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EXPOSURES OF HEALTH CARE WORKERS TO HIV

FACTORS AFFECTING OCCUPATIONAL RISKS IN SAN FRANCISCO, BOSTON, AND NEW YORK

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SUMMARY

As the number of people with AIDS (PWA) continues to grow, health care workers will increasingly be caring for patients with HIV-related illnesses. It is therefore essential both to understand and to mitigate health care workers' real and perceived risks of occupational exposure to HIV-infected fluids. This report examines the experience of the epidemic in San Francisco, New York and Boston and illuminates the various factors and trends which affect exposure of a range of health care workers to HIV.

The first factor considered is health care planning. The "San Francisco Model" of AIDS care is a highly decentralized means of service delivery -- one that is community-based rather than strictly hospital-based and one that relies heavily on outpatient care. Thus, in San Francisco, care for PWA/HIV is spread out over a broad range of community settings such that many different types of health care workers are involved in AIDS patient care. Both because planning for the continuum of HIV care needs has been less successful in New York, and because of a different epidemic course, many PWA/HIV in New York tend to receive costly and often unnecessary hospital-based inpatient care and increasingly, a disproportionate burden of AIDS care in New York is falling to the public hospitals. Like many other cities in the U.S., Boston has been following an epidemic course very similar to that of New York, particularly in terms of patient demographics. Boston is beginning to plan for and develop community-based alternatives along the continuum of HIV care. The direction of current planning will largely determine which categories of health care workers will care for most AIDS patients in the city of Boston. Currently, as in New York, there seems to be a trend towards increased public hospital involvement.

Where patients receive their care is very much a function of current reimbursement structures. Current federal reimbursement mechanisms favor reimbursing for hospital inpatient care rather than for the less costly community-based outpatient care. Planning in most cities tends to follow the path of lowest cost to that city, rather than lowest total cost for society as a whole.

Public hospitals are increasingly caring for HIV+ patients because, particularly in hard-hit eastern cities, the AIDS epidemic has been shifting from gay men who were often privately insured for their medical care, to a significantly poorer, inner city population which primarily relies on the public sector for basic health care. As the number of HIV+ intra-venous drug users (IVDU's) continues to grow, emergency room personnel in particular are more likely to encounter HIV-infected fluids, and some nurses fear that HIV+ drug-addicted patients may become violent or aggressive while in the hospital, thus placing health workers at risk of occupational exposure. Similarly, as the incidence of perinatal transmission increases, so will the potential for occupational HIV exposure to pediatric and obstetric health care workers. In general, as the epidemic ripples

further into the population, it is likely that workers in most aspects of the health care industry will find themselves knowingly or unknowingly (because of confidentiality) caring for HIV+ patients.

Even in the context of an increased HIV+ patient load, however, the risk of occupational exposure can be reduced by implementing "universal precautions," guidelines for infectious disease prevention. Many hospitals have instituted universal precautions although we found that universal precautions are less likely to be followed in smaller suburban hospitals and other institutional health care settings such as nursing homes. Even when an institution does adopt the dictates of universal precautions as an official policy, however, not all health care workers are willing or able to follow these guidelines. This lack of compliance is at times due to inadequate training regarding AIDS prevention, at times due to poor quality barriers, (i.e. gloves, gowns, masks, etc.) and at times due to the sensitive nature of a given procedure, such as delicate surgery. These factors make strict compliance with universal precautions difficult. Some health care workers do comply wholeheartedly with universal precautions. Compliance may be motivated by a fear of contracting AIDS, specifically, a strong fear of AIDS may lead to a reluctance to care for HIV+ patients. A less problematic basis for enthusiastic acceptance of universal precautions has been the realization that these precautions help protect against other diseases which are more likely to be contracted by many health workers, especially hepatitis-B.

Both procedural changes and technological innovations have been introduced to reduce the risk of infection by reducing the health care worker's contact with a patient's body fluids. Procedural changes in most hospital and community settings have mostly centered around the universal precautions philosophy -- always disposing of needles in the designated needle-boxes, donning gloves or gowns at appropriate times,and so on. In some cases, procedural changes have been implemented on a more individual basis, such as a surgeon retrieving his/her own implements during surgery so as to reduce the possibility of tearing a glove during the transfer of sharp surgical instruments. The technological innovations designed to minimize contact with a patient's body fluids are considered "nickel and dime technologies" in that they offer small improvements in terms of prevention for the health care worker but represent no major technological breakthrough.

The health care workers who are disproportionately represented among those coming in contact with HIV-infected body fluids, are nurses. Nurses working in both public and private hospitals, hospices, home-care agencies, clinics and private contract agencies tend to provide most of the care for AIDS patients and perform many of the potentially hazardous tasks such as drawing blood, changing bandages, emptying and cleaning bedpans and so on. Given the current national nursing shortage in the U.S., nurses tend to be overloaded with patient responsibility such that they may feel they have less time to take the necessary precautionary measures for minimizing their risks of occupational HIV exposure. To conserve the time of scarce nursing staff, many hospitals are shifting some traditional nursing responsibilities which involve considerable contact with a

patient's body fluids, to less trained "technicians" and if this trend continues, risk of occupational exposure will increasingly shift to these "technicians."

Finally, fear of transmission plays an important role in workers' assessments of their of occupational risks. Although, as was noted above, fear may motivate health care workers to be more conscientious in adhering to universal precautions, but it may also translates into "refusal to treat." As a result of some health care workers' refusal to treat known HIV+ patients, a disproportionate risk is shifted to those who are willing to treat. This attitude may also increase risk of exposure to those who are refusing to treat for they may not take the proper precautions while unknowingly be caring for an HIV+ patient.

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1. INTRODUCTION

As the Acquired Immuno-Deficiency Syndrome (AIDS) epidemic continues to spread, many health care professionals are becoming increasingly concerned about their risks of occupational exposure to Human Immuno-deficiency Virus (HIV). Though relatively few HIV+ cases have been documented among health care professionals in the United States which indicate occupational exposures as the sole possible route of transmission, it is nevertheless important to prevent future occupational exposures when and where possible. Such prevention efforts require an exploration of current beliefs and practices among health care providers and an assessment of the variables which may affect occupational HIV exposure in the future.

This report is a contribution to task 2 of a four-task project (see Table 1) to assess the risks of occupational transmission of HIV and other blood-borne pathogens. Our intention in this study is to improve present and future estimates of how often and by what means are which workers exposed to what media containing HIV virus of what titer and virulence. These estimates are influenced by all of the following:

1. The severity and type of illness of Persons With AIDS (PWAs) or Persons With HIV[1] and the infectious titers of their tissues and fluids. (The first report for this study concerns HIV infectious titers.)

2. The protocols used in diagnosing and treating the illnesses of those with HIV infection.

3. The technology used in performing the procedures required by diagnosis and treatment protocols.

4. The delegation of procedures (diagnosis and treatment) and support tasks (e.g. disposing of contaminated wastes) to different categories of workers, (i.e. as categorized by experience, training, degree of professional autonomy, etc.)

The first of these will be influenced by any changes in the virulence of the virus as well as changes in the characteristics of the host. Among relevant host characteristics are age, sex, reproductive capacity, previous medical history (including family history, occupational history, etc.), and personal and cultural values (e.g. How often will pregnant HIV positive women choose childbirth or abortion?)

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[1]Some HIV related illnesses still do not qualify for classification as clinical AIDS. For example, HIV positive infants may die of encephalitis as a result of their HIV infection, but will not be classified as a Person With AIDS because encephalitis is not on the current CDC AIDS diagnostic list.

Table 1
Project Outline--Occupational Risks of HIV and Hepatitis-B Exposures for Health Care Workers

Task 1--Assessment of the Distribution of "Infectious Titers" in Source Patients.

- --Types of AIDS/HIV+ Patients
- --Types of Body Fluids
- --HIV vs Hepatitis B

Task 2--Characterization of Exposures

- --Populations at Risk
- --Frequency of Various Exposure Events
- --Distribution of Amounts of Blood/Body Fluid Transferred Per Event.

Task 3--Assessment of Individual and Group Dose-Response for Infection.

Task 4--Projection of Changes in Occupational Risk Over Time

The second, treatment and diagnostic protocols, are likely to be influenced not only by advances in medicine, but by the nature of treatment setting, availability of trained personnel, and reimbursement structures.

Third, technology for performing procedures that pose the greatest perceived hazards to health care workers are likely to evolve rapidly, and be further influenced by the treatment setting.

Finally, the delegation of tasks is likely to be influenced by evolution of treatment settings, availability of trained staff, perceived occupational hazards of performing the procedure, and characteristics of the patient mix.

Because the above factors vary considerably from one city or geographic region to another, the estimates of occupational risk vary accordingly. This report will highlight the considerable differences in the estimates for several major U.S. cities that are among the earliest to experience the effects of this pandemic. We focus primarily on the situations in San Francisco and Boston, with some supplemental information from New York.

There were four components to the research methodology used in this report.:

1) gathering planning documents from San Francisco and Boston,

2) reviewing relevant literature to determine the epidemic's present and future course,

3) keeping appraised of most recent research and community concerns by attending AIDS conferences in San Francisco and Boston, and

4) interviews and personal communication with health care workers in the field.

The interviews and personal communications were perhaps the most informative components of our research, for these improved our understanding of health care workers' actual beliefs and practices--which were not always identical to the official institutional policies supposedly guiding their behavior. We contacted 28 health care workers in San Francisco, Boston, and New York, approximately half in-person and half by telephone. Of these 28 contacts, 12 were formal in-person interviews lasting 1 - 2 hours each, conducted by Fay Twersky, the graduate research assistant working on the project. By design, those we contacted represented a broad range of professionals who may now or at some time in the near future be concerned with occupational exposure to HIV. Thus, our contacts included a surgeon, nurses working in the Emergency Room, obstetrics-gynecology wards, private contract nurses and infection control nurses, child-care specialists working with HIV+ children, a pediatrician, a State Deputy Commissioner for Social Services regarding foster care for HIV+ children, a clinical research director, an infectious disease specialist, drug treatment specialists, direct service providers to the homeless, a community clinic administrator, and health planners. All of the formal interviewees (7 of whose experiences are written up and included as appendices for additional information), were

informed of the purposes of this study and all of their personal experiences and views which were documented in this report, were done so with their permission.

Given that some of the more interesting findings were generated by the interviews and thus reflect personal experiences, many of our conclusions are of a qualitative nature. Although available epidemiological data can offer some quantitative measures for assessing the potential for occupational HIV exposure, a realistic assessment of occupational risk depends greatly on how and why different health care workers respond to the treatment and care of PWA/HIV in the way that they do. Thus, based on our findings, we are able to suggest trends which may be developing in relation to a variety of factors affecting risk of occupational HIV exposure. These tentative qualitative conclusions will serve to focus some of our quantitative efforts in attempting quantitative projections of potential future occupational risks of HIV transmission in Task 4 of our project.

2. HEALTH CARE PLANNING FOR THE AIDS EPIDEMIC

2.1 General Considerations in Planning

Planning for the provision of health care to people with AIDS/HIV is based on assumptions of a multiplicity of needs and the ability of various providers to respond to those needs. Epidemiology and clinical experience yield estimates of the current numbers of infected people, projected risk of infection for various populations, as well as the likely manifestations of the disease. Examining past trends and future projections for patient mix, patient needs, length of life from diagnosis to death, period of HIV incubation and how these estimates vary according to racial, ethnic, gender, economic and age differences, allows planners to assess what the needs are, have been and are likely to be in the future.

The first attempt to address the health care needs of PWA/HIV is usually to try to adapt existing medical services to HIV care. These services include hospital inpatient and outpatient care, hospice and home care, and other medical social supports such as community-based clinics and nursing homes. But because of the continuum of disability associated with HIV, planning extends beyond medical services and ventures into the realm of housing and social services. This means that new occupational categories will develop which entail some possible occupational risk of HIV.

The housing continuum for PWA/HIV has proven to include subsidized low-income housing, independent living, dependent living, congregate living, residential homes for children, and foster care for HIV+ children. Similarly, the social service demands run the spectrum from respite care and child-care to basic necessities of food, income and emotional support. Therefore, some, but not all of these non-medical services present real or perceived occupational HIV exposure, most notably in residential settings or child-care settings where contact with infectious bodily fluids is not inconceivable. Indeed, in some situations, such contact occurs with regularity. Thus, in recognizing the need to assess and reduce occupational risk, it is also essential to broaden the category of "health care professional" to include those persons working in non-medical service occupations but who, nevertheless, may have an occupational risk.

In view of the projections of unprecedented numbers of AIDS patients in the coming years, and also because the AIDS epidemic is affecting much more than just the traditional health care system, planning for AIDS has become a critical component influencing the nature of occupational risk. Our research indicates that cost containment in facilities planning and development given limited resources and insufficient reimbursement mechanisms, is a primary planning consideration

which will appreciably affect the extent and distribution of occupational risks for the health care community. Depending on the type of reimbursement available, different health care workers will be involved in HIV care. Whether facilities are public or private, their location,and their planned capacity also influence the nature of occupational risk. Long term planning around issues such as child-care and/or foster care, will determine whether HIV+ children will be unnecessarily hospitalized for much of their short lives, or whether they will be cared for in other, home-like settings. These circumstances, in turn, translate into differential occupational exposures, increasing or decreasing the risk of various providers. In addition, poor planning will tend to increase overall risk. For example, overburdening hospital staff typically compromises all aspects of care including compliance with precautions, thereby increasing overall chance of exposure. Finally, planning for prevention will of course directly bear on the numbers of patients needing treatment and care. How the planning is done and what is planned for, will vary across cities, regions and communities. It is important to recognize, however, that the whole planning enterprise will significantly affect occupational risk of HIV.

2.2 AIDS/HIV Health Care in San Francisco

In many ways, San Francisco has had a unique experience in the AIDS epidemic. Since the discovery of the disease in 1981, San Francisco has been in the forefront in terms of numbers of cases (see attachment 1) and the city responded early to the AIDS battle cry. Indeed, San Francisco has been praised for its response to the epidemic when other cities such as New York are being indicted for their ineffectual planning. Nevertheless, San Francisco still has more cases in proportion to its population than any other city, and though the seropositivity growth rate has reportedly slowed to almost zero in the gay community, the incidence of clinical AIDS in the city has not yet peaked. Current projections by the San Francisco authorities project that the peak in clinical AIDS cases will occur in 1993 when it is anticipated that as many as 6,288 people will be alive with AIDS in the city (see attachment 2).

In other hard hit cities, the face of the epidemic has changed over the last eight years towards an increasing proportion of intravenous drug users (IVDU's) amongst the ranks of PWAs, as well as increasing percentages of women and those infected through heterosexual transmission. By contrast the distribution of San Francisco cases have remained remarkably consistent. Currently, of all San Francisco's reported AIDS cases, 85% are gay men and 85% are white (see attachment 2A). Based on the San Francisco Men's Health Study and Hepatitis-B Vaccine Cohort Study, it is estimated that between 50% - 60% of the gay male community in San Francisco is infected with the virus (see attachments 3 & 4). Because of the gay community's

mobilization in response to the AIDS virus, a tremendous amount of organizing and planning has resulted in the development of a broad spectrum of services for PWA/HIV.

A pre-existing social network, economic resources and political leverage allowed the gay community to develop a supportive infrastructure along the continuum of HIV care. Further, in the beginning of the epidemic, the City and County of San Francisco had a surplus of funds in its budget which it could allocate to HIV services and program development. In fact the City and County has been quite generous in its support. For, example, during FY1986-87, the City and County paid for approximately 70% of the AIDS services budget for San Francisco.[2]

Future projections for what has become known as the second and third waves of the epidemic, namely IVDU's and women and children, are smaller in San Francisco than in other major cities, in part because it is believed that there are fewer IVDU's in San Francisco (12,000 as opposed to Boston's 40,000[3]) and also because the city geared up its prevention efforts earlier as a result of its experience with the gay community. Nevertheless, the numbers of IVDU's, heterosexuals, people of color, women and children with AIDS are increasing and are expected to increase further over the next five years (see attachments 5, 6, 7, 8, and 9). Because these populations often present different manifestations of the disease as well as different socio-economic circumstances from those of homosexual, typically middle class men, new program facilities are being planned in order to meet their needs.

IVDU's, their sexual partners and children born with the virus, do not generally have the kind of community resources and political power as the gay community did, and now the City and County of San Francisco is facing a major budget deficit. Planners are sensitive to the needs of the non-gay populations and community-based preparatory planning is now in progress to meet the next phases of the epidemic head on. County funds are increasingly being used to support AIDS organizations that are reaching out to ethnic minorities. Even so, the City and County of San Francisco cannot afford to continue its high level of support for the increasing HIV care needs and alternatives are being sought.

It is doing so through what has become known as "The Blum Committee," -- the Planning Committee for Non-Acute Care for PWAs in San Francisco--over the next five years. The committee is chaired by Dr. Henrik Blum, and is using projected AIDS incidence in the city through 1993 (see attachments 2 & 11) to spearhead new planning efforts. This committee of 100+ persons representing all interested public agencies, private non-profits, hospitals, business

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[2] "Rising AIDS Costs Dramatically Changing Health Care System." AIDS Alert, 2, November 1987.

[3] "San Francisco AIDS Plan: Status Report for Fiscal Year 1987-88." and "The Boston AIDS Consortium: Task Force Reports and Preliminary Recommendations."

interests, community groups and PWAs, submitted a series of recommendations to San Francisco's Public Health Commission in December 1988 regarding planning preferences to meet projected needs.

The recommendations were based on the San Francisco Department of Public Health's AIDS Office projections for the number of PWAs at any given point in time needing care in various settings (see attachment 12). Since the Department of Public Health does not have funding to provide all of these settings, they are seeking supplemental options such as federal funding for a centralized facility which would provide services along the whole continuum of care with special emphasis on substance abuse and mental health residential treatment programs. They would also seek special licensure categories from the California State Department of Health Services which would provide state reimbursement for services delivered in presently non-licensed types of settings (e.g. congregate living). Depending on which alternatives come to fruition, different health care workers will encounter different forms of occupational risk. For example, currently there are no psychiatric Skilled Nursing Facilities in San Francisco but the need for such a facility exists and is expected to increase. If a psychiatric Skilled Nursing Facility is developed, a new category of health workers will be faced with the potential for occupational exposure.

2.3. AIDS/HIV Health Care in Boston and New York

The AIDS epidemic in Boston has followed a track more similar to the New York experience than to that of San Francisco. Homosexual and bisexual men still comprise the majority (approximately 65%) of cases in Boston and IVDU's account for approximately 18% of all reported cases (see attachment 13). As HIV continues to spread in Massachusetts, (see attachments 14, 15 and 16), the proportion of non-gay populations, namely IVDU's, their sexual partners, women and children, is growing. Much of the data collected in Boston is reflective of the State as a whole, however Boston cases make approximately half of the state's cases and the transmission category breakdowns for the State and the City are roughly equivalent.

The Massachusetts Department of Public Health estimates that 40% of the homosexual male population in Boston is currently infected with HIV. Of the estimated 40,000 IVDU's in Massachusetts, the Department of Public Health estimates that 25% or more are currently seropositive. The Department further estimates that 20-25% of AIDS cases diagnosed among Massachusetts residents during 1988 will be IVDU's. This increase from the 16% cumulative proportion of IVDU's with AIDS in the State is indicative of trends expected in the future.

AIDS/HIV care in Boston and in Massachusetts more generally, resembles New York more than San Francisco in that care in Massachusetts is more hospital-based and has a much higher

inpatient hospital utilization rate than San Francisco.[3,5] This greater inpatient utilization rate is in part explained by greater incidence of Kaposi's Sarcoma in San Francisco which can be treated largely on an ambulatory basis; it is explained further because there simply are not as many available alternatives along the whole continuum of care as in San Francisco. In part it is also a result of inadequate reimbursement mechanisms such as Medicaid which cover acute care but not many of the alternative and often more appropriate levels of care such as hospice/home-care, thus forcing patients to unnecessarily prolong their hospital stays. Public hospitals overall, as demonstrated by research findings from the National Center for Health Services Research,[4] tend to provide care to more severely ill patients and patients of lower socio-economic status. This is certainly true in New York as Paul Moore, Director of the AIDS Initiative, NYC Health and Hospital Corporation (HHC) explains:

> "With only 16% of the medical/surgical beds in the city, HHC cares for about 35% of hospitalized AIDS patients in New York City....If the public sector in New York City continues to care for this disproportionate share of the AIDS patients, it is projected that in 1991 up to 25% of HHC's total medical/surgical capacity will be filled with AIDS patients."[5]

The burden of treating a disproportionate share of AIDS patients is not the only problem facing public hospitals. An estimated 7 - 8% of New York HHC's hospitalized AIDS patients are homeless. They would not ordinarily need long term institutional care to treat their medical condition, but if discharged they would have no place to go. The phenomenon of "boarder babies," those infants born with HIV antibodies who are abandoned on public hospital wards because of their families' inability to care for them, is another crisis situation with explosive potential.[6] How this is managed will have significant impacts on which health care workers are providing care for HIV infected children and on the number of children providers are caring for in

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3,5 George Seague, et al "Cost of Medical Care for Patients With AIDS" estimates that average length of stay in Massachusetts hospitals is 21 days and average number of days per year is 66 days. This is in contrast to Anne Scitovsky's most recent and as yet unpublished study of San Francisco hospital utilization during 1986-87 which estimates that average length of stay is approximately 9-10 days with average days per year in San Francisco between 17-21 days.

4 National Association of Public Hospitals data presented by Dennis Andrulis at IV Annual International Conference on AIDS, Stockholm, June 1988.

