, Apr. 16, 1992.
- Green, J. and Arno, P. S. The 'Medicaidization' of AIDS: Trends in the financing of HIV-related medical care. *Journal of the American Medical Association* 264(10):1261-1266, Sept. 12, 1990.
- Larder, B. A., Darby, G., and Richman, D. D.: HIV with reduced sensitivity to zidovudine (AZT) isolated during prolonged therapy. *Science* 243:1731-1734, 1989.
- Longstreth, M. L., Olopoenia, P., Phillips, B., et al.: Evaluation of Service Needs of a Minority Inner City HIV Infected Population. Paper presented at the VI International Conference on AIDS. San Francisco. June 1990.
- Moore, R. D., Hidalgo, J., Sugland, B. W., et al.: Zidovudine and the natural history of the acquired immunodeficiency syndrome. *New England Journal of Medicine* 324(20):1412-1416, May 16, 1991.
- Mor, V., Fleishman, J. A., Dresser, M., et al.: Variation in health service use among HIV-infected patients. *Medical Care* 30(1):17-29, Jan. 1992.
- National Center for Health Statistics: Current Estimates From the National Health Interview Survey, 1989. Hyattsville, MD: National Center for Health Statistics (*Vital and Health Statistics*, Series 10: Data From the National Health Survey, No. 69), DHHS Publication No. (PHS) 90-1504, Oct. 1990.
- Pepper Commission: A Call for Action. Final Report to U.S. Bipartisan Commission on Comprehensive Health Care. Washington, DC, 1990.
- Ribble, D., Marte C., Tiersten, A., et al.: Difference in Stage of Presentation and Presenting Symptoms Between Women and Men in a Primary Care AIDS Clinic. Paper presented at the V International Conference on AIDS. Montreal. 1989.
- Rosenberg, P. S., Gail, M. H., Schrager, L. K., et al.: National AIDS incidence trends and the extent of zidovudine therapy in selected demographic and transmission groups. *Journal of Acquired Immune Deficiency Syndromes* 4(4):392-401, 1991.
- Stein, M. D., Piette, J., Mor, V., et al.: Differences in access to zidovudine (AZT) among symptomatic HIV-infected persons. *Journal of General Internal Medicine* 6:35-40, Jan./Feb. 1991.
- Stone, R. I., White, L. A., Wells, J. A., et al.: Section 2: Home Health Services. *Report on the Evaluation of the AIDS/HIV Service Demonstration Program*. Project HOPE. Chevy Chase, MD, Mar. 1992.
- Taravella, S.: Who will provide long-term care for AIDS patients? *Modern Healthcare* 20(12):38-39, Mar. 26, 1990.
- Volberding, P. A., Lagakos, S. W., Koch, M. A., et al.: Zidovudine in asymptomatic human immunodeficiency virus infection: A controlled trial in persons with fewer than 500 CD4-positive cells per cubic millimeter. *New England Journal of Medicine* 322(14):941-949, Apr. 5, 1990.
- Wells, J. A., Juday, T., Mohr, P. E., et al.: Section 5: Ambulatory Medical Services. *Report on the Evaluation of the AIDS/HIV Service Demonstration Program*. Project HOPE. Chevy Chase, MD, Mar. 1992.
- Wells, K. B., Manning, W. G., Duan, N., et al.: Sociodemographic factors and the use of outpatient mental health services. *Medical Care* 24(1):75-85, Jan. 1986.
- Young, M. A., and Pierce, P.: Natural History of HIV Diseases in an Urban Cohort of Women. Paper presented at the VI International Conference on AIDS. San Francisco. June 1990.
- Zucconi, S. L., Dobratz, N. S., Weiner, R. D., et al.: *Health Care Utilization in a Changing HIV/AIDS Epidemic: Policy Implications and Recommendations*. HPI Policy Series No. 17, Pittsburgh, PA: Health Policy Institute, University of Pittsburgh, 1990.



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CDC NATIONAL AIDS HOTLINE

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The CDC National AIDS Hotline is pleased to announce Classroom Calls, its newest service. This free service is intended to enhance a classroom or group discussion about HIV/AIDS. Participants may ask questions about any aspect of HIV/AIDS. Our trained information specialists will provide answers with the most current information available through the U.S. Centers for Disease Control and Prevention.

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- ▣ Classroom Calls usually last between 15 and 30 minutes
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- ▣ Students will learn that the Hotline is available to them 24 hours a day
- ▣ Classroom Calls are available in Spanish and through TTY
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United States. The observations described here provide a basis for continued intervention activities targeted to non-Hispanic black injection drug users residing in the Northeast. For example, there are geographic and race and ethnic differences in the vernacular used to describe drugs and paraphernalia. To be effective, information and education programs about HIV risks associated with drug use and needle sharing, and ways to reduce these risks should be culturally appropriate and understood by the intended audience. Also, system resources for community-based drug treatment programs need to be expanded in the Northeast and to appeal to the targeted population. Recent reports have shown an association between the enrollment of drug users into treatment programs and a reduction in the risk of acquisition of HIV infection in some communities (15, 16). However, additional efforts to describe the influences of social networks and behavioral and cultural conditions are required for an adequate understanding of the observed geographic distribution of HIV in black injection drug users. This understanding is crucial to the development of successful outreach efforts seeking changes in behavior, and to the formulation of sound prevention policies.

The similarities in the distribution of AIDS among non-Hispanic black and Hispanic injection drug users are suggestive of important influences of social networks formed around specific life-style activities among minority groups residing in geographic proximity. The observations also highlight the importance of recognizing the effect of Hispanic subgroups. The high rates of AIDS among Puerto Rican injection drug users throughout the country suggest a higher prevalence of both injection drug use and needle-sharing practices, independent of geographic region. To be effective, culturally appropriate education and information programs must respond to the needs of Puerto Rican drug users. A common outcome in targeting information to Hispanic audiences is to develop a generic Spanish-language translation of educational materials. This approach commonly misses cultural and linguistic nuances that need to be incorporated into effective communication efforts with the various Hispanic subgroups. Additional research is clearly needed to describe the behavioral, socioeconomic, and cultural conditions that make Puerto Rican-born Hispanics particularly vulnerable to injection drug use-related HIV transmission.

The correlation between the high HIV prevalence rates in injection drug users with the HIV rates seen in STD clinics, tuberculosis clinics, and women's prenatal clinics is consistent with our knowledge about the racial and ethnic profile of clients seen in these clinics. In the United States there are two primary HIV epidemics resulting from different life-styles. HIV/AIDS in men who have sex with men is proportionately more associated with non-Hispanic whites than with non-Hispanic blacks or Hispanics. Injection drug use-associated HIV/AIDS is proportionately more associ-

ated with blacks and Puerto Rican-born Hispanics than with non-Hispanic whites.

The resurgence of syphilis and gonorrhea in racial and ethnic minority populations has been linked to high rates of crack cocaine use and increased sexual activity to trade for money or drugs (9, 17). These life-styles are undoubtedly contributing to the accelerated transmission of HIV and other STDs in those settings.

In American Indians and Alaskan Natives, the rates of AIDS are relatively low, but have significantly increased over time. The relatively high rates of gonorrhea and syphilis during the mid-1980s in this ethnic group may have represented risk markers for HIV. Studies among other racial and ethnic minority populations have consistently demonstrated that syphilis is an important risk factor for HIV and AIDS (18-20).

HIV transmission is also facilitated by other treatable STDs that cause genital ulcers (20-23). Based on these observations, targeted STD therapeutic campaigns have been suggested as a method to reduce HIV transmission (17, 20-24). Primary prevention programs for STD control should ideally target these affected core groups and also be integrated with HIV and AIDS prevention activities. For example, condom promotion campaigns focusing on the consistent and correct use of condoms should substantially reduce the spread of HIV and other STDs.

The connection between race and ethnicity and low SES is both intuitively and empirically evident. However, limitations of available data do not allow for a systematic evaluation of the relative influence of low SES and lack of health insurance on morbidity due to HIV and other STDs in racial and ethnic minorities. The data examined here suggest that limited access to health insurance probably has an added adverse effect on morbidity in persons already infected with HIV. The recent decreases in PCP as an AIDS-indicator disease are temporally correlated with the widespread use of primary and secondary preventive therapy. Most of the observed decrease is accounted for by declines of PCP in men who have sex with men. No significant decreases are yet demonstrable among women, injection drug users, and some racial and ethnic minorities. Given the documented discrepancies in health insurance coverage, this raises serious questions about the lack of access to early medical care by those groups.

In recognizing the limited economic resources of the affected populations, HIV and other STD intervention programs must extend access to preventive and treatment services. When designing HIV/AIDS and STD interventions, partnerships between health care providers, public health departments, and community-based organizations are essential for the provision of services that are both accessible and delivered within an appropriate sociocultural environment.

In conclusion, collection of data on race and ethnicity has served to document the need for appropriately targeted intervention strategies. However, the role of race and ethnicity in adverse health outcomes, such as HIV/AIDS and other STDs, is best viewed as a marker for life-style risk behaviors in need of additional behavioral research. Behaviors to be addressed include early initiation of sexual activity, exposure to large number of casual sex partners, exposure to sex partners from "high-risk core groups," and perceptions of remote risks in competition with immediate life-style needs. Because of demonstrated multifactorial influences, interdisciplinary research is now required to better understand risk perception, behavior, and barriers to change within a given sociocultural context. The combination of epidemiologic tools with those of behavioral scientists should provide both the quantitative and the qualitative basis for the development of sound health policies. Evidently, any serious attempt to deal with HIV/AIDS and other STDs in racial and ethnic minorities must include overcoming financial and nonfinancial barriers to health care access.