5 Moore, Paul A., "AIDS: The New York Public Hospital Experience", unpublished manuscript delivered at 2nd National AIDS Conference, San Francisco, Sept 1988.

6 Hegarty, J. et al, "The Medical Care Costs of Human Immunodeficiency Virus -- Infected Children in Harlem." JAMA Oct 1988.

different settings. In New York, it is clearly public hospital staff who are bearing the lion's share of occupational risk.

If public health officials are correct in their assessment that cities such as Boston are only 2-3 years behind New York City in terms of magnitude and patient mix, it is instructive to look at New York City whose total AIDS cases represent 23% of the U.S. total.[7] In contrast to San Francisco, where 85% of the cases are white homosexual and bisexual men, only 52% of New York's adult cases are homosexual and bisexual men and only 41% are white (see attachment 17). Blacks are grossly over-represented (32% of all cases) as are Latino men and women (26% of all cases).

Whereas in San Francisco the cumulative number of adult and adolescent female AIDS cases by the end of 1988 is projected to be 57-58 by November 1988,[8] New York already has 2,123 female cases reported. Cumulatively, adult female AIDS cases comprise about 12% of New York's total adult cases (see attachments 17, 18, and 19), but recent trends illustrate a dramatic increase in the number of women being diagnosed with AIDS. During the reporting period of January 1, 1988 to November 10, 1988, females comprised 17% of the total adult cases (552 out of a total 3,250 diagnoses - see attachment 20). Because over 80% of women with AIDS are in their child-bearing years, the number of children born HIV+ has been steadily increasing (see attachment 21). An anonymous study of cord blood from women giving birth in New York City during 1988 found that one out of sixty-one children born in New York will be HIV+. Because of the disproportionate effect AIDS is having on women in communities of color, 90% of New York's pediatric AIDS cases are Black or Latino (see attachment 22), a trend likely to continue unless massive and systematic prevention efforts are undertaken. Such trends are likely to increase occupational risk for those health care workers in pre and post-natal care, pediatrics and obstetrics, particularly those in public hospitals or in settings which tend to care for minority women.

As of September 1, 1988, there have been a total of 1,713 reported AIDS cases among Massachusetts residents (see attachment 23) and by 1989, the Public Health Department projects there will be almost 2,500 cases in the state. Further, Boston AIDS case data is already remarkably similar to New York's in terms of over-representation of ethnic minorities. According to the 1980 census, 22% of the population between the ages of 15 and 49 were black, but as of September 1, 1988, blacks represented 32% of the reported AIDS cases for that age group. (see attachment 24) Black females made up 23% of the female population in the 1980 census, but represented 78% of the female AIDS cases in Boston as of September 1, 1988. (see attachment 25) While Boston's

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[7] "AIDS Surveillance Update - November 30, 1988" New York City Dept of Health, AIDS Surveillance Unit.

[8] "San Francisco AIDS Plan:1987-88."

incidence rate for AIDS cases of 212.5 per 100,000 people (see attachment 26) compares favorably to San Francisco's 420 cases per 100,000, the data for minority communities are not quite as hopeful. The incidence rate for Black and Latino males is 505.8 and 467.6 per 100,000 respectively, compared with 361.4 per 100,000 for white males. Similarly, the incidence rate for Black and Latina females is 129.1 and 36.9 per 100,000 respectively, compared to 8.7 for white females. (see attachment 27) Again, these demographic breakdowns as well as the overall projected growth rates for Boston, suggest that occupational risk is likely to increase for those care providers most likely to come in contact with people in this population subgrouping, including health care workers in prisons, emergency rooms, health clinics in homeless shelters, and public hospital staff in general.

Boston's gay community has been hit hard by AIDS as evidenced by the nearly 500 deaths it has already suffered. Like San Francisco's gay community, gay men in Boston were mostly upper-middle class and medically insured. They had a strong social network and community infrastructure, including a gay and lesbian community health clinic which has proven to be an invaluable resource from the very first days of the epidemic up through the present time (see interview 1, Martha Moon of the Fenway Community Health Clinic). Although the majority of gay men were insured for much of their treatment costs, over 60% of the Fenway Clinic's AIDS patients paid out of pocket in order to avoid having their HIV status on any public record. That fact not only demonstrates the level of self-protective fear that characterizes this group of AIDS patients, but also the stark contrast with the newer faces of the epidemic, specifically the depressed socio-economic status of IVDU's and their sexual partners.

Boston public health officials recognize the dire situation confronting them and they do not want the city to be a mirror reflecting the New York crisis two years from now. A newly formed Boston AIDS Consortium representing all the various interested public and private agencies, hospitals and communities, is trying to define the gaps in Boston's continuum of care and create opportunities for filling current and future needs. The Consortium has broad-based support and participation for comprehensive facilities planning and positive momentum is developing in an attempt to find common ground and overcome some of Boston's historical difficulties with racial and social differences. On the whole, the Consortium members recognize that collaboration and cooperation will be necessary in order to meet the full range of HIV care needs and is working towards that end.

3. FACTORS AFFECTING OCCUPATIONAL EXPOSURES OF HEALTH CARE WORKERS TO HIV-CONTAINING FLUIDS

In discussing the variables affecting occupational exposure, it is important to note five basic assumptions about HIV and its transmissibility:

1. HIV is transmitted primarily through blood and semen.
2. No one is immune.
3. HIV has a U-shaped titer curve over the time course from initial infection to death.
4. Symptomatic children infected perinatally may be more infectious in that their length of life is shorter and the titer curve is less deep.
5. The mean length of life from time of adult diagnosis of clinical AIDS to time of death has been approximately 12 months (see attachment 28) but may be shorter when the route of transmission is through sharing needles. On the other hand, as treatments improve, this time is likely to increase.

With this background, below we consider a number of other factors whose changes, over time and geography, will affect occupational risks of HIV exposure.

3.1 The Proportion of PWA/HIV in Different Stages of the Disease or with Different Syndrome Types.

Different syndromes and/or opportunistic infections require different types of care and differently skilled health care professionals to provide care (see attachments 29, 30, 31, and 32 for breakdown of cases by initial diagnosis in San Francisco, Boston and New York). The most frequent initial diagnosis is Pneumocystis carinii pneumonia (ranging from 58 - 63%) and there is a great deal of variability among the other opportunistic infections. For reasons still unclear, Kaposi's Sarcoma (KS) seems more closely associated with homosexual transmission. Thus, in San Francisco, the proportion of AIDS cases with initial presentation of KS is about 27% whereas in New York and Boston, where the proportion of homosexual transmission is lower, it is 17% and 12% respectively.

Different patient demographics may also reflect variation in pre-infection immune status. Whereas middle class gay men, with the exception of those with other sexually transmitted diseases, are generally in good health before seroconverting, IVDU's often have a history of other diseases, and all too often, diseases left untreated. As a result of IV drug use and the lifestyle associated with drug use, IVDU's often have compromised immune systems before they become

infected, thus complicating their care and possibly shortening the period of HIV incubation. Homeless persons too, a group whose seropositivity rate is startlingly large and growing,[9] have particularly compromised pre-infection immune status due to the nature of survival on the streets. (see interview #3, Joe Blansfield) Finally, special attention also needs to be given to the increasing numbers of HIV+ people of color and people in poverty whose living conditions contribute to malnutrition, untreated medical problems, and generally poor health.

Different patient demographics also reflect variation in time of entry into the health care system as well as in point of entry into the system. Gay men, because of the gay community's massive education/prevention efforts, are generally aware they are at risk and typically have access to health care at any point in time although discrimination does prevent access to some medical resources and personnel. IVDU's, on the other hand, are not usually connected to the system and are not always aware of their risk of infection. Often, IVDU's enter the health care system in crisis through the doors of the Emergency Room (ER) (see interview #2 with Dr. Michael Shapiro, Surgeon, Beth Israel Hospital and #3 with Joe Blansfield, Clinical Specialist, ER, Boston City Hospital). IVDU's may also enter through the periphery of the health care system when enrolling in detoxification or drug treatment programs. The number diagnosed in this way is relatively small in proportion to the total number of IVDU's, however, because there are insufficient numbers of drug treatment programs to meet the needs.

Women who are IVDU's or who are partners of IVDU's often enter the health care system when they are pregnant. They receive most of their care in Labor and Delivery wards, often with insufficient pre- and post-natal care. These women are perhaps least aware of their risk of infection. Dr. Janet Mitchell, Director of Perinatology at Harlem Hospital Center in New York, said that 60% of HIV+ women giving birth in New York find out their HIV status only after giving birth to an HIV+ baby. This has startling implications for the babies as these women suddenly find themselves dealing both with issues of their own mortality and their child's health during a time they would normally be rejoicing in the renewal of child-birth. It is as a result of this and the fact that the mother herself is often sick from the virus, that the number of "boarder babies" is growing.

A final factor to consider in assessing the proportion of PWA/HIV in different stages of the disease or with different syndrome types, is what Chris Norwood calls the "hidden epidemic."[10] Norwood is referring to the recent increases in deaths among women due to a variety of respiratory

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[9] In Boston, the AIDS Consortium estimates that 1/8 homeless adults is seropositive, and in San Francisco, Bob Prentiss, Director of San Francisco's Indigent Medical Care program, estimates that approximately 1/15 homeless adults are already infected.

[10] Norwood, Chris "Women and the 'Hidden' AIDS Epidemic", The Network News, Nov/Dec 1988.

and infectious diseases, and the increases in TB cases across the country. These are diseases and syndromes which look remarkably like those associated with immunodeficiency, but have not been diagnosed as AIDS-related.

3.2 Proportion of PWA/HIV of Different Ages

Age breakdowns are already noted above in the sections on planning and demographic changes in patient mix, but it is important to recognize not only that people of different ages will require different types of treatment and care, but also that the incubation period for different ages seems to vary. Specifically, children under the age of four seem to have a shorter HIV incubation period than adults.[11] This shorter incubation period may prove significant in terms of occupational risk since it implies that children will be getting sicker more quickly. Thus, during their shortened lives, the titer curve for their illness may be condensed such that their care providers may be exposed more regularly to HIV virus of greater virulence. This is confirmed by available measurements of HIV-ag reviewed in the report of Task 1 of this project.

3.3 Special Considerations Related to Modes of Transmission

As noted above, the number of patients who acquired their infections through different modes of transmission varies regionally with significant trends, particularly in hard hid Eastern cities, towards increasing proportion of IVDU's, their sexual partners, women and children. Type of care varies according to mode of transmission especially because of the lifestyles and living conditions associated with those modes of transmission. Anecdotal evidence about medical researchers preferring to use gay men over IVDU's in clinical trials, also suggests that mode of transmission influences the type of care which given patients receive.

Nurses have attested to some of the cooperation problems they experience with patients who are drug users (see interview #4, Janet Delgado, Nursing Care Planners). Nurses are accustomed to dealing with drug users' aggressions and they can recount numerous situations where an IVDU patient tried to stab a nurse with his IV needle. Unfortunately, if that patient is HIV+, the nurse is faced with the threat of AIDS, and needs to be particularly self-protective and on guard.

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[11] Medley, G.F., et al "The Distribution of the Incubation Period for the Acquired Immunodeficiency Syndrome." Technical Report Number Sta 79, Presented at AAAS Conference, Jan 1988.

3.4 Distribution of AIDS/HIV Care Tasks and Perceived Risks Among Health Care Workers

The distribution of AIDS/HIV care among health care workers is unequal. It is unequal in part, because of fear and reluctance to treat PWA/HIV, and in part, because of the nature of the treatment. Surgery on seropositive patients, for example, is believed by a number of our interviewees to be quite risky, because despite precautions taken, such as wearing gloves, a patient's blood still ends up on a surgeon's hands about 50% of the time. A surgeon in Boston's Beth Israel Hospital who operates on many of that hospital's known HIV+ patients because of other surgeons' reluctance to do so, calculates that his lifetime risk of occupational exposure is about 10%! (see interview #2)

Another case of disproportionate care among health care workers seems to be occurring in small suburban hospitals. While AIDS patients have clearly entered the suburban world, many of the staff in these small hospitals have not received adequate AIDS education or training in HIV care. Fear of AIDS is extremely high and consequently, so is reluctance to treat. As a result, many of the hospital floor nurses transfer responsibility for AIDS patient care to private contract, or "temp" nurses. This phenomenon is frequent and escalating (see interview #4 for further details).

Public hospital staff, because they now tend to care for over 1/3 of the hospitalized AIDS patients in a given city (including San Francisco General Hospital), disproportionately contend with the risks of caring for AIDS patients (see attachments 33, 34, 35, 36, 37, and 38 for more details on New York's HHC). Public hospitals also tend to serve as the setting for outpatient services to PWA/HIV, such as the newly-formed outpatient clinic at Boston City Hospital, thus the impact ripples further into the indirect services of lab work and other supports.

There are some cities that have no public hospitals, yet the responsibility of care is still not equally shared. In Philadelphia, for example, where there is no public hospital but there are more private hospitals per capita than in any other U.S. city, according to David Fair, Executive Assistant to the Philadelphia Health Commissioner for the AIDS Program, care for PWA/HIV has still fallen primarily to only two hospitals in that city.

Because of increases in HIV+ women of childbearing age, health care workers in obstetrics and pediatrics are also increasingly affected. Considering the U-shaped titer curve, workers caring for seropositive infants who are in the initial stages of infectivity, may be at higher risk than workers caring for adult AIDS patients who are in the middle period of infectivity status (see interview #6, Diana Forrest, Director, Children's AIDS Program, Boston).

The increase in HIV+ IVDU's is having a significant impact on emergency room (ER) staff, particularly in public hospitals. IVDU's tend to arrive in the ER with penetrating trauma like

knife or bullet wounds and ER staff treating those patients necessarily come in contact with a lot of blood. At Boston City Hospital, it is estimated that 20-25% of all ER patients and 1/2-2/3 of all personal assault cases, involve IVDU's. Many of the IVDU's do not know their HIV status or choose not to disclose that information even if they do. Because of confidentiality concerns, ER staff cannot always know when they are treating seropositive patients and so must follow universal precautions quite rigorously (see interview #3).

The health care workers who have the most contact with PWA/HIV overall, are nurses. The workers who most frequently draw blood, are phlebotomists. Those who work most closely with pediatric AIDS/HIV, are child-care specialists. All of these professions are dominated by women. Women have historically served the care-taker role in helping professions, often putting themselves at considerable risk for the sake of others. In the case of AIDS patients, their fear of HIV infection and occupational exposure, is significant. For example, informal protectionist policies in some hospitals have allowed pregnant hospital workers to avoid caring for known HIV+ patients. Even though pregnant women are not known to be at greater inherent risk than any other health care worker, the desire to protect an unborn child has given expression to deeply felt fears. (see interview #7, Infection Control Nurses, Beth Israel Hospital)

3.5 Changes in the technology/procedures for diagnosis and treatment of PWA/HIV.

The most sweeping procedural change for diagnosis and treatment of PWA/HIV has been in the protocols of care, most notably, the adoption of "universal precautions." This doctrine calls for the treatment of all patients, regardless of their HIV status, with the same care and caution. Universal precautions advocates implore health care workers to always wear gloves when there is the potential to come in contact with body fluids, to wash hands immediately following contact with body fluids, to dispose of all used needles in designated needle-boxes instead of recapping or cutting off the tips, to dispose of all infectious materials in special red-bag waste containers, and to don other barriers, such as gowns, masks or goggles during procedures where blood may be spilled or splashed. Universal precautions have been strongly recommended because they protect the patient's right to confidentiality as well as reduce occupational risks to the health care worker for both AIDS and the more common Hepatitis B risks. Advocates argue that health care workers do not need to know a patient's HIV status if they treat all patients with the same precautionary care. Further, not all patients even know their HIV status and antibody tests are not routinely performed on all patients. If health care workers were aware of all the known HIV+ patients, they may come to treat other patients more laxly, patients who unbeknownst to anybody, may also be

HIV+. In that case, health care providers would be increasing their risks of occupational exposure.

Although most hospital and health care settings familiar to our interviewees appear to have adopted universal precautions, it is recognized that such measures are not fail-safe. Many of the barriers are of poor quality -- gloves which leak or don't fit, gowns and masks which are not waterproof, goggles which are uncomfortable, fog up and impair visibility, and so on (see interviews 2, 3, and 4). Even when the barriers are of a higher quality, it is often difficult to perform delicate surgical or treatment procedures while wearing them. Since gloves can keep spilled blood away from skin but cannot prevent needle-sticks, nurses may opt not to use gloves for the benefit of greater dexterity (see interview #4). Because of such trade-offs, many of the health care workers we interviewed prefer that universal precautions be strongly recommended and encouraged, but not mandated or regulated with the threat of punishment for noncompliance.

Some of the problems with universal precautions stem from the difficulties people have in "unlearning" what they know and have practised for years. Nurses who have drawn blood for 25 years without wearing gloves, are sometimes resistant to change. Similarly, there are recapped needles frequently found in the needle-boxes designated for safe disposal, although recapping was exactly the practice that the needle boxes were supposed to eliminate! Indeed, one of the big lessons from the AIDS epidemic has been about the difficulty all people have in changing their behavior.

The enthusiasm with which the health care workers on some services have adopted universal precautions may provide lessons for future infection control education. Jean Nardini, Head Nurse at the Dialysis Unit at the Massachusetts General Hospital reports that there is very good compliance with universal precautions on that unit. NIOSH guidelines had a greater effect that MGH's directive on universal precautions. Staff considered the NIOSH guidelines in light of their long-standing risk of infection with hepatitis-B and all agreed that "It should have been done long ago for hepatitis." Thus they embraced the precautions as an improvement in their work situation rather than as a response to a new danger in their work situation.[11.5]

One of the final obstacles in implementing universal precautions is fear. Fear may motivate some compliance, but overwhelming fear undermines faith in the efficacy of universal precautions. Usually education, information and experience will alleviate the fear, but it may resurface when jarred by a major media scare about occupational HIV transmission (see interview #7).

[11.5] Telephone interview 5/8/89.

In addition to universal precautions, health care providers may also make individual choices to reduce risk. Child-care workers will often double-glove to change an HIV+ baby's diaper or to disinfect the child's pottie (see interview #6). Surgeons, when operating on a known HIV+ patient, may opt to retrieve his/her own implements, for it is in the transfer of implements that glove tears usually occur (see interview #2).

Other procedural changes include more presumptive (i.e. less invasive and by implication, also less definitive) methods to perform biopsies and make diagnoses, in place of previously routine surgical procedures. In general, there are less surgical procedures performed in treatment because surgery tends to suppress the immune system.

Technological changes are also occurring which may minimize occupational risk. For example, in order to minimize needle-sticks, numerous products have been developed which would allow the same needle to remain in a patients arm during an IV infusion. Rather than taking the needle in and out, a little plastic attachment device can be detached and then re-attached to the needle in the patients arm. Another such technology is "auto-transfusion" used for patients with blood in their chests which needs to be removed. Before, a tube would be inserted into the chest and the blood would be siphoned into a waste container, but often in that process, blood would fly all over the room. Auto-transfusion is a fluid resuscitation mechanism which takes blood directly from the chest, anti-coagulates it, filters it, and in a matter of minutes, pumps it back into the patient's bloodstream. It is a process that serves to minimize risk as well as save blood, an increasingly scarce commodity in the health care industry. This is felt to be a safe procedure for HIV+ patients for there is no indication that pumping one's own seropositive blood back into one's system will act as a source of reinfection. Such innovations are known as "nickel and dime technologies" for they reduce risk in an incremental fashion rather than representing a major technological breakthrough. (see interview #3, Joe Blansfield)

Changes in treatment of PWA/HIV such as aerosolized pentamidine, AZT, or any number of the "orphan" drugs now being tested, will affect health care workers both in the delivery of the treatment and in the prolonged life expectancy which may result. The development of new treatments involves some very sensitive and complicated issues. AZT, for example, may delay or offset opportunistic infections and possibly extend life expectancy for one to two years. But the additional cost of care associated with that treatment, is $24,000 per patient.[12] Currently, Congress has made special reimbursement provisions for AZT treatment, but it is unclear whether such support will continue, especially as costs escalate further. There are also a number of ethical concerns raised in regard to clinical trials and the withholding of drugs in the process of testing to

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[12] Hellinger, F. "Forecasting the Personal Medical Care Costs of AIDS From 1988 Through 1991" Public Health Reports, May-June 1988.

PWA/HIV unless they agree to participate in a controlled experiment. The development of new, effective treatment will depend in part on how these issues are resolved.

4. PRELIMINARY INFERENCES ON LIKELY CHANGES IN OCCUPATIONAL EXPOSURES OVER THE NEXT SEVERAL YEARS

4.1 The Impact of Changing Procedures

As the number of patients increases, the number of procedures performed will also increase. As more experimental treatments are developed, the number of procedures will probably increase at an even greater rate. If one includes the blood-drawing, testing and lab work done for research purposes, then the number of encounters with potentially hazardous body fluids increases greatly (see interview #1). Barriers will help to minimize risk, but barriers are not fool-proof and cannot offer universal protection.

Where possible procedures are likely to become less invasive, reducing surgery in favor of more presumptive methods of diagnosis and treatment. We can also expect to see more early treatment in attempts to delay or prevent onset of opportunistic infections.

Almost any new treatment or procedural change will be directly affected by changing reimbursement mechanisms. Very few states and/or municipalities are willing or able to pay for treatment or service costs as San Francisco has done. San Francisco itself can no longer afford to offer the needed support. To the extent that local governments do supplement existing reimbursement mechanisms, new experimental procedures, technologies and treatments may prove successful in extending life or preventing opportunistic infections. But it is expected that most local governments will not extend themselves to pay such costs. Thus, federal reimbursement structures and policies will play a most significant role in the type of procedure performed, the number performed and in who is performing them.

4.2 Infectivity of Substances/Fluids to Which Care Providers are Exposed.

This is reviewed more extensively and quantitatively in our Task 1 report. Infectivity is partly a function of stage of illness (i.e. U-shaped titer curve). Since the United States has not yet seen the peak of the AIDS epidemic, the number of PWAs alive in the final stages of the disease, will continue to increase over time. The Centers for Disease Control estimates there are 1 - 1.5 million people currently infected with HIV in the U.S. As most or all of these people progress towards the end stage of their illness, the infectivity of substances/fluids to which care providers are exposed, will also increase. One response to this situation is increased attention to living wills

and other mechanisms for giving force to a patient's desires concerning the scope and limits of treatment in the terminal stages of any disease.

Infectivity is also a function of syndrome for if a patient is diagnosed with dementia or other nervous system disorders, and not with the more common respiratory infections, there will be less contact with a patients bodily fluids. This does not seem to be the case, however. Although diagnosis such as dementia and encephalopathy are increasing, it is usually in conjunction with other opportunistic infections.

The volume of substances/fluids in given procedures, i.e. how much blood is there in a needle-stick, also can be expected to affect infectivity. This will be addressed in considerable detail in subsequent reports for this project.

4.3 The Impact on Distribution of Care Among Health Care Providers

The types of procedures used will in turn affect who is performing the procedures. But, who is performing them will also depend upon where they are being performed and the level of fear different health care providers have about treating HIV+ patients.

Insofar as there is to be some shift away from surgery, the disproportionate impact on nurses will continue and will probably increase. Because of circumstances associated with IV drug use, occupational risk among emergency medical personnel is likely to increase despite the "nickel and dime" technologies which are being developed to control exposure. Since few procedural changes have occurred in obstetrics aside from increased use of gloves and other barriers,[12.5] the current and projected numbers of HIV+ women of child-bearing age, make it likely that there will be some increase increase in occupational exposures among obstetric staff. Subsequently, the risk to pediatric care nurses and doctors will also increase.

Risk to child-care workers may be offset somewhat by general good health care practices such as providing a child with a nutritionally sound diet and preserving the integrity of a child's skin with lotion or cream. The skin serves as the first line of defense against infection both for the child and the care provider. The fewer cuts, rashes and bruises a child suffers, the less contact a child-care worker will have with the child's body fluids.

12.5 Personal communication with Bechy Dewees-Dunk, an obstetrics/gynecology nurse at Boston City Hospital. Dewees-Dunk reports that in addition to the increased use of gloves, gowns and eyewear, wall suction has been introduced into the delivery room to clear the orifices of newborns. Ms. Dunk reports that after an initial period of staff turnover in the Obstetrical service at Boston City Hospital--a service that has a comparatively high proportion of HIV+ individuals among the women giving birth--there is now little turnover and no refusal to treat HIV+ patients.

4.4 Personnel Shortage Concerns

A national nursing shortage in the United States is reaching critical proportions.[12.8 1] Nurses are over-worked, under-paid and are being stretched to their physical and emotional limits. In Boston, the legal limit of a hospital nurse's patient responsibility has quickly escalated from a maximum of five in 1985, to a current limit of eight (see interview #4). Nurses are increasingly working in temporary agencies (of which there are 400 registered in Massachusetts alone!) for higher wages, with more flexibility and with greater respect for the work they do. As long as nurses remain under-paid, under-recognized and under-respected, we can expect the nursing shortage to continue as well as the trend towards private contracting.

This will have serious implications for patient care and occupational risk. In order to compensate for the nursing shortage, many hospitals have already begun shifting nursing tasks to less trained, relatively inexperienced hospital "technicians." The technicians' tasks include the responsibilities of changing dressings, emptying bedpans, bathing patients, and other duties along those lines. Most nurses are outraged by this shift for it demonstrates a complete lack of understanding of a nurse's relationship to her patient (see interview #4 for more details). It also has serious occupational risk implications for those inexperienced "technicians" for they will consistently be coming in direct contact with patients' potentially hazardous body fluids.

More general questions about provider shortages have also been raised in regard to the AIDS epidemic. Specifically, it is speculated that among people entering the health care field, there will be a shift away from areas perceived as "riskier," such as surgery, obstetrics, or emergency medicine. It is difficult to be certain that this is indeed occurring, but anecdotal evidence at least suggests that the possibility merits serious consideration. Special compensation, or some kind of hazardous duty pay may be necessary to overcome such shortages. Otherwise, occupational HIV risk may become further concentrated among smaller numbers of providers practicing in those "riskier" fields.

12.8 For explicit details on the national nursing shortage, see "Nursing Shortage in the Hospital Sector, 1982-87" published in the "Secretary's Commission on Nursing: Support Studies and Background Information, Volume II", National Center for Health Services Research and Health Care Technology Assessment.

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4.5 Impact of Changing Demographics and Patient Mix on Future Occupational Risk

The increase of IVDU's, women and children will directly affect health care providers who have traditionally worked with these populations. The seropositivity growth rate among these groups is growing at a tremendous rate and shows no indication of slowing down. The occupational risk of workers in detoxification and drug treatment centers, community health clinics, family planning clinics, child-care programs, and public hospital settings, will increase significantly, corresponding to their increases in service delivery to these populations.

4.6 Settings and their Impact on Occupational Exposure

The relative success or failure of cities' planning efforts for comprehensive HIV care and facilities development, will determine many of the other relevant variables regarding occupational exposure. In San Francisco, many procedures have been (and continue to be) performed on an outpatient basis, both because it is less costly and it is usually the patient's preference. As a result of the continued availability of these community-based alternatives to hospitalization, non-hospital workers, i.e. nurses and attendants providing hospice/home-care, day-care workers providing iv-infusions, social service workers providing dependent living support and so on, allow the occupational risk to be more evenly distributed across settings and hence, across the different categories of health care providers.

In those cities where alternatives are largely unavailable, as in New York and Boston, risk will continue to be concentrated among public hospital staff. Public hospitals will be pushed to their physical and fiscal limits, and the quality of care PWA/HIV receive will very likely be adversely affected.

Cities such as Boston, which are following an epidemic course similar to New York, may develop differently because they have the benefit of extra time to do more preparatory planning, Though comprehensive planning efforts were only initiated seven years into the epidemic, planning is now underway in Boston to help prevent further spread of the epidemic as well as meet the broad spectrum of needs of those already infected.[13] New settings have recently been developed such as Hospice West in Boston's Mission Hill District. Pediatric AIDS demonstration projects in Boston's minority communities are now in their initial operating stages. The Massachusetts

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[13] For a more complete discussion of what is being planned, see The Boston AIDS Consortium: Task Force Reports and Preliminary Recommendations, November 1988.

Department of Social Services is increasingly placing HIV+ children in foster homes around the city.[14] And a special residence for homeless PWAs is being planned by the Pine Street Inn, one of Boston's largest homeless shelter providers.[15] These developments represent hopeful signs for more conscientious HIV care in the city.

These programs will vary in levels of supervision and support which they provide, but their development underscores the fact that occupational risk affects a broader range of people than the general conception of health care workers. As the Boston Consortium and others become more active in terms of providing for the housing, social service, and support needs of PWA/HIV, there will be a corresponding increase in occupational exposure among these service providers.

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[14] Based on information furnished by Judy Riley, Assistant Commissioner of Social Services for the State of Massachusetts.

[15] According to Bob Johansen, Administrative Director at Pine Street Inn, the homeless residence is complete on paper. The most intractable problem is siting the facility.

5. CONCLUSIONS

Our intention in this study is to improve current estimates of how often and by what means are which workers exposed to what media containing HIV virus of what titer and virulence. It is virtually impossible to construct a precise response to these questions for their are numerous unknown variables in the equation. In this early effort we therefore focus on the trends that appear to be developing in several U.S. cities, and highlight those factors which may have a direct bearing on occupational risk of HIV infection.

Planning for the care and treatment for PWA/HIV affects which health care workers primarily treat the illnesses of those with HIV infection. In San Francisco, intensive community-based planning has led to the development of a diverse array of care settings with an emphasis on outpatient care. In contrast, PWA/HIV in New York and increasingly in Boston, rely primarily on a public hospital inpatient mode of treatment. This trend is likely to continue as the demographics of AIDS continue to shift towards increasing numbers of IVDU's, their sexual partners, HIV-infected infants, and in general, to a poorer and disproportionately ethnic minority population. This trend is also reinforced by current reimbursement structures which favor inpatient hospital care over the less costly and often more appropriate lower levels of care.

Although the careers of most health care workers will be affected by the AIDS epidemic and many will professionally encounter a person who is infected with HIV, some workers are more likely to come in contact with potentially hazardous body fluids than others. Those who are more likely to have such contact include nurses, surgeons, emergency room personnel, obstetrics and pediatric staff, lab technicians, and those working in the newly developed "technician" positions who perform some of the more traditional nursing tasks. As the large number of persons with HIV infection progress to "full blown AIDS," that final period of disability when the HIV virulence appears to be greatest, workers who care for these clinically diagnosed patients may be exposed more often to highly infectious body fluids. When some health care professionals refuse to treat AIDS patients, as is currently the case, a disproportionate risk falls on those who are willing to treat. Further, those caring for HIV+ children may potentially come into contact with body fluids which contain a relatively high virulence of HIV given that the titer curve for children is less deep. We expect this potential risk to child-care specialists to increase as long as heterosexual contact between IVDU's and their partners continues to be a common route of transmission.

There have been a number of procedural changes implemented in order to reduce occupational exposure to HIV, such as the adoption of "universal precautions." Although most hospitals have adopted universal precautions in order to help prevent occupational HIV

transmission, however, not all health care institutions have done so and not all health care workers are willing or able to follow universal precautions even when these precautions represent the institution's official policy. Sometimes the neglect of universal precautions is a function of fear or a lack of knowledge with regard to AIDS, sometimes it may be due to poor quality barriers, and sometimes it is simply due to the demands of a given procedure and the limitations of existing equipment.

There have also been some technological innovations intended to reduce occupational exposure. These are by and large considered "nickel and dime technologies," however. They do serve to usefully reduce potential exposure to a patients' blood, but they represent no major technological breakthrough.

Given the current state of the AIDS epidemic and its apparent future course, the best current methods of prevention in terms of health care workers' risk of occupational exposure are to reinforce the notion of universal precautions and to encourage the adoption of technical changes (e.g. better needle devices not requiring disassembly prior to disposal) to reduce the likelihood of blood exposure. This includes providing quality barriers and ensuring that those barriers are readily available and accessible. It also means providing continuous education to all health care workers so that awareness in high, fear is diminished and PWA/HIV receive the best care and treatment available.

APPENDIX A--ATTACHMENTS

S.F. AIDS INCIDENCE AND MORTALITY

BY MONTH OF DIAGNOSIS OR DEATH, 1980–88

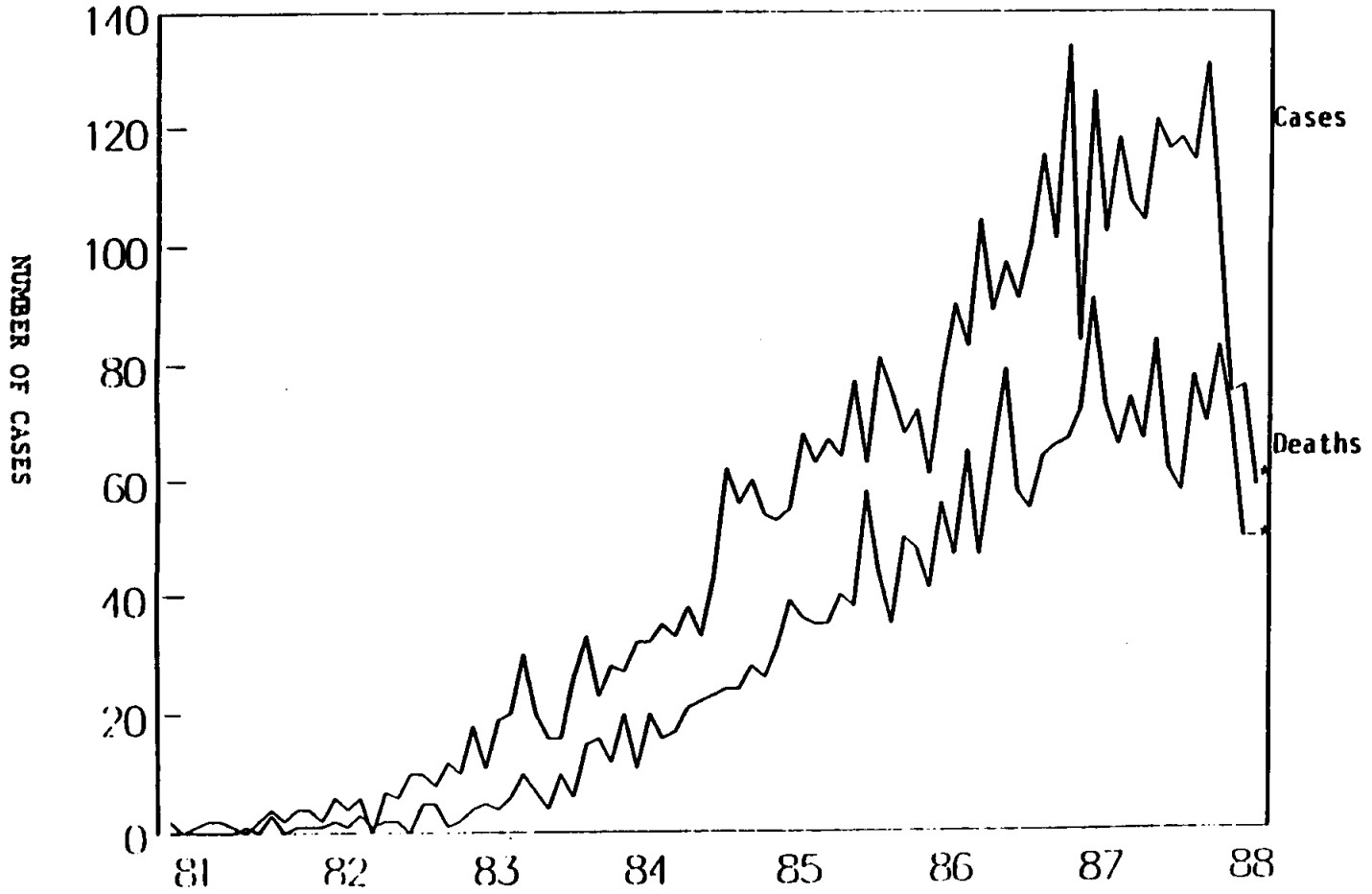


Figure 1

* Reporting for recent months is incomplete

Attachment # 1

Attachment # 2

PROJECTED NUMBER OF AIDS PATIENTS ALIVE IN S.F.
AT THE END OF THE FISCAL YEAR (TO JUNE 30,1993)

FISCAL YEAR ENDING (TO 6/30)	ACTUAL NUMBER ALIVE (ON 6/30)	PROJECTED NUMBER ALIVE (RANGE) LOWER ESTIMATE	MIDDLE ESTIMATE	UPPER ESTIMATE
1980	0			
1981	9			
1982	45			
1983	172			
1984	355			
1985	680			
1986	1031			
1987	1500			
1988		1814*	1889	2660
1989		1954	2237	3201
1990		2074	2637	3811
1991		2178	3104	4522
1992		2276	3645	5348
1993		2383	4255	6288

* Projected Number Alive on June 30, 1988

San Francisco AIDS cases by Race or Ethnic Group*								
	Adult/Adolescent		Children (o - 12 yrs)		Total Cases			
	N	%	N	%	N	%		
White	3674	84.3	7	53.8	3681	84.2		
Black	282	6.5	3	23.1	285	6.5		
Latino	323	7.4	3	23.1	326	7.5		
Asian/Pacific Is.	75	1.7	0	0	75	1.7		
Native American	4	0.1	0	0	4	0.1		
Total	4358	100%	13	100%	4371	100%		
*As of January 1988; Source San Francisco AIDS Plan: Status Report for Fiscal Year 1987-88								

Attachment * 2A

CUMUL PROPORTION SEROCONVERTING TO HIV

SFMHS & HEP-B VACCINE COHORT

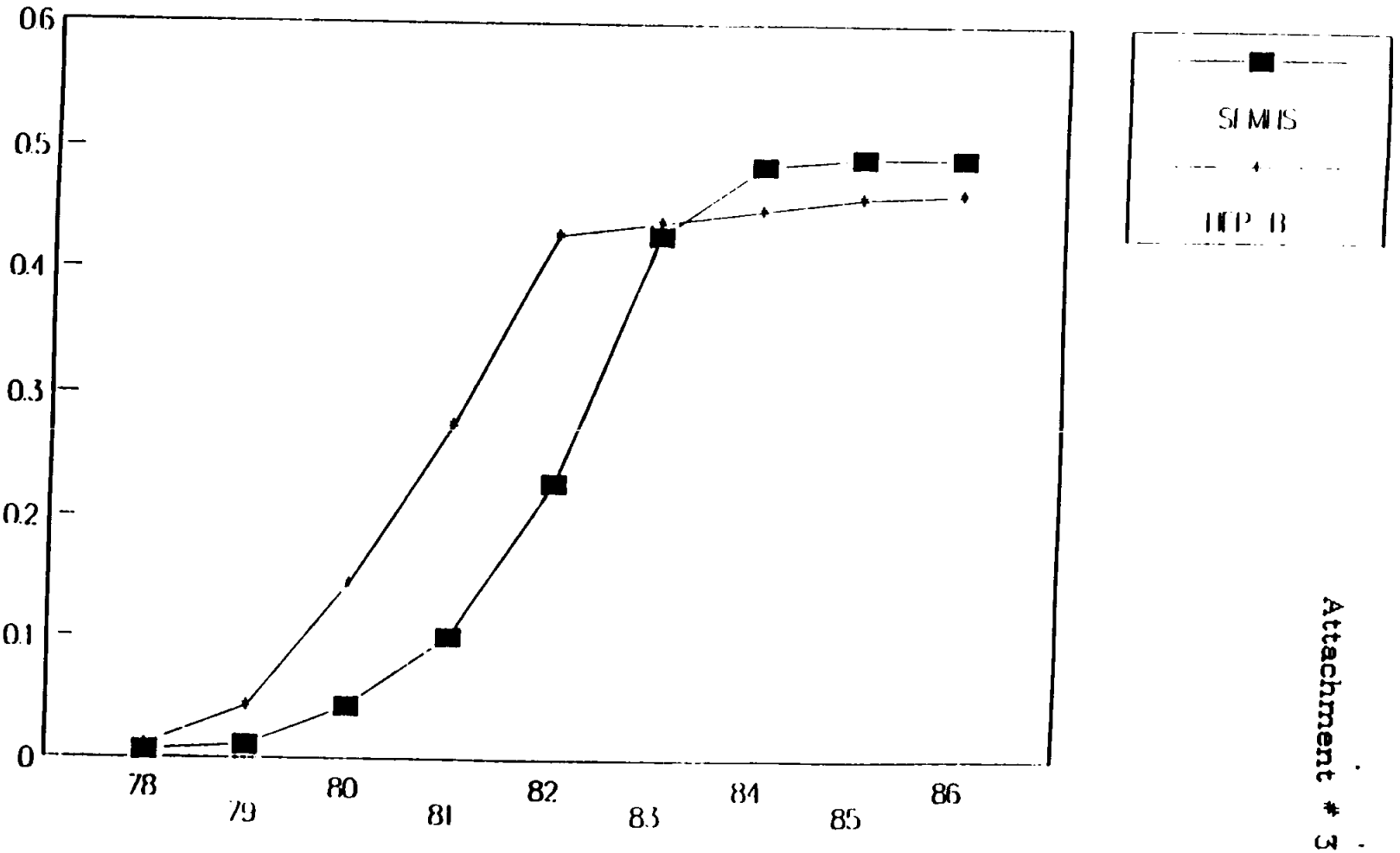
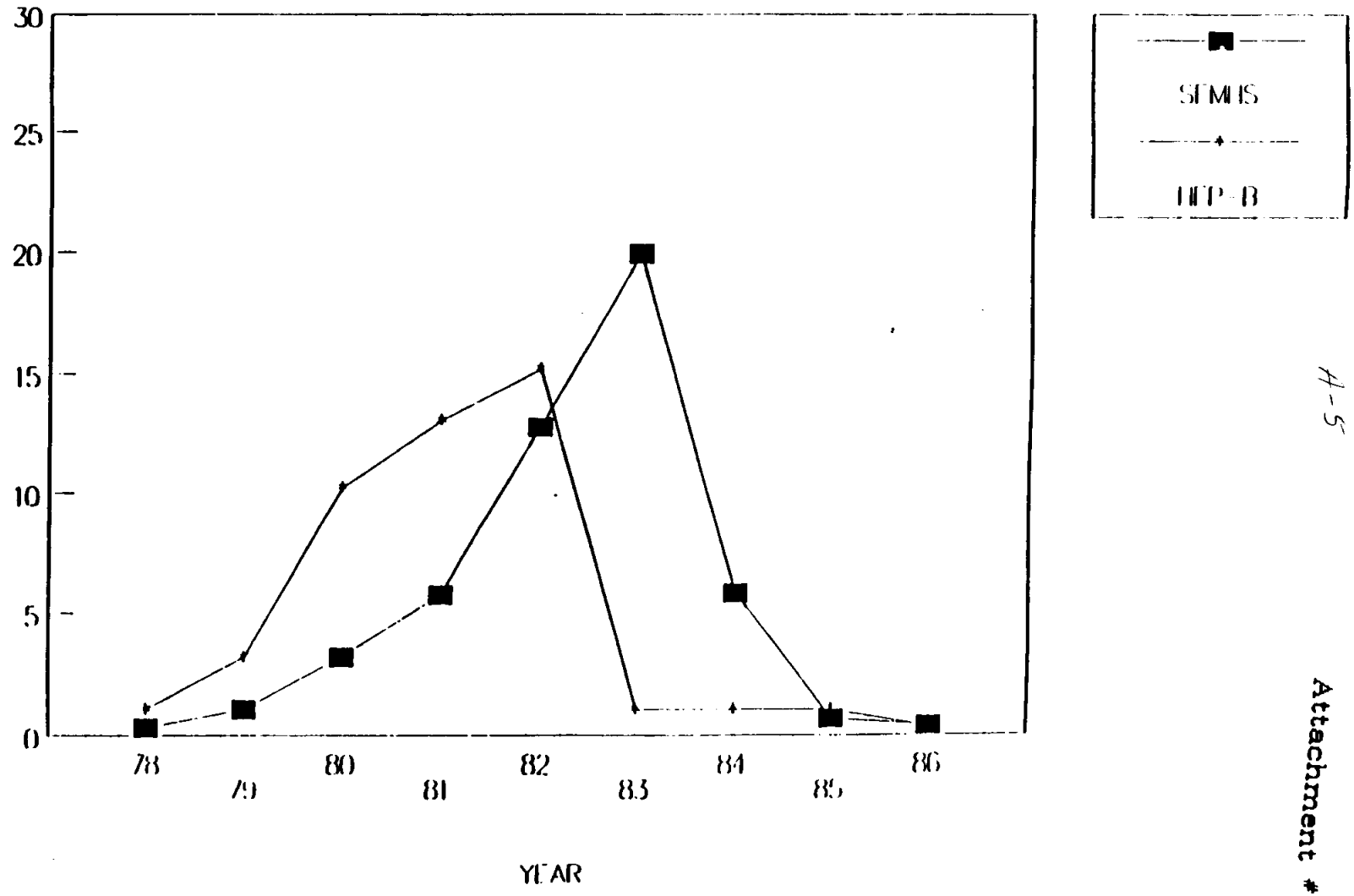