REFERENCES

- Public Health Service. Healthy People 2000. Conference edition. Washington, DC: US Department of Health and Human Services, Public Health Service; 1990:29-43.
- Centers for Disease Control. Update: Acquired immunodeficiency syndrome—United States, 1991, MMWR. 1992;41:463-8.
- Centers for Disease Control. HIV/AIDS Surveillance Report. Atlanta: Centers for Disease Control; January 1992:10.
- Metler R, Conway GA, Stehr-Green J. AIDS surveillance among American Indians and Alaska Natives, Am J Public Health. 1991;81:1469-71.
- Selik RM, Castro KG, Pappaioanou M. Racial/ethnic differences in the risk of AIDS in the United States, Am J Public Health. 1988;78:1539-45.
- Selik RM, Castro KG, Pappaioanou M, Buehler JW. Birthplace and the risk of AIDS among Hispanics in the United States, Am J Public Health. 1989;79:836-9.
- Dondero TJ, Allen DM, McCray E, et al. Injected drug abuse: The driving force for much of the U.S. HIV epidemic (abstract W.C.3356). In: VII International Conference on AIDS, Florence, Italy. v. 2. 1991:385.
- Morse DL, Lessner L, Mednesky MG, Glebatis DM, Novick LF. Geographic distribution of newborn HIV seroprevalence in relation to four sociodemographic variables, Am J Public Health. 1991;81(suppl):25-9.
- Rolfs RT, Goldberg M, Sharrar RG. Risk factors for syphilis: Cocaine use and prostitution, Am J Public Health. 1990;80:253-7.
- Toomey KE, Oberschelp AG, Greenspan JR. Sexually transmitted diseases and Native Americans: Trends in reported gonorrhea and syphilis morbidity, 1984-88, Public Health Rep. 1989;104:566-72.
- Rice RJ, Roberts PL, Handsfield HH, Holmes KK. Sociodemographic distribution of gonorrhea incidence: Implications for behavioral research, Am J Public Health. 1991;81:1252-8.
- Friedman E. The underinsured: From dilemma to crisis, JAMA. 1991;265:2491-5.
- Green J, Arno PS. The "medicaidization" of AIDS, JAMA. 1990;264:1261-6.
- Ciesielski CA, Fleming PL, Berkelman RL. Changing trends in AIDS-indicator diseases in the U.S.: Role of therapy and prophylaxis? (abstract 254). In: Program and Abstracts, 31st Interscience Conference on Antimicrobial Agents and Chemotherapy, Chicago, Illinois. 1991:141.
- Serpelloni G, Gomma M, Morgante S, Perluto R, Brunelli M, Capra C. Methadone treatment and reduced possibility to acquire HIV infection (abstract PoC 4282). In: VIII International Conference on AIDS, Amsterdam, The Netherlands, 19-24 July 1992. v. 2. 1992.
- Kerndt PR, Ford WL, Weber MD, Cheng FK. Trends in HIV infection among heterosexuals in methadone maintenance drug treatment in Los Angeles County, 1988-1991 (abstract PoC 4257). In: VIII International Conference on AIDS, Amsterdam, The Netherlands, 19-24 July 1992. v. 2. 1992.
- Rolfs RT, Nakashima AK. Epidemiology of primary and secondary syphilis in the United States, 1981 through 1989, JAMA. 1990;264:1432-7.
- The collaborative study group of AIDS in Haitian Americans. Risk factors for the acquired immunodeficiency syndrome among Haitians residing in the United States: Evidence of heterosexual transmission, JAMA. 1987;257:635-9.
- Castro KG, Lieb S, Jaffe HW, et al. The Belle Glade Field Study Group. Transmission of HIV in Belle Glade, Florida: Lessons for other communities in the United States, Science. 1988;239:193-7.
- Quinn TC, Glasser D, Cannon RO, et al. Human immunodeficiency virus infection among patients attending clinics for sexually transmitted diseases, N Engl J Med. 1988;318:197-203.
- Kreiss J, Coombs R, Plummer F, et al. Isolation of human immunodeficiency virus from genital ulcers in Nairobi prostitutes, J Infect Dis. 1989;160:380-4.
- Mertens TE, Hayes RJ, Smith PG. Epidemiological methods to study the interaction between HIV infection and other sexually transmitted diseases, AIDS. 1990;4:57-65.
- Chiasson MA, Stoneburner RL, Lifson AR, et al. Risk factors for human immunodeficiency virus type 1 (HIV-1) infection in patients at a sexually transmitted disease clinic in New York City, Am J Epidemiol. 1991;131:208-20.
- Peterman TA, Wasserheit JN, Cates W. Prevention of the sexual transmission of HIV. In: DeVita VT, Hellman S, Rosenberg SA, eds. AIDS. 3rd ed. Philadelphia: J.B. Lippincott; 1992:443-51.