Figure 2

Attachment # 3

PROPORTION SEROCONVERTING TO HIV BY YR

SFMHS & HEP-B VACCINE COHORT



PERCENT SEROCONVERTING

Figure 3

4-5

Attachment # 4

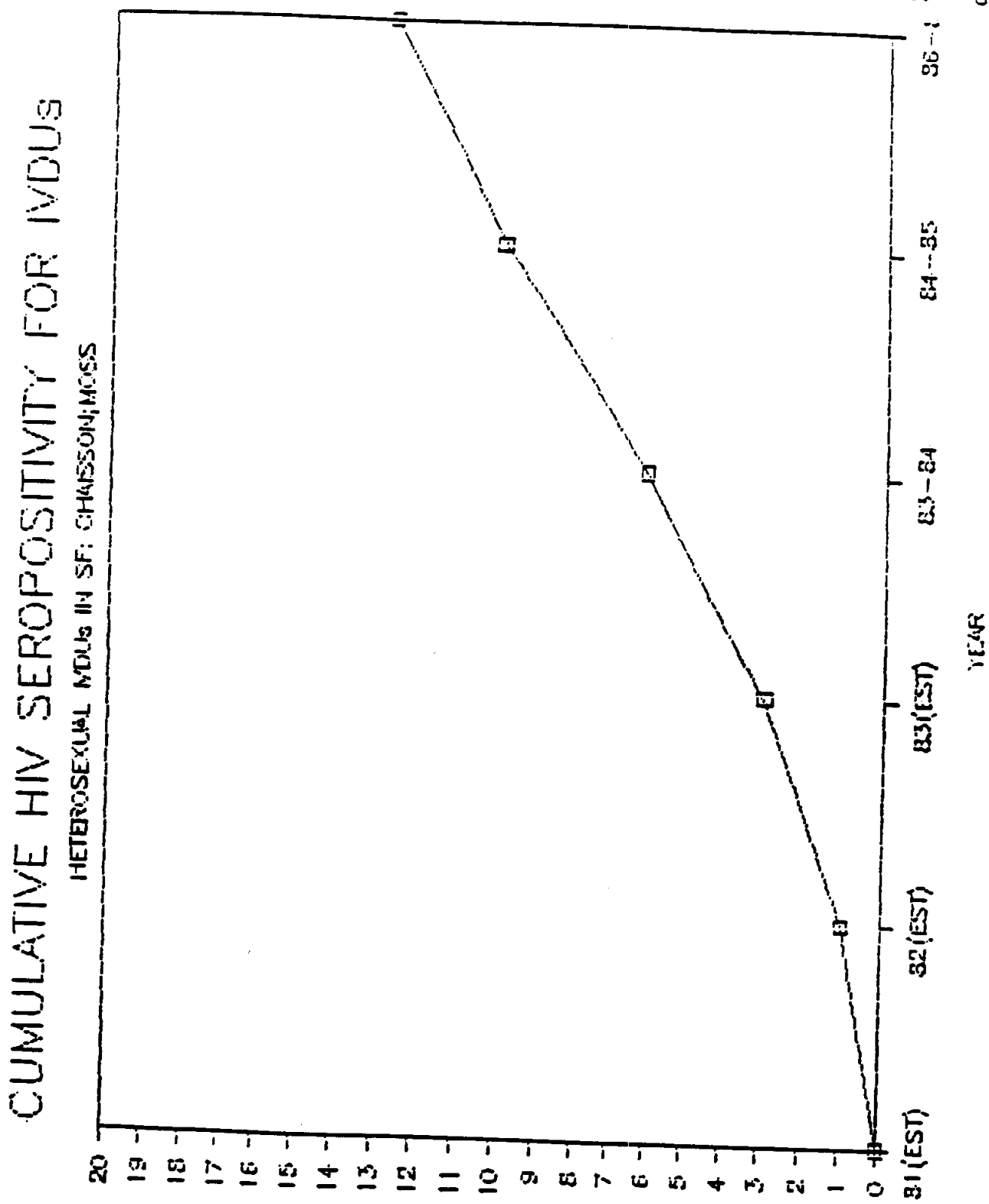
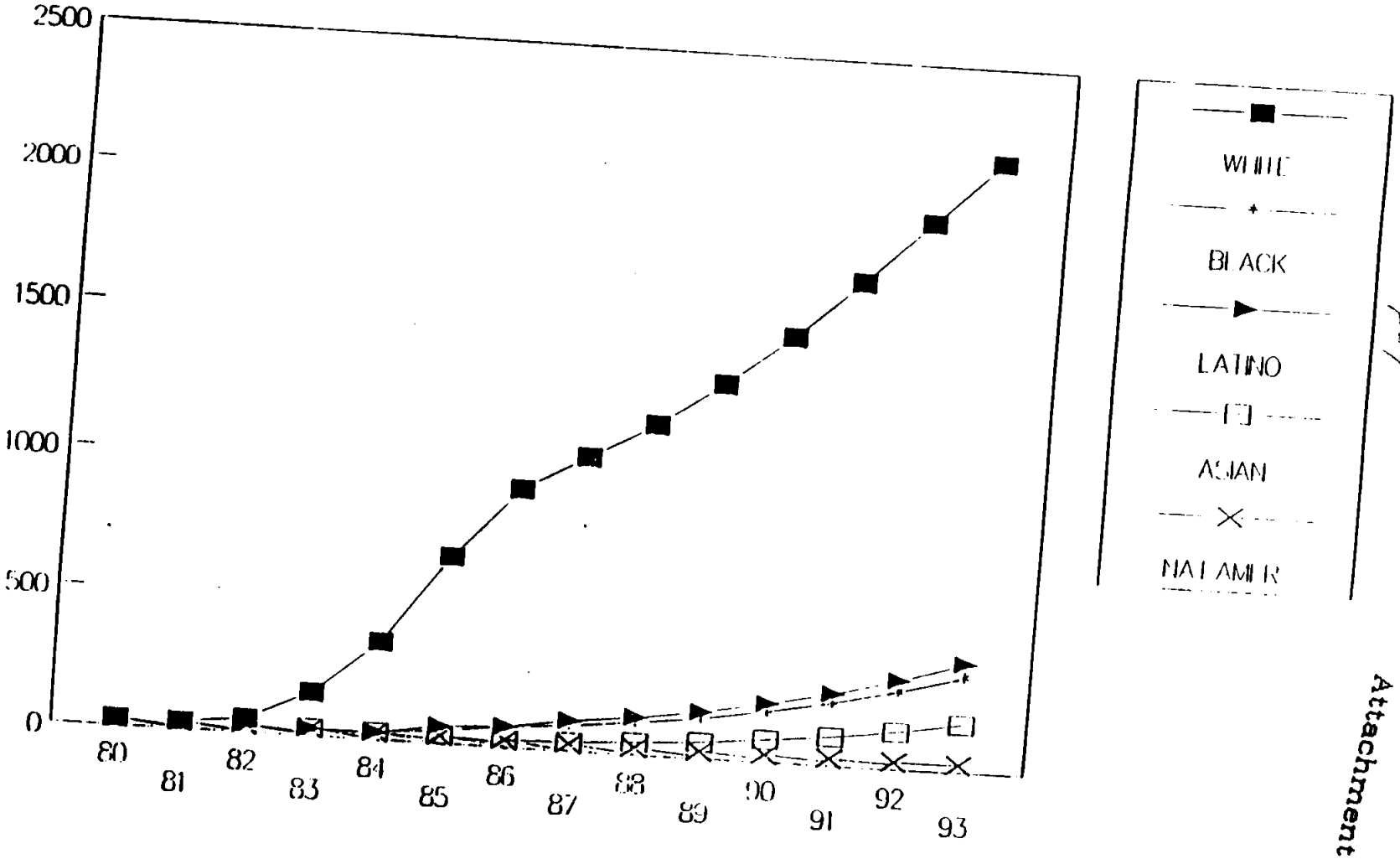

CUMULATIVE HIV SEROPOSITIVITY FOR MDUS
HETEROSEXUAL MDUs IN SF: CHARSON/MOSS
PERCENT SEROPOSITIVE
YEAR
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
81(EST)
82(EST)
83(EST)
83-84
84-85
86-

Figure 4

Figure 5

PROJECTED AIDS CASES BY RACE/ETHNICITY

By Fiscal Year, S.F., Polynomial Model



Attachment *

PROJECTED HETEROSEXUAL IVDU AIDS CASES IN SF BY FISCAL YEAR (RANGE)

FISCAL YEAR ENDING	LOWER RANGE CUMUL.*	LOWER RANGE ANNUAL	UPPER RANGE CUMUL.	UPPER RANGE ANNUAL
1988	108	49	110	47
1989	170	62	173	63
1990	243	73	251	78
1991	328	85	349	98
1992	424	96	468	119
1993	531	107	612	144

* Cumulative cases since 1981.

PROJECTED AIDS CASES AMONG CHILDREN OF IVDUs IN SF BY FISCAL YEAR (RANGE)

FISCAL YEAR ENDING	LOWER RANGE CUMUL.*	LOWER RANGE ANNUAL	UPPER RANGE CUMUL.	UPPER RANGE ANNUAL
1988	6	3	6	3
1989	10	3	10	3
1990	14	4	14	4
1991	18	5	20	6
1992	24	5	26	7
1993	30	6	34	8

* Cumulative cases since 1981

A-9

Attachment # 8

PROJECTED CHILDREN OF IVDUs ALIVE WITH AIDS
AT THE END OF THE FISCAL YEAR (RANGE)

FISCAL YEAR ENDING	LOW	MID.	HIGH
1988	3	3	4
1989	4	4	5
1990	5	5	7
1991	6	7	9
1992	7	9	12
1993	8	10	14

Attachment # 9

PROJECTED ADULT/ADOLESCENT FEMALES ALIVE WITH AIDS
AT THE END OF THE FISCAL YEAR (RANGE)

FISCAL YEAR ENDING	LOW	MID.	HIGH
1988	26	26	34
1989	31	40	53
1990	43	47	66
1991	49	60	85
1992	61	76	107
1993	68	93	133

PROJECTED CHILDREN (0-12 yrs) ALIVE WITH AIDS
AT THE END OF THE FISCAL YEAR (RANGE)

FISCAL YEAR ENDING	LOW	MID.	HIGH
1988	9	10	13
1989	12	13	17
1990	13	15	22
1991	15	20	28
1992	17	23	33
1993	19	28	41

Attachment #10

Appropriate Care for People With AIDS

Acquired Immunodeficiency Syndrome represents a later stage along the continuum of HIV disability where the continuum ranges from the time of infection to the time of probable death. Once infected with HIV, an individual will typically go through periods of apparent wellness as well as periods of inability to work or properly care for one's self due to various bouts with opportunistic infections. Though CDC defined AIDS is by definition the most disabling stage of HIV disease, and the most costly, it certainly is not the only phase of the continuum requiring care or incurring costs, and neither is it a homogenous phase of the disease. A PWA may at times require intensive inpatient care and at other times require varying levels of skilled nursing or attendant care or other support services. In other words, AIDS is beginning to look more and more as a chronic illness with a continuum that includes an acute and a long term care phase.

San Francisco was one of the first places where the communities collectively understood and appreciated the continuum of disability associated with AIDS and HIV infection and responded by creating a parallel continuum of care. As such, services in the city range from highly skilled inpatient care to

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the somewhat less technically skilled array of outpatient services. The range can be summed up in the following way:[1]

* Skilled Care
* Residential Treatment
* Short Term Residential
* Longterm Residential
* Independent Living
* Homecare
* Daycare
* Specialized Pediatric Care
* Outpatient Support Services

It may be somewhat misleading to represent these services in a linearly progressive fashion because they are not necessarily utilized progressively. A PWA may go from an acute care hospital into a long term residential hospice, or from an independent living situation into a mental health residential treatment program, or utilize any number of services in the order and for the length of time that is appropriate.

Herein follows a short discussion of each of these categories along the continuum, touching on what currently exists in the community as well as on services in the process of being developed in order to respond to a recognized present and/or future need.

Skilled Care settings include acute, subacute and Skilled Nursing Facility (SNF) care and all of the inpatient medical and support services provided in these settings. Because of increasing dementia amongst PWAs coupled with AIDS related

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[1]The descriptions of care have been adapted from various drafts of the report prepared by San Francisco's Committee on Non-acute Services for PWAs.

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illnesses and physical debilitiations, secured SNFs are now being planned for in San Francisco and elsewhere. The lack of such facilities is one of the major problems for discharge planners.

Residential Treatment refers to programs for mental health and/or substance abuse. Mental health residential treatment programs are conceived to be programs for PWAs or People with HIV related diseases who suffer from some level of mental illness but are able to function so that they do not require a secured SNF. Substance abuse treatment programs are critical components in the continuum of care for most regions in the nation considering the increasing national proportion of IVDU people infected with HIV. A special approach is usually needed for the substance abuse treatment programs since the standard appeal to the benefits of a clean and sober life is not always applicable with HIV infected persons. Innovative problem specific and value specific approaches are more likely to be effective in this case of dual diagnosis. (e.g. San Francisco)

Short Term Residential settings are for PWAs who have no permanent place to live and require emergency or transitional housing until a more permanent home can be arranged. These settings may also serve the need for "respite care," in that they offer the caregivers at home a respite from the demands of caring for their loved one and do not require more costly hospitalization. (e.g. SF AIDS Foundation providing x# vouchers)

Long Term Residential settings are appropriate for people who do not require a high level Skilled Nursing Facility but do

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need 24 hour care and supervision. For those with neurologic or physiologic disabilities, a dependent living facility may be appropriate. For those who are in the final stages of their terminal illness, a residential hospice like San Francisco's Coming Home Hospice, can offer comfort and round the clock care to ease the pain both of the person dying as well as that of the person's family and/or lover.

Coming Home Hospice maintains 15 beds, 11 of which are on average occupied by PWAs. The other 4 are occupied by elderly and traditional hospice users. Thus far, such an arrangement has worked well in San Francisco, although planning is currently going on to develop more hospice beds in the city which will be used solely by PWAs.

The question of integrating or separating PWAs from other health care recipients is one which is discussed in relation to not only residential hospice settings but also traditional hospital settings, residential treatment programs, Skilled Nursing Facilities and so on. San Francisco General Hospital for example, uses both approaches, whereas most other hospitals who do not have specialized wards integrate AIDS patients with others. Clearly, if a hospital has a high AIDS caseload, it may not be feasible to maintain completely separate facilities.

Independent Living settings, like those offered by San Francisco's Shanti Project, are for people who generally do not require skilled care on a continuous basis. They are essentially able to care for themselves, but 24-hour support and supervision

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is available and care is provided as needed. Those living at Shanti residences are people who could be cared for at home if friends/lovers/caregivers were able to provide the support necessary to augment the person's independent living capabilities.

Homecare and home hospice services in San Francisco are primarily provided by Visiting Nurses and Hospice and the program is often tauted as the hallmark of success in the San Francisco AIDS model. Teams of health workers, including a nurse, social worker, attendant and trained volunteers, go to the patient's home and provide health care and personal support as needed. This type of care is most effective for a person who has a home support system already but at times needs more skilled care. After acute care (numbering 44,698 patient days in 1988), homecare represents San Francisco's most highly utilized AIDS and HIV-related service in 1988 (numbering 23,360 patient days).

Daycare is in the process of being developed and represents one of the latest innovations in the San Francisco model of care. Fashioned after Adult Day Health programs for the elderly, daycare for PWAs and People with HIV will offer recreational therapy, physical therapy, occupational therapy, independent living skills building, psychiatric and psychological support services and transportation services. In addition, the daycare program expects to provide nursing services and infusion services.

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The daycare program will fill a current gap in the service continuum for many of the same reasons why daycare programs proved enormously important in elderly communities. It will get PWAs and People with HIV who might otherwise be home alone without much interaction or stimulation, to get out and socialize with others in similar situations while at the same time meeting many of their personal, emotional, and health needs. It is intended to make people feel better about themselves and their lives thereby enhancing their will to live.

Specialized Pediatric Care to meet the needs of HIV+ children and their mothers, is an increasingly essential component along the AIDS continuum of care. In some ways, services needed for children mirror those needed for adults in that infection results in a continuum of disability where there are bouts of sickness intermittent with periods of apparent wellness. Infants and children, however, have special needs that are not addressed by the adult model. Also, because caring for children involves significant contact with bodily fluids (changing diapers, cleaning up vomit, bloodied knees etc.), infection control procedures such as wearing gloves, proper disposal of diapers, disinfecting potties and so on, become important, thereby specializing care for HIV+ children.

Since the majority of HIV+ children are born to HIV+ mothers who will themselves become sick and die, or who are confronting their own mortality and are not in a condition to care for their children, many HIV+ children find themselves homeless and

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abandoned on a hospital ward. Currently, San Francisco's pediatric AIDS cases are low enough enough in number to be adequately addressed through existing foster care programs, but particularly in major East Coast cities, there is a great need for specialized pediatric care. Thus, residential and daycare programs are being developed in New York, Newark, Boston and elsewhere which are designed to meet the emotional, educational, recreational, support, advocacy and other non-acute care needs for pediatric HIV. Foster care programs are also being developed so that HIV+ children may live some of their lives in a home family setting. Such an arrangement may involve supportive services for the foster family, respite care, or other special compensation.

Other <u>outpatient support services</u> are offered by 50 different AIDS organizations in San Francosco. They run the gamut of possibilities from psychotherapy and support groups to food banks and arranging for a PWA to have a pet in his/her home. Strong voluntary efforts, largely from the gay community in San Francisco, made possible such an extensive array of outpatient services. Now, instead of HIV infection rates growing exponentially in the city, the information and referral books are!

To get to this point, however, took a lot of time, energy, commitment, coordination, trust, professional integrity and fear for community survival. It took integrating the efforts of the public and private sector, linking their interests and goals to

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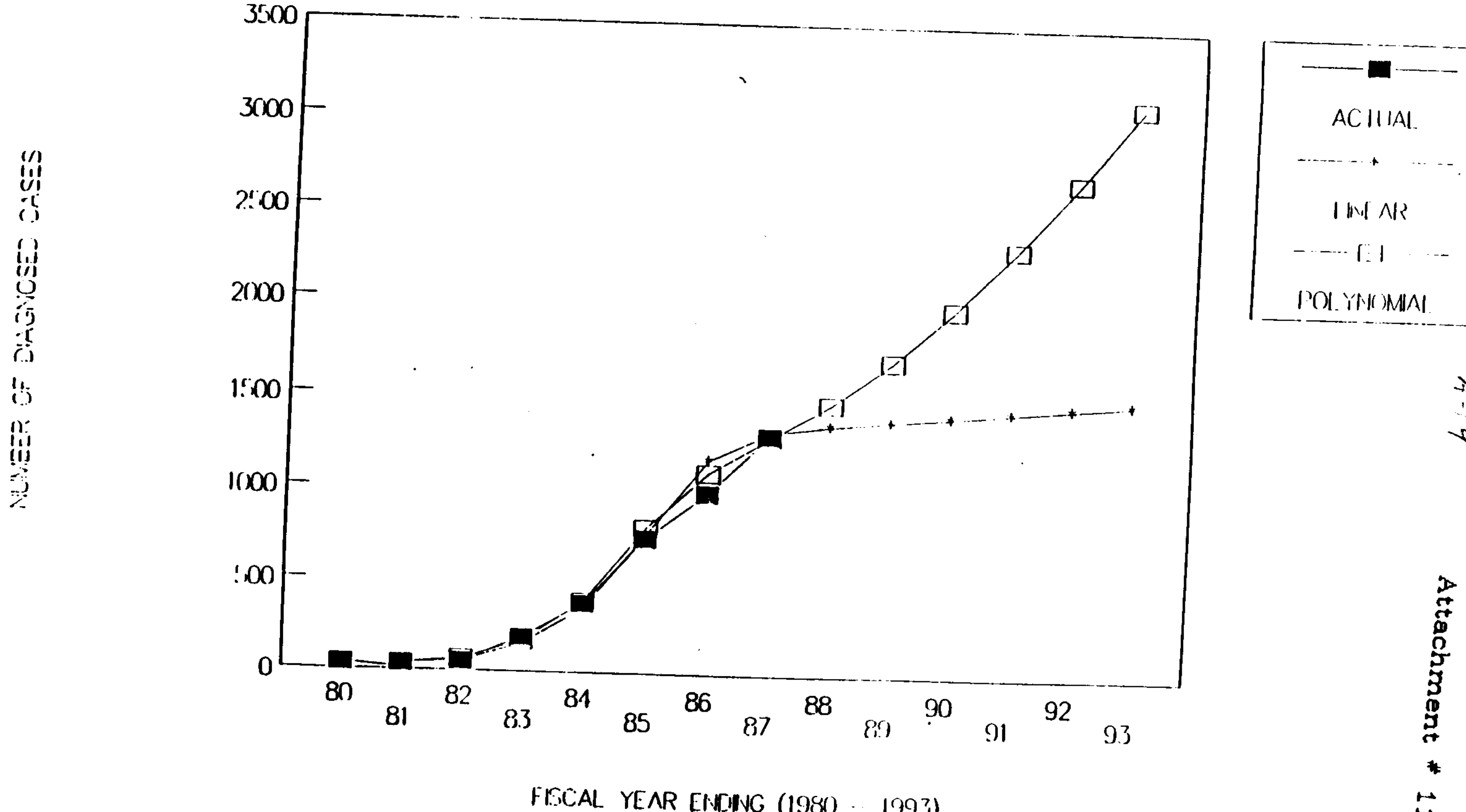
create a coordinated, sensitive and responsive system of care. The most important impetus in the ongoing development of the model though, was and is the political pressure exercised by San Francisco's very strong and vital gay community. The gay community continues to marshall its own resources to ensure appropriate care for People With AIDS. And, the City and County of San Francisco is working with the gay community, as well as with other affected communities and institutions, every step of the way. It is doing so in order to provide the best, the most humane, and the least costly care possible.

Attachment # 11

A-19

PROJECTED AIDS INCIDENCE BY FISCAL YEAR

SAN FRANCISCO, JUNE 1980 – JUNE 1993



San Francisco AIDS cases by setting through 1993: High Projection

Setting	1988	1989	1990	1991	1992	1993
Skilled Care						
-Acute	221	266	317	376	445	523
-Subacute	15	18	22	26	31	36
-Skilled Nursing	15	18	22	26	31	36
Residential Treatment						
-Substance Abuse	92	110	131	156	184	217
-Mental Health	37	44	53	62	74	87
Short-Term Residential						
-Emergency Housing	29	35	42	49	58	69
-Respite Care	27	33	39	47	55	65
Long-Term Residential						
-Dependent Living	12	15	18	21	25	29
-Hospice	43	51	61	73	86	101
Independent Living						
-Indep Living/24 hr support	179	215	256	304	359	422
-Indep Living/hotels	206	248	295	350	414	487
-Group Indep Living	87	105	125	148	175	206
Other						
-Homecare and Home Hospice	264	318	378	449	531	624
-Daycare	46	55	66	78	92	108
Subtotal Receiving Care	1276	1536	1828	2169	2565	3016
Other PWAs Living at Home without Homecare	1384	1665	1983	2353	2783	3272
Total Living PWAs	2660	3201	3811	4522	5348	6288

Source: Report from the Committee on Non-Acute Services for People With AIDS, San Francisco, December 1988

AIDS Cases among Boston Residents age 15-49 as of September 1, 1988

Transmission Category	White	(%)	Black	(%)	Hispanic	(%)	Total	(%)
Homoseexual/Bisexual	362	87	53	25	25	51	440	65
Intravenous Drug User	23	6	83	39	17	13	123	18
All other risks*	31	7	78	36**	7	14	116	17
Total (% of cases)	416	61	214	32	49	7	679	100

*Includes hemophiliac, blood transfusion and undetermined risk factors
**55/214 (26%) of Black cases are heterosexuals born in African/Carribean countries

Source: The Boston AIDS Consortium: Task Force Reports and Preliminary Recommendations

Attachment # 1

A-5-2

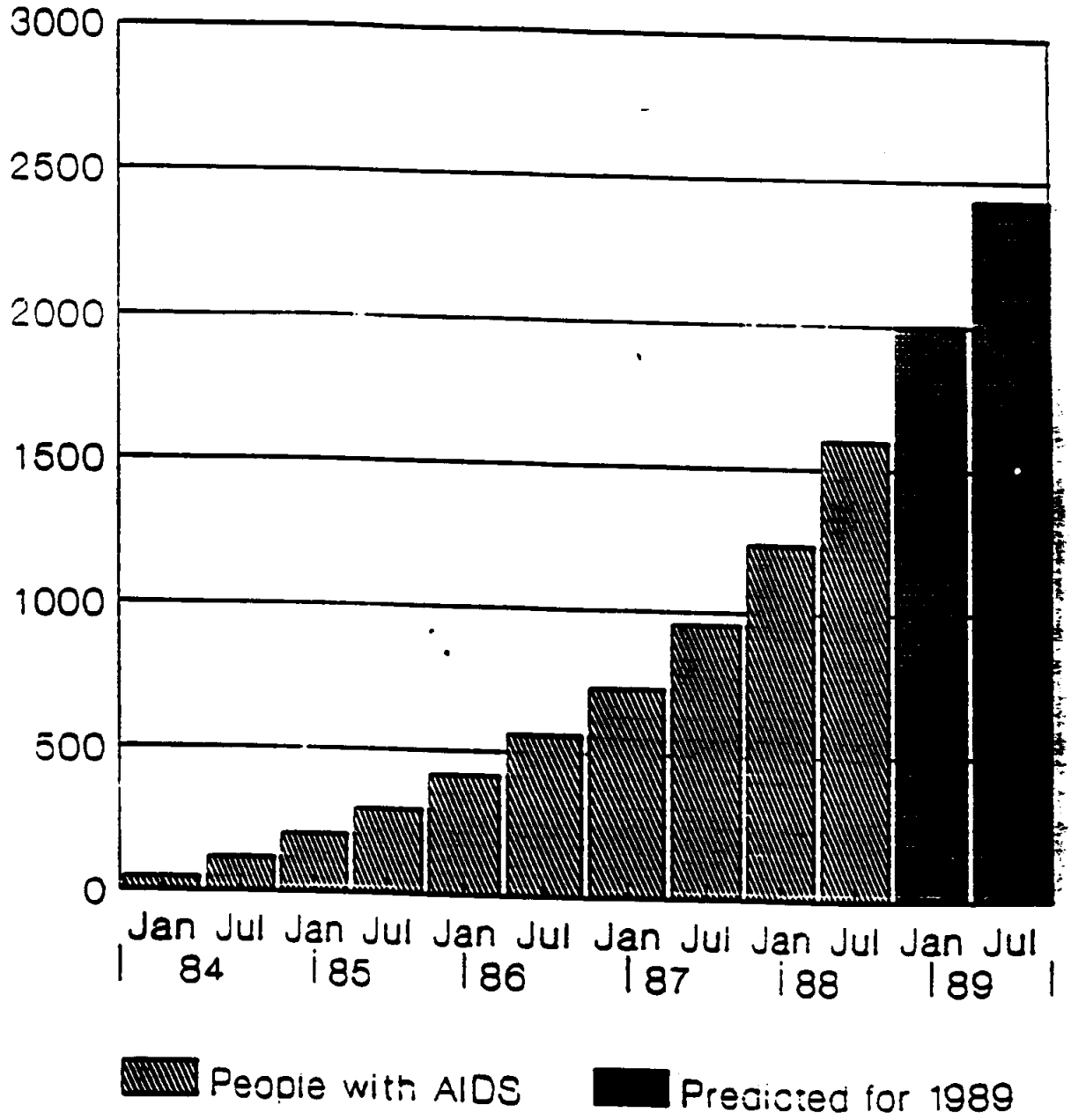
Attachment # 14

Acquired Immunodeficiency Syndrome (AIDS)
Definitive and Presumptive AIDS Cases
Surveillance Report - September 1, 1988

5. Reported Cases of AIDS and Case-Fatality Rates by Half-Year of Diagnosis.

Half-Year of Diagnosis	Number of Cases	Number of Deaths	Case-Fatality Rate
Before 1980	2	1	50%
1980 Jan -June	1	1	100%
July-Dec	0	0	—
1981 Jan -June	3	3	100%
July-Dec	4	4	100%
1982 Jan -June	6	5	83%
July-Dec	15	14	93%
1983 Jan -June	23	22	96%
July-Dec	44	33	75%
1984 Jan -June	54	43	80%
July-Dec	87	62	71%
1985 Jan -June	94	72	77%
July-Dec	140	107	76%
1986 Jan -June	167	114	68%
July-Dec	189	105	56%
1987 Jan -June	284	111	39%
July-Dec	285	82	29%
1988 Jan -June	278	58	21%
July-Sep 1	70	3	4%
Totals	1746	840	48%

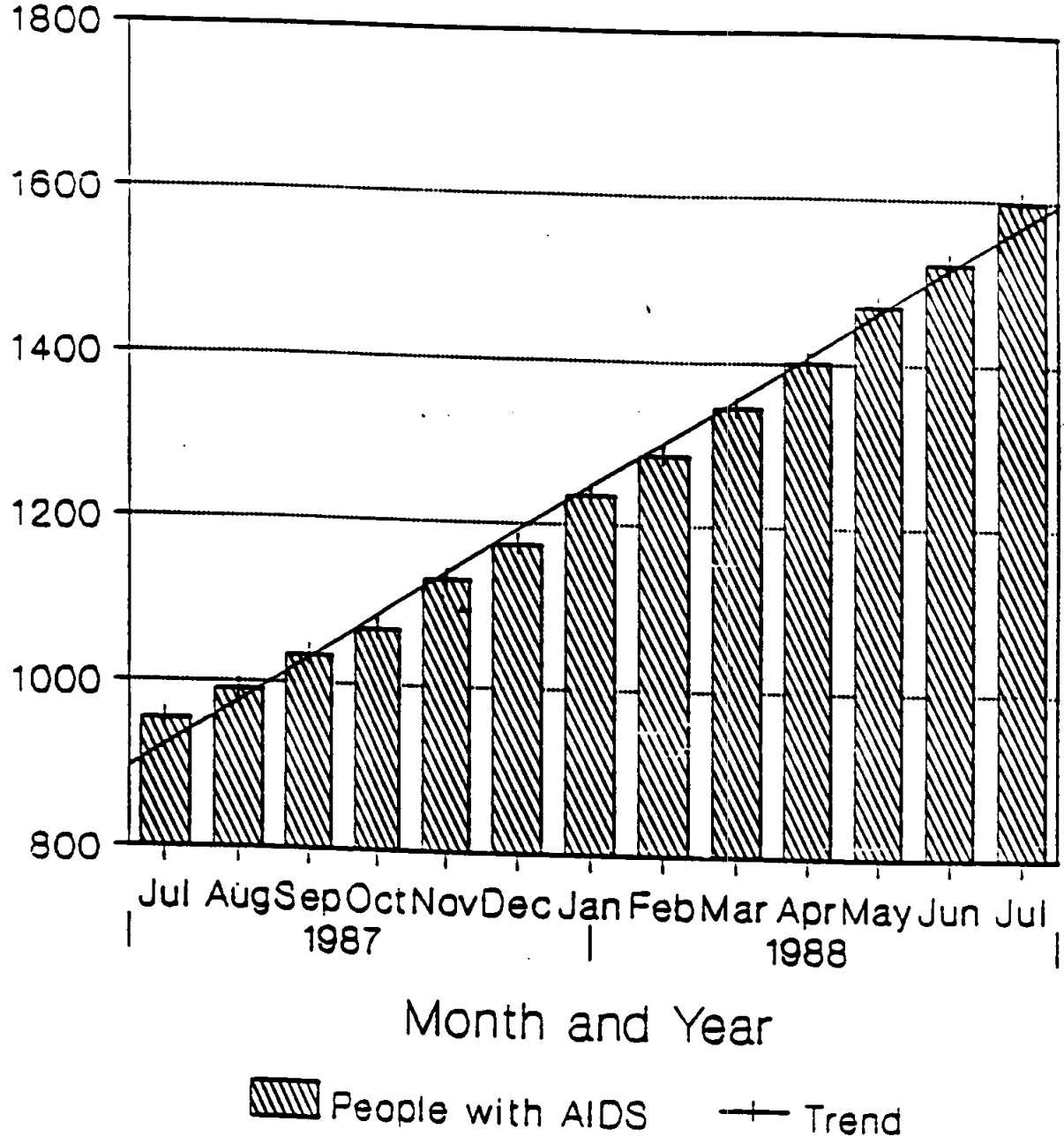
Rate of Increase of AIDS Over 6 Years In Massachusetts



Source: George Seage. Epidemiologist
Mass. Dept. of Health & Hospitals
Compiled By Simon Levin

Prediction For 1989 Calculated by Taylor Expansion

Rate of Increase of AIDS
Over one Year In Massachusetts



Source: George Seage, Epidemiologist
Mass. Dept. of Health & Hospitals
Compiled By Simon Levin

CUMULATIVE ADULT CASES RISK BY RACE BY SEX

Attachment #

MALES

	BLACK	WHITE	HISPANIC	ASIAN/NATIVE AMERICAN*	OTHER	TOTAL
SEX WITH MEN AT RISK	1727	5544	1504	84	13	8,872 (59)
SEX WITH MEN AT RISK/IVDU	273	249	217	3	0	742 (5)
IVDU	1997	683	1896	6	9	4,591 (30)
PERSONS FROM COUNTRIES WHERE RISKS ARE UNCLEAR	258	1	0	0	0	259 (2)
SEX WITH WOMEN AT RISK	4	2	1	0	0	7 (<1)
TRANSFUSION	14	27	11	2	0	54 (<1)
BLOOD PRODUCTS	1	24	6	0	0	31 (<1)
NO IDENTIFIED RISK	17	11	23	2	0	53 (<1)
OTHER**	162	115	160	6	22	465 (3)
TOTALS (%)	4453 (30)	6656 (44)	3818 (25)	103 (1)	44 (<1)	15,074

FEMALES

RISK	BLACK	WHITE	HISPANIC	ASIAN/NATIVE AMERICAN*	OTHER	TOTAL (%)
SEX WITH MEN AT RISK	198	66	231	2	1	498 (24)
IVDU***	691	178	393	3	1	1,266 (60)
PERSONS FROM COUNTRIES WHERE RISKS ARE UNCLEAR	78	0	0	0	0	78 (4)
TRANSFUSION	13	12	4	1	0	30 (1)
BLOOD PRODUCTS	2	1	0	0	0	3 (<1)
NO IDENTIFIED RISK	15	7	8	0	0	30 (1)
OTHER**	118	45	51	2	2	218 (10)
TOTALS (%)	1115 (53)	309 (15)	687 (32)	8 (<1)	4 (<1)	2,123
TOTAL MALE AND FEMALE BY RACE (%)	5568 (32)	6965 (41)	4505 (26)	111* (1)	48 (<1)	17,197

*Includes 104 Asian/Pacific Islanders and 7 Native American/Alaskans.

**Includes persons who died before interview; those who refused to be interviewed (or whose doctor refused); persons still under investigation for risk; and those pending confirmation of transfusion.

***Data is not routinely collected on the number of these women who also have sex with a man at risk.

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AGE GROUPINGS BY GENDER/RISK

Attachment # 1

MALES

	13-19	20-24	25-29	30-39	40-49	50+	Age Unk.	Total	(%)
SEX WITH MEN AT RISK	8	231	1105	3867	2455	1137	69	8,872	(59)
SEX WITH MEN AT RISK/IVDU	2	18	116	426	139	27	14	742	(5)
IVDU	3	73	459	2599	1125	294	38	4,591	(30)
PERSONS FROM COUNTRIES WHERE RISKS ARE UNCLEAR	0	13	71	115	34	17	9	259	(2)
SEX WITH WOMEN AT RISK	0	0	2	0	2	3	0	7	(<1)
TRANSFUSION	0	0	4	6	9	35	0	54	(<1)
BLOOD PRODUCTS	7	3	5	9	4	3	0	31	(<1)
NO IDENTIFIED RISK	0	1	2	14	18	18	0	53	(<1)
OTHER*	3	19	51	123	117	127	25	465	(3)
TOTALS (%)	23 (<1)	358 (2)	1815 (12)	7159 (47)	3903 (26)	1661 (11)	155 (1)	15,074	

FEMALES

	13-19	20-24	25-29	30-39	40-49	50+	Age Unk.	Total	(%)
SEX WITH MEN AT RISK	5	52	129	224	60	28	0	498	(23)
IVDU**	2	44	218	783	172	40	7	1,266	(60)
PERSONS FROM COUNTRIES WHERE RISKS ARE UNCLEAR	1	5	22	38	3	9	0	78	(4)
TRANSFUSION	1	1	2	6	5	15	0	30	(1)
BLOOD PRODUCTS	0	1	0	2	0	0	0	3	(<1)
NO IDENTIFIED RISK	0	2	4	8	9	7	0	30	(1)
OTHER*	0	10	33	88	42	40	5	218	(10)
TOTALS (%)	9 (<1)	115 (5)	408 (19)	1149 (54)	291 (14)	139 (7)	12 (1)	2,123	

*Includes persons who died before interview; those who refused to be interviewed (or whose doctor refused); persons still under investigation for risk; and those pending confirmation of transfusion.

**Data is not routinely collected on the number of these women who also report sex with a man at risk.

Attachment #

NEW YORK CITY SURVEILLANCE - REPORTING PERIOD: October 13 - November 10, 1988

	New Cases	Total Cases to Date	
	N	N	(%)
MALES	364	15,074	(86)
FEMALES	92	2,123	(12)
TOTAL ADULTS	456	17,197	
TOTAL CHILDREN	17	366	(2)
TOTAL CASES	473	17,563	(100)

CDC Surveillance Report, 11/ 7/88: Total U.S. cases = 76,764
Total New York City cases = 23% of U.S. total

Attachment # 20

NEW YORK CITY SURVEILLANCE - REPORTING PERIOD: October 13 - November 10, 1

ADULT CASES DIAGNOSED SINCE JANUARY 1, 1988
BY GENDER AND RISK

	Male (%)	Female (%)	Total (%)
SEX WITH MEN AT RISK	1299 (48)	133 (24)	1432 (44)
SEX WITH MEN AT RISK/IVDU*	82 (3)	**	82 (3)
IVDU	1088 (40)	326 (59)	1414 (44)
PERSONS FROM COUNTRIES WHERE RISKS ARE UNCLEAR	33 (1)	18 (3)	51 (2)
SEX WITH WOMEN AT RISK	0	0	0
TRANSFUSION	17 (1)	4 (1)	21 (<1)
BLOOD PRODUCTS	7 (<1)	1 (<1)	8 (<1)
OTHER***	172 (6)	70 (13)	242 (7)
TOTAL	2698	552	3250

* Intravenous drug user.
** Data is not routinely collected on the number of IVDU women who also report sex with a man at risk.
***Includes persons who died before interview, who refused investigation or whose doctor refused, and persons still under investigation for risk, and possible transfusion associated cases awaiting verification.

Attachment # 2

NEW YORK CITY SURVEILLANCE - REPORTING PERIOD: October 13 - November 10, 1988

CHILDREN WITH AIDS

	TOTAL	Known Deaths	(%)
Male	185	117	(63)
Female	181	115	(64)
TOTAL	366	232	(63)

New cases this month: 17

Total New York City cases: 366*
CDC Total pediatric cases: 1230

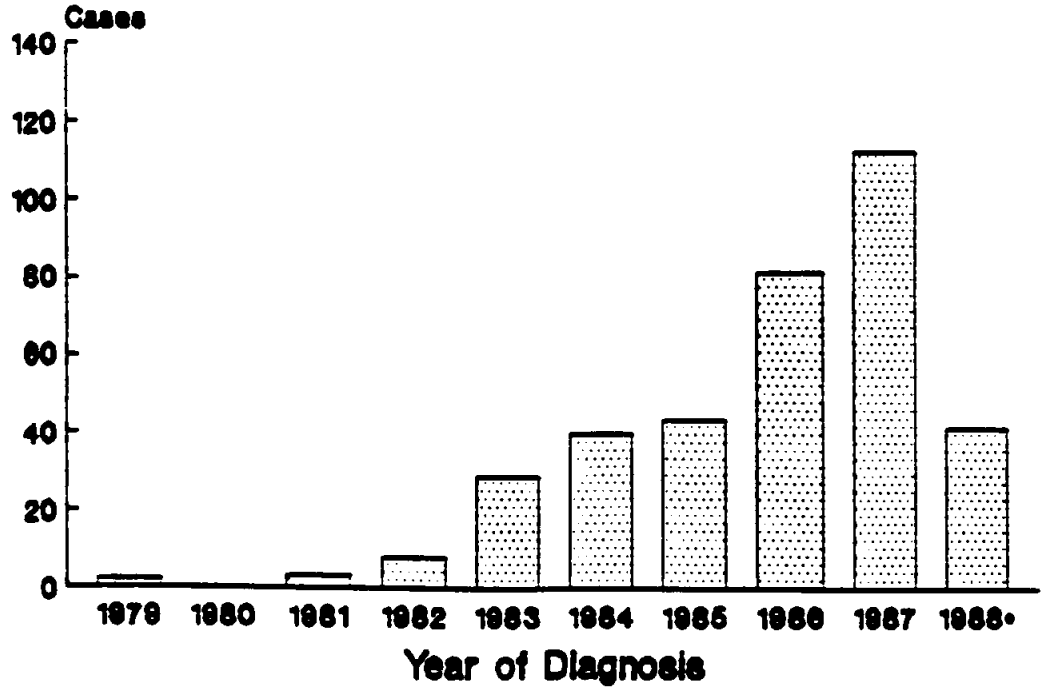
*Includes 72 (20%) reported cases meeting expanded CDC definition only. In 1988 59 (51%) of reported cases meet only the expanded definition.

FREQUENCY OF OPPORTUNISTIC INFECTIONS (Up to 3 diagnoses per case)

Pneumocystis carinii pneumonia	183	(50)
Lymphocytic interstitial pneumonitis	77	(21)
M. avium-intracellulare	38	(10)
Candida (esophagitis or pulmonary)	34	(9)
Cytomegalovirus (disseminated)	32	(9)
Bacterial Infections	32	(9)
HIV Wasting Syndrome	20	(5)
Herpes simplex virus	16	(4)
HIV Encephalopathy	14	(4)
Cryptosporidiosis	14	(4)
Lymphoma	6	(2)
Cryptococcal meningitis	2	(1)

INCIDENCE OF PEDIATRIC AIDS

NEW YORK CITY, November 1988



• Preliminary Data

NEW YORK CITY SURVEILLANCE - REPORTING PERIOD: October 13 - November 10, 1988

RISK GROUP INFORMATION FOR NYC PEDIATRIC AIDS CASES, NOVEMBER 1988

	Number	Percent
Probable maternal transmission		
IV drug use by mother	227	62
IV drug use by father only	42	11
Both parents from countries where AIDS cases have unidentified risk	22	6
Mother is former sex partner of IVDA	13	4
Mother is former sex partner of bisexual	1	<1
Father is bisexual	3	1
Transfusion associated		
With blood/blood products	15	4
Hemophilia/Coagulation Disorder	2	1
Interviewed - no risk identified	1	<1
Incomplete information on parents		
Unlocatable	3	1
Refused interview	2	1
Under investigation	35	10
TOTAL:	366	
Parents with AIDS (excluding tranfusion-associated cases)	39	11

RACE/ETHNICITY OF MOTHERS OF PEDIATRIC AIDS CASES

	Number	Percent
Black	210	57
Hispanic	120	33
White	36	10
TOTAL	366	

AIDS Cases Among Adult/Adolescent Massachusetts Residents as of Sept. 1,1988

Patient Groups	Males	(%)	Females	(%)	Total	(%)
Homosexual/Bisexual Men	1096	70	0	0	1096	64
Intravenous Drug User	211	16	67	43	278	16
Homo/Bi IV Drug User	70	6	0	0	70	4
Coagulant Disorders	25	2	2	1	27	2
Heterosexual Contact*	88	6	57	36	145	8
Transfusion w/Blood Products	32	2	26	17	58	3
None of the above/other	36	2	5	3	41	2
Total	1556	100	157	100	1713	100

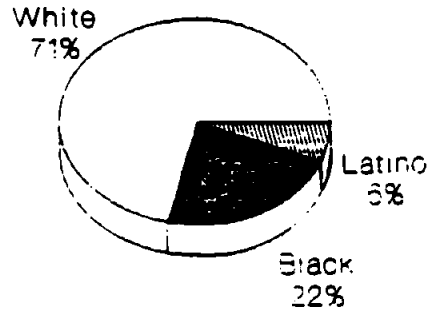
*Includes 55 cases who had contact with a PWA or person at risk for AIDS and 90 cases without identified risks who were born in countries in which heterosexual transmission is believed to play a major role

Source: The Boston AIDS Consortium: Task Force Reports and Preliminary Recommendations, November, 1988

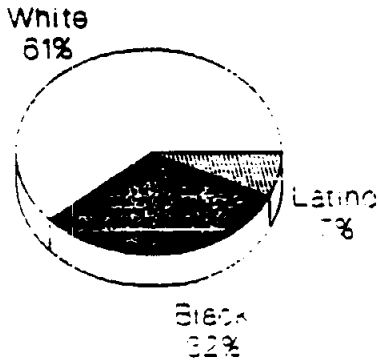
Boston Race/Ethnicity Breakdown

Population vs. AIDS Cases, Age 15-49

Cumulative Data Through Sept.1, 1988



Boston Population
(1980 Census, Age 15-49)

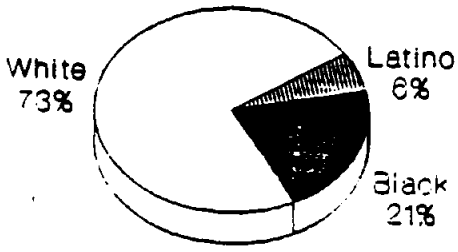


Boston AIDS Cases
N=679

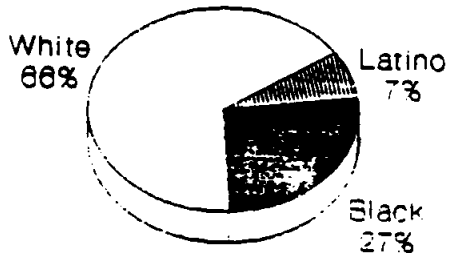
Source: AIDS Surveillance Program, BDHH

Boston Males, Age 15-49
Population vs. AIDS Cases

Attachment # 25



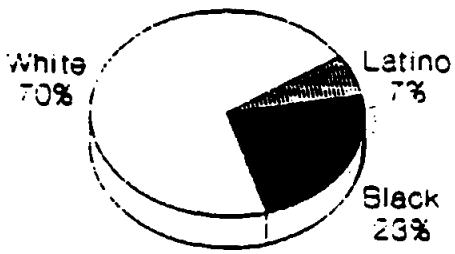
Boston Male Population
(1980 Census, Age 15-49)



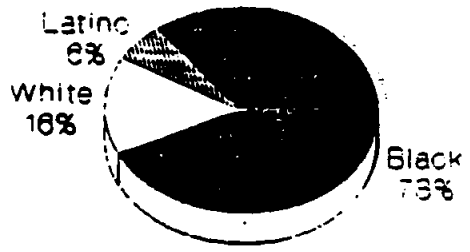
Boston Male AIDS Cases
(Cumulative Sept.1, 1988)

N=615

Boston Females, Age 15-49
Population vs. AIDS Cases



Boston Female Population
(1980 Census, Age 15-49)



Boston Female AIDS Cases
(Cumulative Sept.1, 1988)

N=64

Source: AIDS Surveillance Program, BDHH

Attachment # 26

AIDS INCIDENCE RATES BY RACE
MASSACHUSETTS CASES BY AREA OF RESIDENCE
SEPTEMBER 1, 1988

AGE 15-49

Race	BOSTON RESIDENTS # Cases	(%)	Population 1980	(%)	Rate Per 100,000	NONBOSTON RESIDENTS # Cases	(%)	Population 1980	(%)	Rate Per 100,000	TOTAL MASSACHUSETTS RESIDENTS # Cases	(%)	Population 1980	(%)	Rate Per 100,000
White	416	(61)	227925	(71)	182.5	552	(77)	2466876	(96)	22.4	968	(69)	2694801	(93)	35.9
Black	214	(32)	71156	(22)	300.7	83	(12)	48697	(2)	170.4	297	(21)	119853	(4)	247.8
Hispanic	49	(7)	20677	(6)	239.3	84	(12)	55219	(2)	152.1	133	(10)	75696	(3)	175.7
Total (% cases)	679	(49)	319558	(11)	212.5	719	(51)	2570792	(89)	28.0	1398	(100)	2890350	(100)	48.4

Source: AIDS Surveillance Program, BDHH

AIDS INCIDENCE RATES BY RACE AND SEX
SEPTEMBER 1, 1988

Attachment # 2

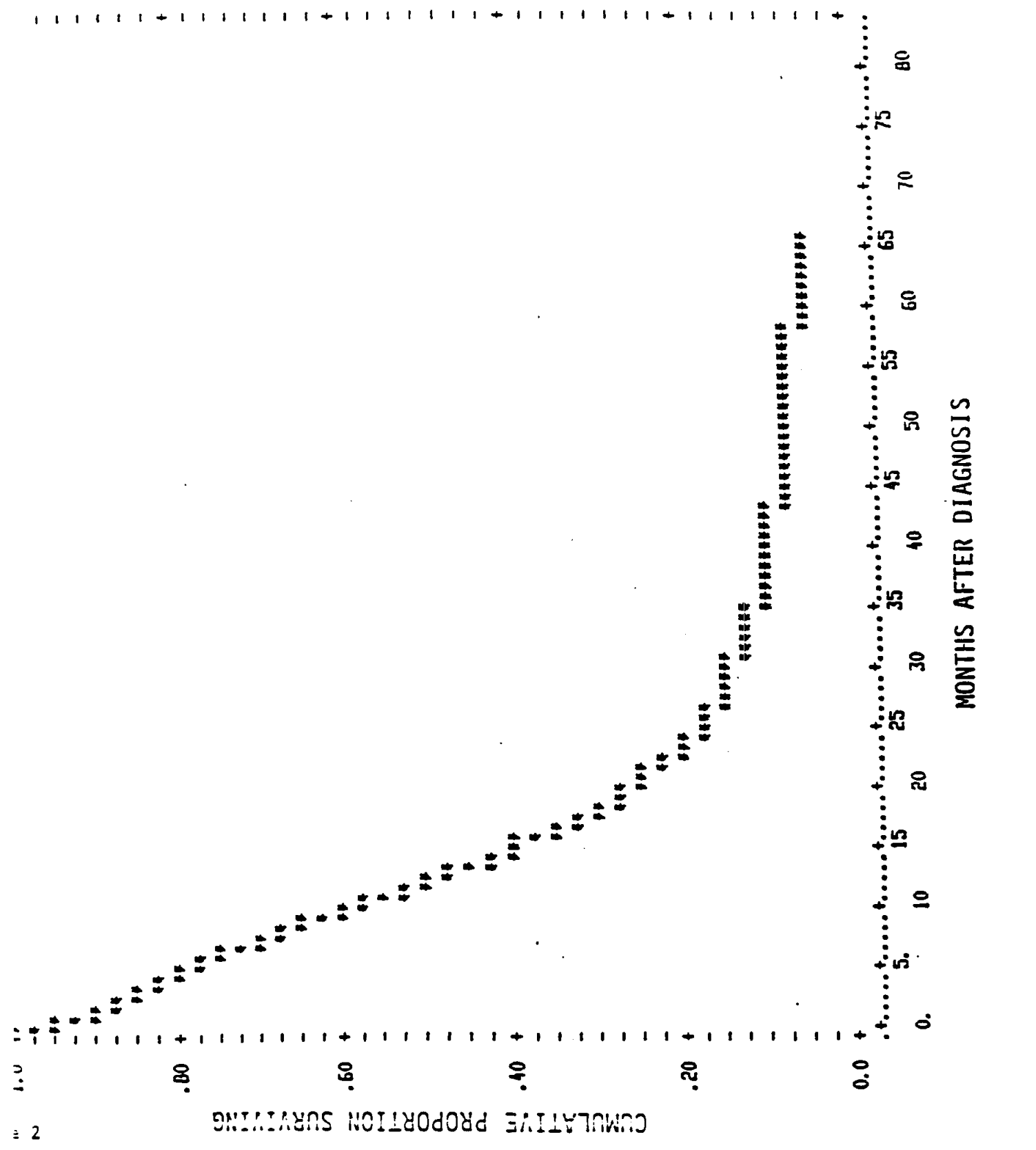
MALES AGE 15-49

Race	BOSTON MALES # Cases	(%)	Population 1980	(%)	Rate Per 100,000	NONBOSTON MALES # Cases	(%)	Population 1980	(%)	Rate Per 100,000	TOTAL MASSACHUSETTS MALES # Cases	(%)	Population 1980	(%)	Rate Per 100,000
White	406	(66)	112330	(73)	361.4	514	(78)	1210181	(96)	42.5	920	(72)	1322511	(93)	69.6
Black	164	(27)	32421	(21)	505.8	69	(11)	24214	(2)	285.0	233	(18)	56635	(4)	411.4
Hispanic	45	(7)	9623	(6)	467.6	73	(11)	26423	(2)	276.3	118	(9)	36046	(3)	327.4
Total (% cases)	615	(48)	154374	(11)	398.4	656	(52)	1260818	(89)	52.0	1271	(100)	1415192	(100)	89.8

FEMALES AGE 15-49

Race	BOSTON FEMALES # Cases	(%)	Population 1980	(%)	Rate Per 100,000	NONBOSTON FEMALES # Cases	(%)	Population 1980	(%)	Rate Per 100,000	TOTAL MASSACHUSETTS FEMALES # Cases	(%)	Population 1980	(%)	Rate Per 100,000
White	10	(16)	115595	(70)	8.7	38	(60)	1256695	(96)	3.0	48	(38)	1372290	(93)	3.5
Black	50	(78)	38735	(23)	129.1	14	(22)	24683	(2)	57.2	64	(50)	63218	(4)	101.2
Hispanic	4	(6)	10856	(7)	36.9	11	(17)	28796	(2)	38.2	15	(12)	39650	(3)	37.8
Total (% cases)	64	(57)	165184	(11)	38.7	63	(56)	1309976	(89)	4.8	127	(100)	1475158	(100)	8.6

Source: AIDS Surveillance Program, BDHH


CUMULATIVE PROPORTION SURVIVING
1.0
.80
.60
.40
.20
0.0
0.
5.
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
MONTHS AFTER DIAGNOSIS

AIDS Cases by initial diagnosis, San Francisco, 1981 - 1988(1). Cases meeting the old case definition for AIDS

Initial Diagnosis (old definition)	N	Percent
Pneumocystis carinii pneumonia; definitive	2445	55.9
Kaposi's sarcoma, (60 yrs.; definitive	1165	26.7
Cryptococcosis, extrapulmonary; definitive	136	3.1
Non-Hodgkins lymphoma, HIV+; definitive	118	2.7
Mycobacterium avium complex or M. Kansasii disease, disseminated; definitive	65	1.5
Candidiasis of the esophagus, trachea, bronchi, or lungs; definitive	65	1.5
Cryptosporidiosis, chronic intestinal; definitive	60	1.4
Cytomegalovirus disease; definitive	52	1.2
Toxoplasmosis of the brain; definitive	25	0.6
Primary lymphoma of the brain, (60 yrs.; definitive	19	0.4
Progressive multifocal leukoencephalopathy; definitive	15	0.3
Herpes simplex virus infection; definitive	11	0.3
Histoplasmosis; disseminated; HIV+; definitive	6	0.1
Isosporiasis, chronic intestinal, HIV+; definitive	4	0.1
Lymphoid interstitial pneumonia/pulmonary lymphoid hyperplasia, (13 yrs.; definitive	2	0.0
Subtotal (old definition)	4188	95.8

Attachment # 2

AIDS Cases by initial diagnosis, San Francisco, 1981 - 1988(1). Cases meeting the new case definition for AIDS

Initial Diagnosis (new definition)	N	Percent
HIV encephalopathy ("AIDS dementia"); definitive	45	1.0
Toxoplasmosis of the brain; presumptive	37	0.8
Pneumocystis carinii pneumonia; presumptive	31	0.7
HIV wasting syndrome; definitive	22	0.5
Cytomegalovirus retinitis with loss of vision; presumptive	12	0.3
Kaposi's sarcoma; presumptive	11	0.3
Candidiasis of the esophagus; presumptive	9	0.2
M. tuberculosis, extrapulmonary; definitive	8	0.2
Mycobacterial disease (not M. tuberculosis), disseminated; definitive	3	0.1
Coccidioidomycosis, disseminated; definitive	2	0.0
Salmonella septicemia, recurrent; definitive	2	0.0
Mycobacterial disease (unspecified species), disseminated; presumptive	1	0.0
Subtotal (new definition)	183	4.2
Total	4371	100.0

Attachment # 30

Attachment # 31

Boston AIDS Cases as of 10/31/88

Primary Diagnosis (hierarchical order)	Number	%
Pneumocystis carinii Pneumonia	459	58%
Other Opportunistic Diseases	236	30%
Kaposi's Sarcoma	92	12%
Total	787	100%

Age	Number	%
Under 13	13	2%
13-19	2	0%
20-29	161	20%
30-39	412	52%
40-49	154	20%
Over 49	45	6%
Total	787	100%

Source: The Boston AIDS Consortium: Task Force Reports and Preliminary Recommendations, November, 1988

Attachment # 32

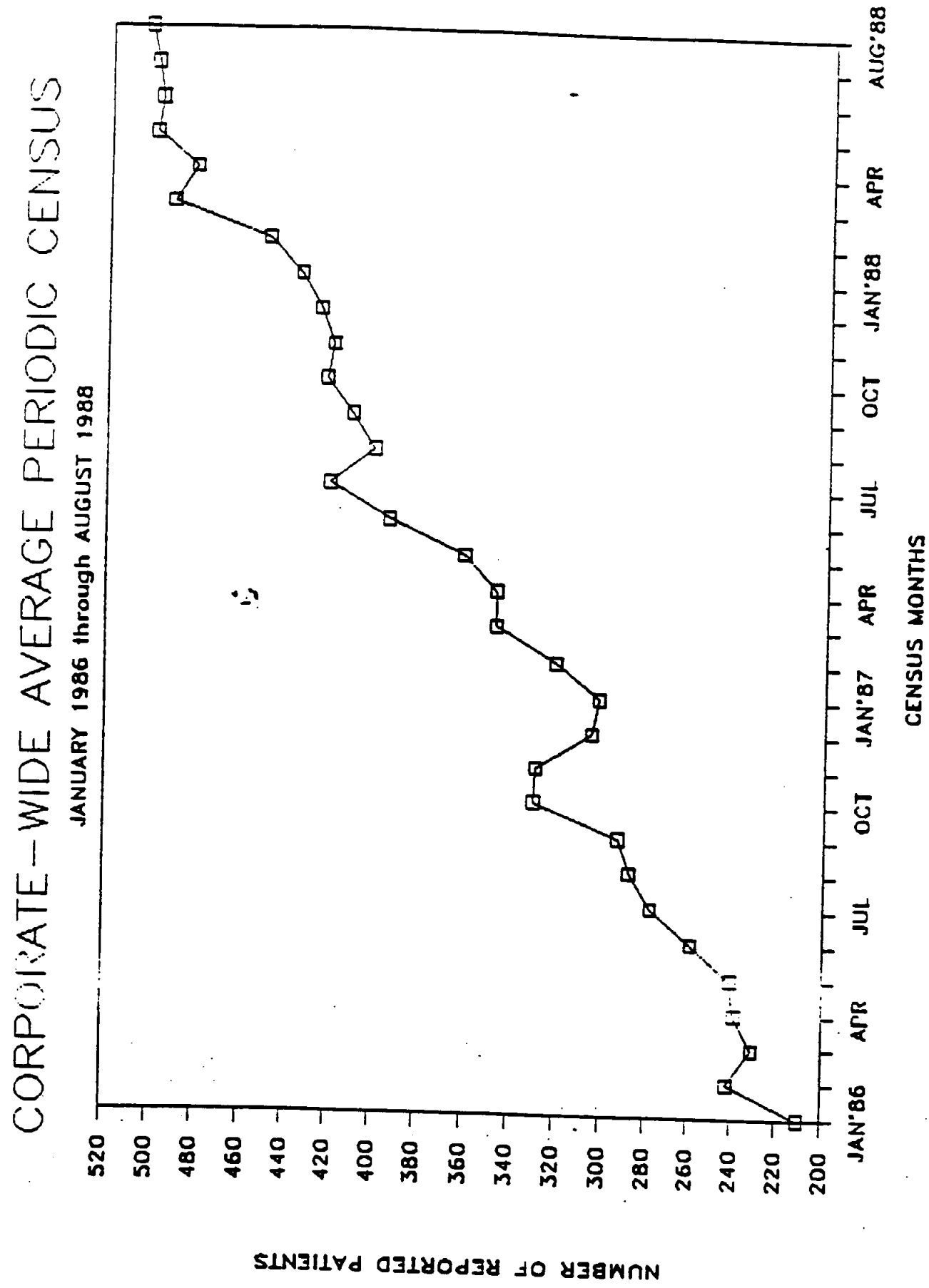
NEW YORK CITY SURVEILLANCE - REPORTING PERIOD: October 13 - November 10, 1988

FREQUENCY* OF DIAGNOSES IN ADULT AIDS CASES
(Diagnosis seen in at least 1% of all cases)

Diagnosis	Definitive	Presumptive	Total Cases	(%)
1. Pneumocystis carinii pneumonia	10,362	420	10,782	(63)
2. Kaposi's Sarcoma	2,878	43	2,921	(17)
3. Candida esophagitis	1,117	239	1,356	(8)
4. Cryptococcal meningitis	1,235	-	1,235	(7)
5. Toxoplasmosis	281	266	547	(3)
6. Herpes simplex virus	344	-	344	(2)
7. Cryptosporidiosis	336	-	336	(2)
8. HIV Wasting Syndrome	308	-	308	(2)
9. Lymphoma	293	-	293	(2)
10. Tuberculosis	234	6	240	(1)
11. HIV Encephalopathy	234	-	234	(1)

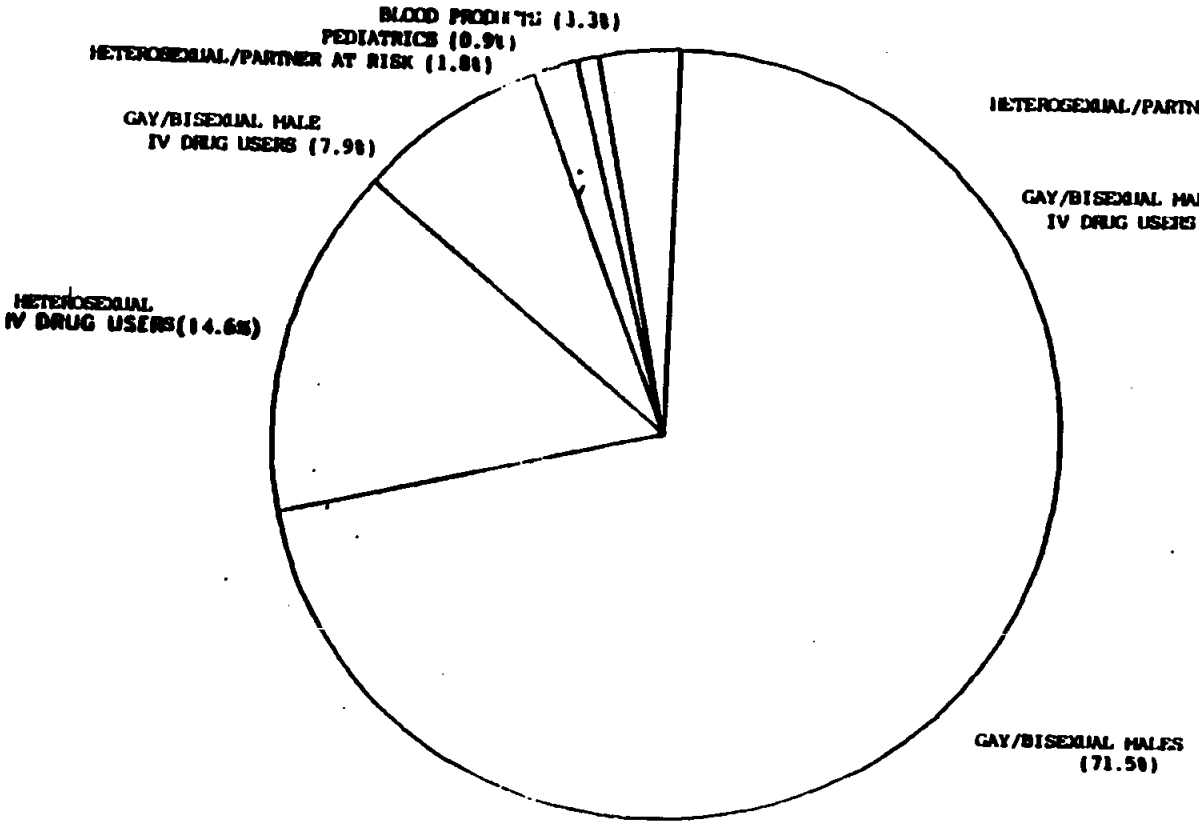
* Multiple diagnoses possible for each case. Mycobacterium avium and cytomegalovirus are temporarily deleted from this table pending recoding of diagn

Attachment # 33



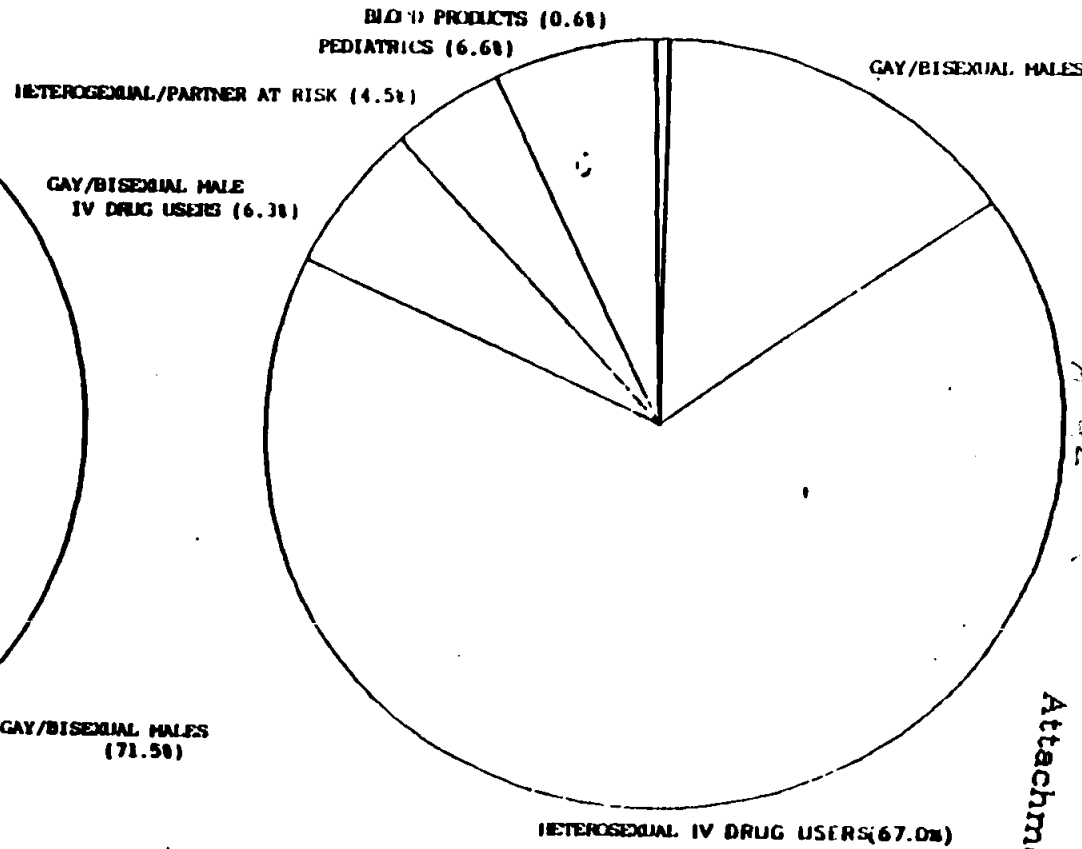
DISTRIBUTION OF AIDS CASES BY TRANSMISSION CATEGORIES

NATION-WIDE



Source: CDC Weekly Surveillance Data (1987)

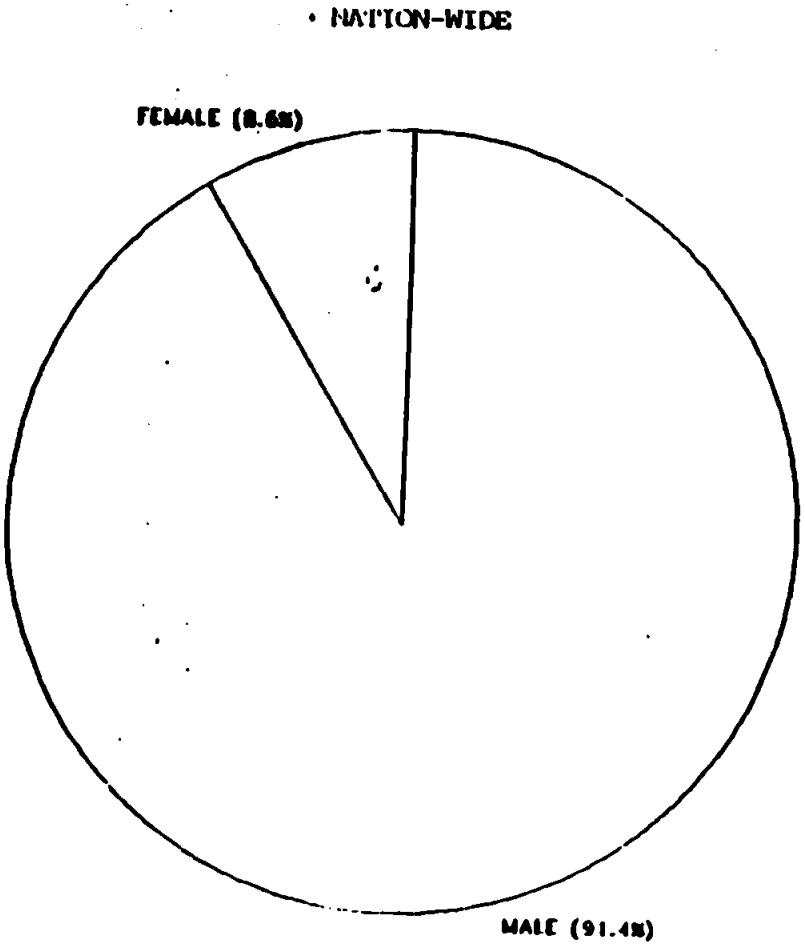
NYCHHC



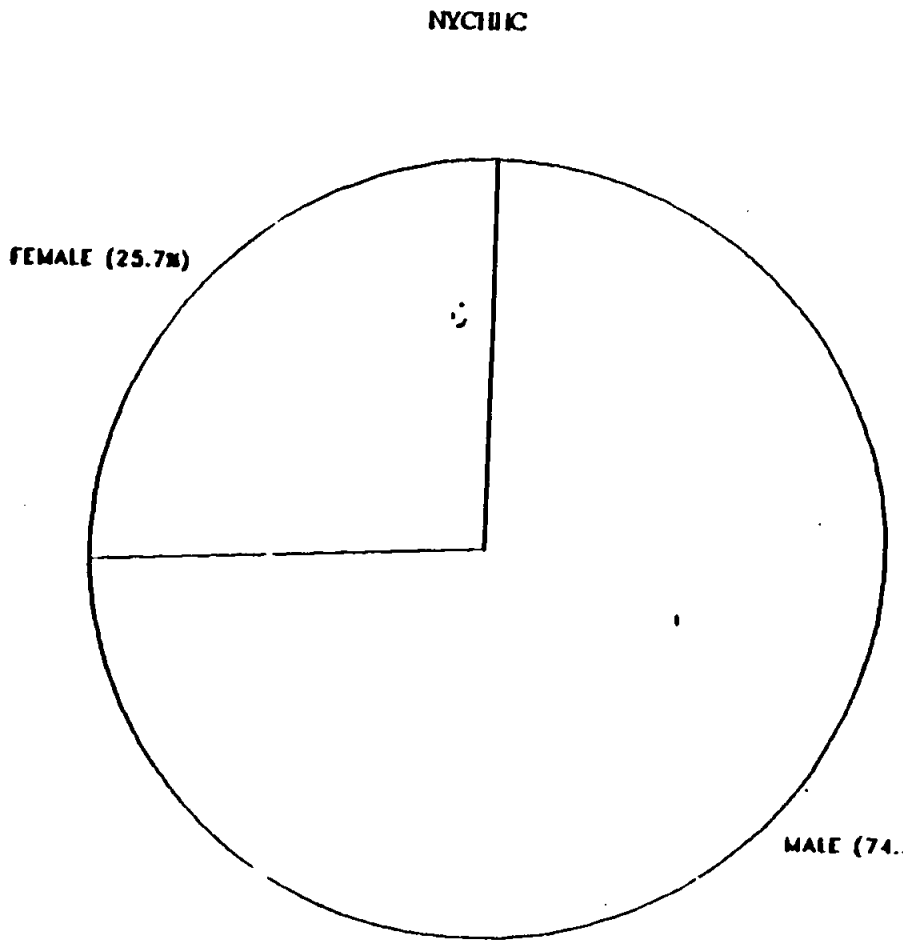
Source: NYCHHC AIDS Discharge Database (1987)

Attachment # 34

DISTRIBUTION OF AIDS CASES BY SEX



Source: CDC Weekly Surveillance Data (1987)

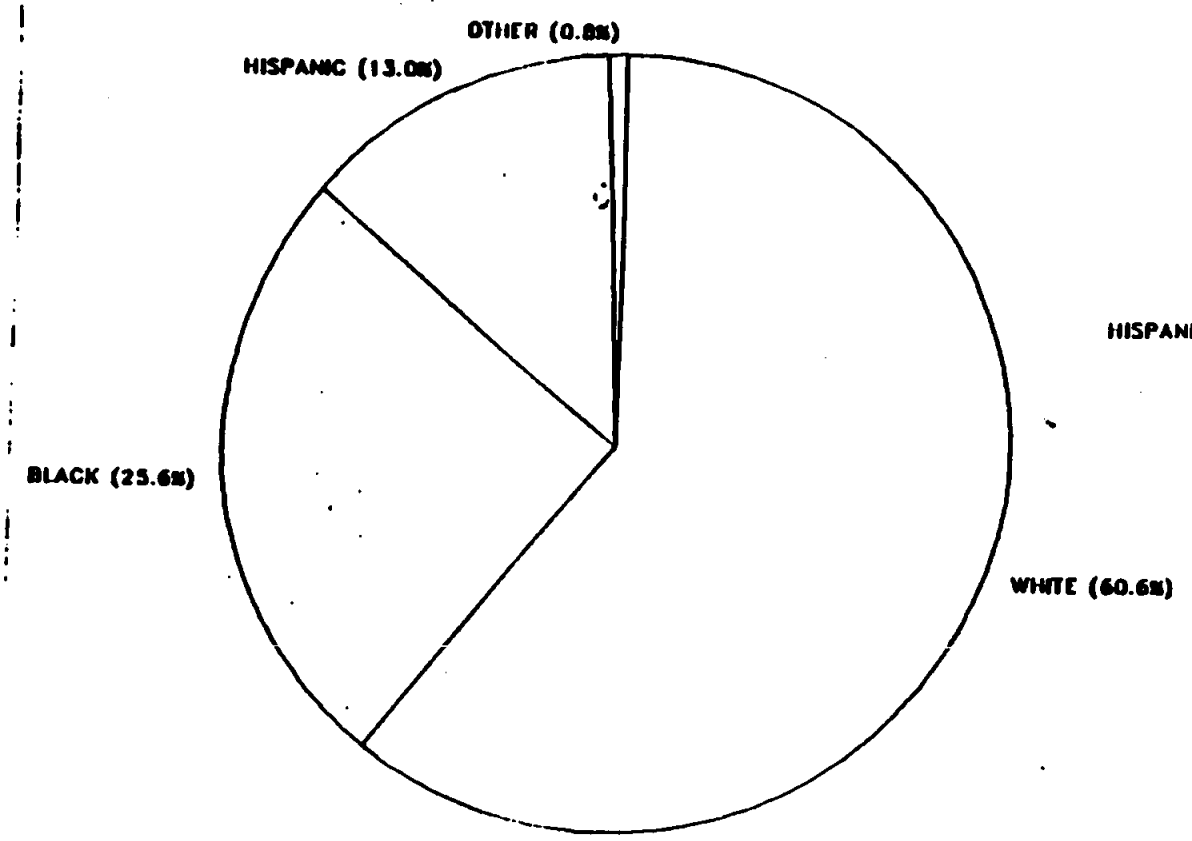


Source: NYCHHC AIDS Discharge Database (1987)

Attachment # 35

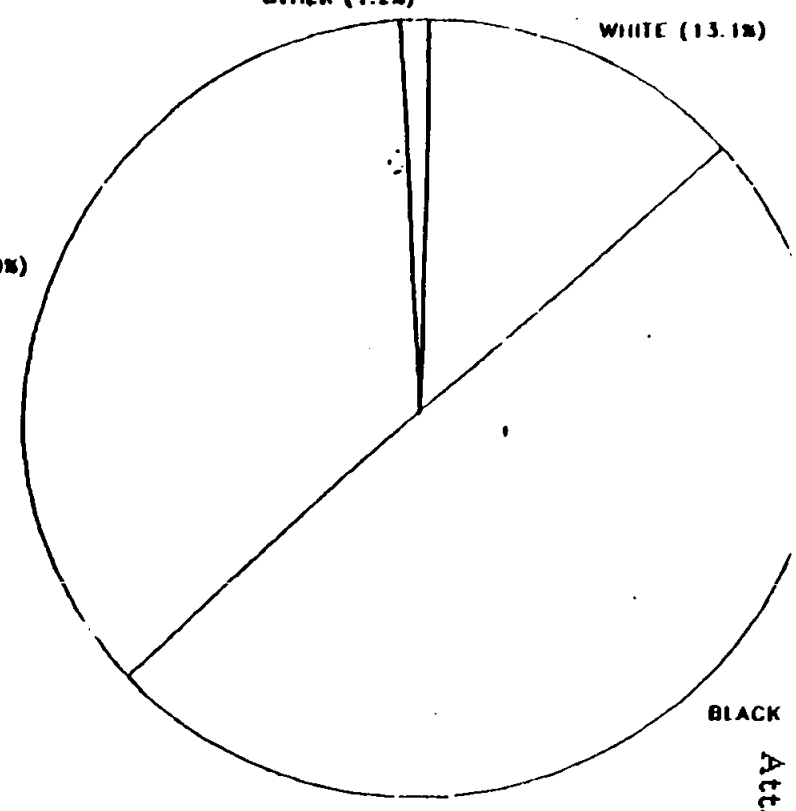
DISTRIBUTION OF AIDS CASES BY ETHNICITY

NATION-WIDE



Source: CDC Weekly Surveillance Data (1987)

NYCHHC



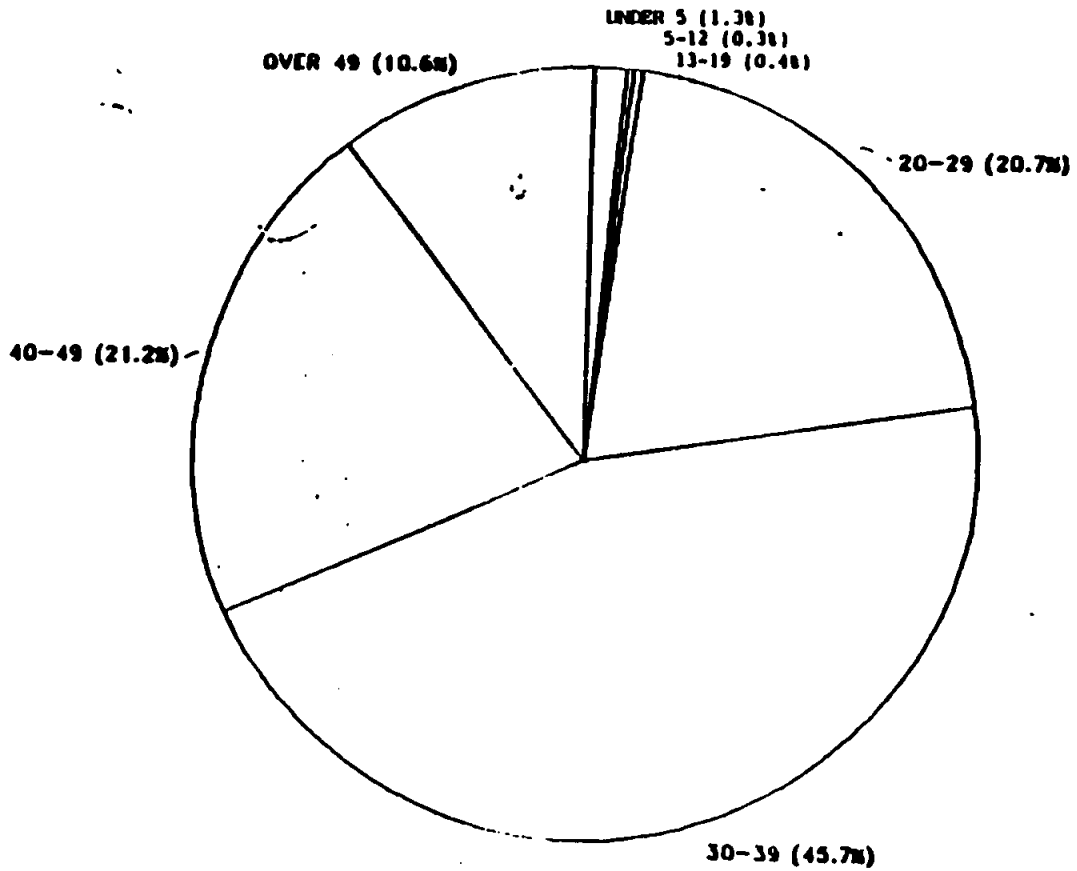
Source: NYCHHC AIDS Discharge Database (1987)

A-44

Attachment # 35

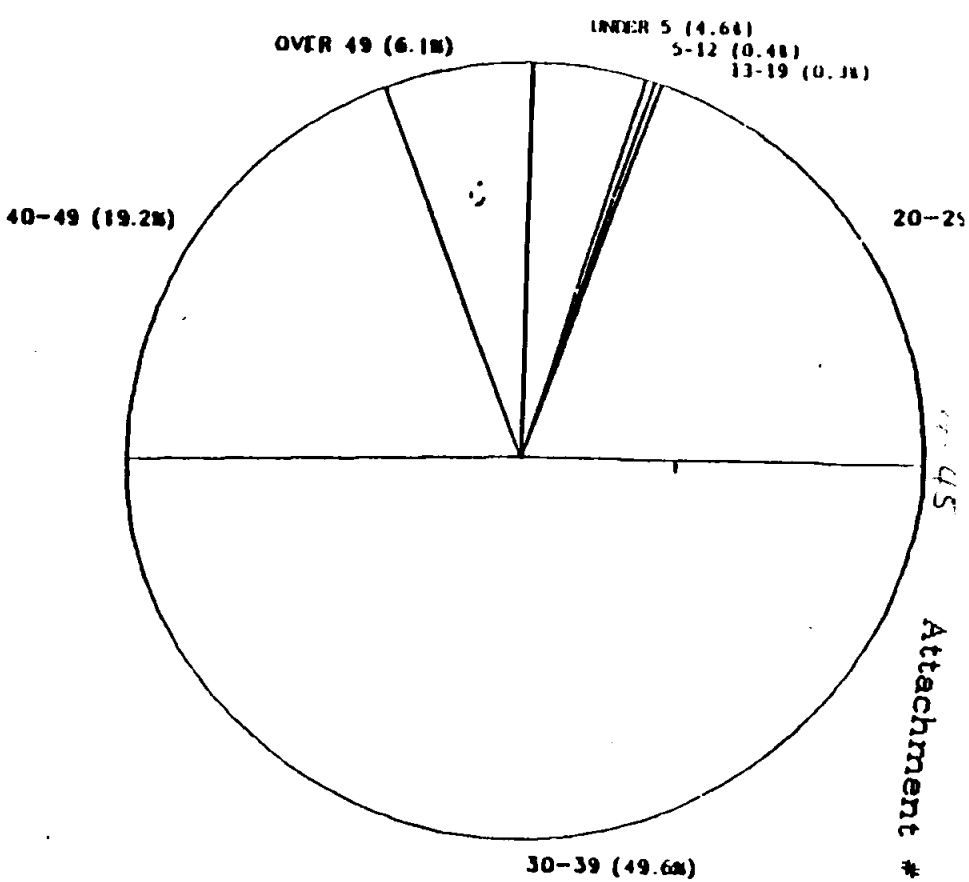
DISTRIBUTION OF AIDS CASES
BY AGE (YEARS)

NATION-WIDE



Source: CDC Weekly Surveillance Data (1987)

NYCHHC



Source: NYCHHC AIDS Discharge Database (1987)

45

Attachment # 37

NATIONAL TRENDS IN THE SPREAD OF THE AIDS
AMONG FEMALES, IV DRUG USERS, AND BY ETHNICITY

	JANUARY 1987 through JUNE 1987	JULY 1987 through DECEMBER 1987		JANUARY 1988 through JUNE 1988	
	(%)	(%)	PERIOD -TO- PERIOD VARIANCE	(%)	PERIOD -TO- PERIOD VARIANCE
FEMALES	7.4%	9.6%	29.7%	10.8%	12.5%
IV DRUG USERS	14.4%	19.2%	33.3%	23.6%	22.9%
ETHNICITY: WHITE	63.4%	58.4%	-7.9%	53.6%	-8.2%
BLACK	23.2%	27.5%	18.5%	28.8%	4.7%
HISPANIC	12.6%	13.4%	6.3%	16.7%	24.6%
OTHER	0.8%	0.7%	-12.5%	0.9%	28.6%

Source: Based on CDC Weekly Surveillance Data.
(These data are provisional).

APPENDIX B--INTERVIEWS

B.1 Martha Moon, Clinical Research Director, Fenway Community Health Center

Fenway Community Health Center opened in 1971 with an emphasis on the special health concerns of Boston's lesbian and gay community. In the beginning, much of the Center's work centered on Sexually Transmitted Diseases (STD) among gay men. In fact, throughout the center's history, it has maintained a patient mix where gay men have always comprised 70% of the patient population. The center has evolved over time, growing in a number of different directions as needed in the community.

Because of its unique position in Boston's gay community, Fenway Community Health Center immediately became the primary care center for People With AIDS and HIV infection in the early days of the epidemic. It was the first free standing (non-hospital) AIDS Treatment Center in the U.S. and continues to expand its health services capability with regard to HIV infection.

Martha Moon, Clinical Research Director at Fenway, summarized the current number of patient encounters per year involving possible risk of exposure to HIV infection as follows:.

Type of visit	# of visits	% of visits involving risk	total number of visits involving risk	number of patients who are HIV+
Research	1,500	100%	1,500	750
Treatment Center	5,000	100%	5,000	200
Alternative Test Site	2,400	30%	720	720
Regular Patient Visits	11,661	25%	2,967	593
			10,187	2,263

Ms. Moon explained the risks of exposure associated with each type of interaction:

- Research - Fenway received a grant from the Massachusetts State Dept of Public Health to conduct an extensive three year study on behavior change in a cohort of HIV+ homosexual men in Boston. The cohort is comprised of 750 gay men who are interviewed every six months and at the time, each man has his blood drawn to test for signs of disease progression. Ms. Moon stressed that there is no one person responsible for drawing that blood. In fact, everyone on the research team, including nurses, nurse practitioners, epidemiologist, clinician and researchers, knows how, and does draw blood. AIDS consciousness in the Center is high, ignorance around routes of transmission is low and they make a concerted effort to reduce fear, including fear

about contagion. Therefore, because it is more efficient for everyone on the research team to be available to draw blood when necessary, and there is no reason why anyone should abstain from doing so, everyone draws blood. They also seriously observe universal precautions, using needle boxes, gloves and red-bagging infectious waste, as they do throughout the rest of the center as well. This research project has been going on since 1985. Ms. Moon expects the research to continue and even to expand as they are now embarking on an adjunct study of the uninfected male partners of HIV+ gay men. They have also recently applied for an AMFAR (American Foundation for AIDS Research) grant which would allow them to release orphan and experimental drugs such as Peptide T.

- Treatment Center - The treatment center provides care specifically for AIDS patients. At the center, the whole gamut of services and treatments are provided, including, aerosolized pentamidine, IV infusions, biopsies for KS, minor cryo surgery to remove anal warts, basic dermatological care to treat rashes and KS, as well as other kinds of care like massage and psychotherapy. Moon said that Fenway also expects to very shortly be providing acupuncture and blood transfusions. In the treatment center, the phlebotomist draws most of the blood and the nurse provides most of the treatments. Universal precautions are followed.

- Alternative Test Site - Of all the people who come to the ATS to be tested for HIV, 30% test positive. According to Ms. Moon, their ATS sees 40% - 45% of all patients seen in ATS's throughout the State of Mass. Again, the phlebotomist draws most of the blood and lab technicians do the testing. Universal precautions are followed.

- Regular patient visits - Ms. Moon estimated that 30% of all patient visits involve HIV positive patients. Various procedures are conducted during these visits which may involve possible exposure. Again, universal precautions are followed.

With regard to the number of HIV+ patients in each type of visit, Ms Moon explained that there is some crossover between the categories. By design, half of the HIV+ persons participating in the research are regular Fenway patients. Similarly, half of those using the treatment Center are also regular Fenway patients. The Alternative Test Site, according to Ms. Moon, tends to serve a population distinct from the Fenway's regular patient population.

Ms. Moon counted 24 different individuals on staff at the Fenway clinic who are involved in drawing blood from HIV+ persons. She also said that there have been no needle-sticks reported in the past four years since she has been on staff. She believes that that if any staff had experienced a needle-stick that it would have been reported.

B.2 Michael Shapiro, Surgeon, Beth Israel Hospital, Boston, MA

Despite well intended hospital rules designed to prevent discrimination against HIV positive patients, many doctors and surgeons still avoid treating HIV positive patients. They do not do so by outright refusing to treat, but rather by being "homophobic and negative," causing

patients to seek a more sympathetic and positive doctor or surgeon. So says Dr. Michael Shapiro, a general surgeon at Beth Israel Hospital, who operates on a disproportionate share of known AIDS/HIV+ persons in the hospital. Because Dr. Shapiro is not homophobic and treats his patients with respect and caring, AIDS patients prefer him to operate on them. He never refuses to treat, but this does not mean that he does not fear infection.

Shapiro says he tears his gloves about once a week and that between one out of three and one out of five times a surgeon operates, there will be blood on that surgeon's hands. Double gloving sometimes helps, but then it is difficult to do delicate surgery. Using sterile gloves is better than using non-sterile gloves, but even then there is a 7% leak rate. Since, according to Shapiro, most of the tears in gloves occur when a resident hands sharp instruments to the surgeon, the surgeon could retrieve his/her own instruments. Shapiro in fact does this when operating on a known AIDS/HIV+ patient, but to do so on a regular basis is problematic because it slows and impedes surgical process.

Shapiro quantified his risk of HIV infection in two ways. First, he recalled a study (published in JAMA, July 1988) which, based on the frequency of tearing gloves and on the potential frequency of operating on an HIV+ person, concluded that per patient, there was between a 1/10,000 and a 1/40,000 chance of exposure. Shapiro then calculated that if he does a couple of hundred operations per year for twenty years, that he has a few percentage points chance of exposure. (Actually, if you assume 200 operations * 20 years = 4,000 operations and apply that number to the above range, the lifetime chance of exposure is between 10% - 40%.)

Second, he figured that if 40% of all gay men in Boston are HIV+ (which represents current best estimates), and 10% of all men are gay (which represents Kinsey data from the 1940's, but is nevertheless the best estimate we have for measuring homosexuality in the general population), then approximately 4% of all operations on men will be on HIV+ men. This figure can arguably be adjusted either up or down -- up because it does not account for IVDU's in the equation. When they are figured in, the chance of exposure would seem greater. It could be adjusted down because most surgeries are performed on older people, not on young, relatively healthy gay men. AIDS does not tip those surgical proportions either for the opportunistic infections which typically occur with full blown AIDS, do not usually require surgery. Hence, Shapiro figures that the 4%, after being adjusted this way and that, will for him turn back up to be 4%.

He feels that the risk is significantly higher for Emergency Room surgeons, however, primarily because young men and IVDU's are both involved in a lot of trauma. IVDU's, in particular, tend to be involved in a lot of penetrating rather than blunt trauma, so that more blood is present during those emergency surgical procedures. Thus, as the number of HIV infected IVDU's increases, the risk to ER personnel increases. Of course, risks increase with IVDU's due

to other complicating factors such as ulcers which result from nutritional depletion, or cellulitis which results from non-sterile injections. Such changes in risk/chance of exposure, Shapiro agreed, will probably have a disproportionate impact on public hospitals like Boston City Hospital, because on the whole, they treat a disproportionate number of IVDU's.

Across the board, procedures and treatments have already changed in response to the risk of exposure. Whereas surgeons used to perform open lung biopsies or lymph node biopsies for those with ARC, now such diagnoses are performed with more presumptive procedures or are done less frequently. If surgery can be avoided for AIDS patients it will be, Shapiro explains, because almost every surgical procedure suppresses the immune system.

Shapiro predicts that we will also begin to see more procedures done on an outpatient and home care basis, such as infusions, pentamidine and in-dwelling catheters like port-a-cath which allows a patient to have an IV team administer treatment on an outpatient basis. These changes may shift risk to Home Health Aides, nurses or family members (family members are already being trained in changing dressings on wounds) who administer treatment outside of a hospital inpatient setting. Even though he makes these predictions, Dr. Shapiro couches them in caution because as AIDS patients start living longer, secondary complications may develop, requiring different treatments in different settings and by different providers.

B.3 Joe Blansfield, Clinical Specialist, Emergency Room, Boston City Hospital

According to Joe Blansfield, the BCH Emergency Room (ER) mission is to assess, stabilize, and mobilize. As a rule, patients do not stay in the ER more than 1 - 2 hours before they are transferred to a more appropriate setting, whether that be home or to another hospital unit. Nevertheless, despite the short length of stay, the very nature of an ER involves treatment of critically ill/injured patients, and hence, interaction with a lot of blood.

Health care workers are not privy to a patient's HIV status unless that patient divulges that information. Everyone is routinely asked about past medical conditions and allergies and sometimes patients will disclose that they are HIV+. Often, Mr. Blansfield feels, patients choose not to disclose that information, and possibly even more often, they do not even know their HIV status. The staff therefore treats all patients as if they were HIV+, taking all necessary precautions against infection. Every patient, according to Mr. Blansfield , whether it be an elderly women who is in for a broken hip, or an IV drug using man in for a knife wound, is treated according to the same hospital policies and guidelines.

Since 1986 when more stringent infection control policies were implemented, everyone in the ER wears gloves all the time and uses masks, goggles and gowns as appropriate. The workers

are more cautious, guarded and cognizant of risks because of AIDS and HIV, but there has not yet been an incident where an ER health care worker has refused treatment. Mr. Blansfield says that the biggest complaint has been that the barriers which the hospital provides (i.e. goggles, gloves, gowns, etc.), should be of higher quality. Measures are now being taken to acquire better barriers, such as goggles which don't fog up, gowns which are indeed waterproof, gloves which fit well, and so on. Such acquisitions are essential, Mr. Blansfield believes, if health care workers are to do their jobs well, particularly when specific procedural guidelines regarding infection control continue to come down the pike. (These specific policies are currently in the drafting process but Mr. Blansfield indicated that they will include such policies as mandatory goggle wearing for wound irrigation procedures.)

In addition to procedural changes, there are also some technological changes occurring which may minimize risk. Mr. Blansfield refers to these changes as "nickel and dime technologies," meaning they may reduce risk somewhat, each in an incremental way, but none represent a major technological breakthrough. For example, in order to minimize needlesticks, numerous products have been developed which would allow the same needle to remain in a patient's arm during an IV infusion. Rather than taking the needle in and out, a little plastic attachment device could be detached and then reattached to the needle in the patients arm. Another such technology is "auto-transfusion" used for patients who have blood in their chest which needs to be removed. Before, a tube would be inserted into the chest and the blood would be siphoned into a waste container, but often in that process, blood would fly all over the room. Auto-transfusion is a fluid resuscitation mechanism which takes blood directly from the chest, anti-coagulates it, filters it, and in a matter of minutes, pumps it back into the patient's bloodstream. It is a process which serves to minimize risk, as well as save blood, an increasingly scarce commodity in the health care industry. Mr. Blansfield felt this to be a safe procedure for HIV+ patients for there is no indication that pumping one's own seropositive blood back into one's system would act as a source of reinfection.

Mr. Blansfield did not know how many seropositive ER patients there have been in recent times, but he did estimate that of all ER patients, approximately 20-25% were known IV drug users. This proportion has remained fairly constant over the last 8 years since the beginning of the AIDS epidemic. He also estimated that of all personal assaults ER cases (knife, gun or club wounds as opposed to motor vehicle, industrial accidents, or other types of trauma), approximately 1/2 - 2/3 involve an IV drug user.

He did not feel that uncooperativeness was a factor in increasing risk to health care workers. In his experience, most patients are cooperative. Those who do not want to cooperate are free to leave. Level of cooperation also depends on what the patient is in for. If an IVDU had overdosed, he/she may get scared of hospital authority and decide to leave and not receive

treatment. If the patient is a violent assault victim, that patient may not be able to leave quite as easily. Nevertheless, patients are never forced to receive treatments they do not want.

Mr. Blansfield explained that nurses make up the "Lions share" of health care workers in the ER. There are 46-48 nurses, 6-8 orderlies, 8-10 attending staff, and varying numbers of residents and emergency medicine doctors spending varying amounts of time in actual attendance at the ER. Of the 46 - 48 nurses, eight are men and the rest are women (approximately 83% women). Most are in their mid-to-late 30's and have come to their position in the ER with considerable other clinical experience. For nurses, the ER is a special area one step higher than a nurse on the floor. But, according to Mr. Blansfield , it is the special knowledge and skills required for the job, and not the nature of the risk involved, which warrants higher pay for ER nurses. There are also a number of clerks who are not involved in any direct patient care. Every worker in the ER receives a mandatory full orientation to infection control procedures. Staff turnover varies, but among the nurses Mr. Blansfield estimated that the average length of stay was approximately 28-29 months.

B.4 Janet Delgado, Owner, Nursing Care Planners Inc.

Nursing Care Planners Inc. is a nursing temp agency, one of 400 now operating in the State of Massachusetts. Janet Delgado opened operations one year ago in January 1988 and presently employs 105 private contract nurses. Of the 105, only three are men. The agency is highly successful as are most of the other temp agencies in the state. The nurses work for hospitals, nursing homes and private duty patients. The hospitals with which Ms. Delgado's company contracts, are all relatively small suburban hospitals, the largest of which is Mt. Auburn Hospital with 350 - 400 beds, but according to Ms. Delgado, other agencies contract with the larger city hospitals. With the near crisis level national nursing shortage, every health care setting is hurting for nurses. There is always work available and temping provides nurses with the flexibility and pay they don't get in a full time position as a floor nurse.

In the interview with Ms. Delgado and two of her contract nurses, they explained that the going wage rate for temp nurses in Massachusetts is $18-20/hr. Nursing Care Planners Inc. pays $25/hr which is between two and two-and-a-half times more than full time hospital floor nurses earn! If they work in ICU/CCU or ER, they earn an extra $3/hr and if they work as a Charge Nurse, they earn an extra $5/hr. This includes no benefits, no malpractice insurance, no sick days and so on, but they all felt it worked out to greater pay and the flexibility of not having to mandatorilly work weekends or holidays was a critical benefit in their eyes.

The orientation the nurses are given when they enter a new situation varies from setting to setting. Sometimes, they receive a fairly formal orientation to guidelines and procedures by the

other nurses on the floor, and sometimes it is as minimal as a pamphlet they are expected to read. The nurses say that universal precautions are in place in almost every hospital although AIDS awareness is especially low in the small suburban hospitals. The nurses in Ms. Delgado's agency are fortunate in terms of understanding HIV and infection control measures to prevent HIV transmission. Delgado is a member of the Mass Nursing Association's AIDS Task Force and has offered a customized AIDS 101 course for the nurses in her agency. According to Ms. Delgado, not all other agencies are as sensitive and responsive to the need for orienting nurses to the risks and care associated with AIDS/HIV.

Both of the private contract nurses I interviewed had cared for AIDS patients. They assured me that this was not an uncommon experience for temp nurses because "floor nurses tend to give all the AIDS patients to agency people." Ms. Delgado felt that nurses on the floor are terrified of AIDS because the smaller suburban hospitals have not taken the time to properly train or educate their staff about an epidemic which has clearly already entered their world. Instead of being prepared, nurses in these settings are all too often uninformed. Private contract nurses who work with Ms. Delgado often find themselves informally playing the role of an AIDS educator with other nurses.

Temp agency nurses can technically perform all the functions of full time hospital nurses, but different agencies concentrate in different areas of specialty. Thus, Nursing Care Planners contracts with nurses who have the skills to work in ICU/CCU, but only two of the agency's nurses have ER qualifications and none of the agency's contracts include labor & delivery or pediatric wards.

The nurses were quick to point out that even though they do not work in the ER, they most certainly do deal with emergencies. One nurse related a story of an elderly man she was caring for in a hospital who pulled out his IV and his foley tube so that when she walked into his room there was blood coming out of his arm and his penis. Her first thought was to stop the bleeding, not to put on gloves. The other nurse corroborated that such situations are not uncommon and that these kind of emergencies, in a way, present a more serious risk than those incurred in ER because of the surprise element. She told of another circumstance where an IVDU AIDS patient threatened to stab a nurse with his IV needle. Ms. Delgado explained that in the ER, nurses expect emergency situations and prepare for them. On the hospital floor, nurses are not usually operating in such a crisis mode and do not always think about infection control procedures before responding to emergencies.

In most hospitals, there are gloves by the door of every patient's room; though they usually only supply one size -- large. Nurses with smaller hands usually find the large gloves too cumbersome for delicate procedures and remove them for the benefit of greater dexterity.

According to Ms. Delgado and the other nurses, Nursing Homes are worse than the hospitals in terms of providing gloves and other equipment with which to observe universal precautions. When working in a Nursing Home, a private contract nurse used her own gloves to deal with body fluids such as changing a foley bag. The Nursing Home administration balked at the idea of supplying gloves to everyone, claiming that the patients in the Home were safe and that gloves were an unnecessary cost.

During the interview, we talked about the national nursing shortage and the types of developments it has given rise to. One development quite disturbing to the nurses, is hospitals' use of poorly trained people to do nurses' tasks. A large Boston hospital, for example, has instituted a three month training program for people with no prior medical or clinical experience, after which they work as "technicians" in the hospital, changing bedpans, bathing patients, changing dressings and so on. Such a situation infuriates the nurses who feel that those "tasks" are critical components of nursing care for a patient. For example, while bathing a patient, a nurse assesses the integrity of the skin, converses with the patient and establishes trust and it is usually a good opportunity to explain to the patient how to best care for themselves. Also, a nurse does not just change a bedpan and that's that. While she is emptying it, she can tell by the odor of the stool whether or not there is blood in the stool. A relatively untrained person cannot know these things and should not just perform nursing tasks without the proper skills or clinical training. Without better pay and incentives to help attract more people into nursing, these nurses feel such practices will continue.

Another development has been an increase in the number of patients each nurse is responsible for. A number of years ago in most Massachusetts hospitals, five patients was the legal limit. It then increased to six and then seven, and now, in some hospitals, it is already up to eight! The nurses feel they are being pushed to their physical and mental limits with such a high case-load and that as a result, patient care may be suffering.

B.5 Connie Haggerty, Co-ordinator, Clinical Program, Boston City Hospital

There is no separate inpatient ward for AIDS patients at Boston City Hospital. The AIDS patients who become hospitalized are interspersed with other patients throughout the hospital. The outpatient clinical program, for which Connie Haggerty is the co-ordinator, is the only place in the hospital where care for AIDS patients is intentionally concentrated.

The clinic first opened its doors two years ago in order to care for people at the sicker end of the HIV spectrum. It began with 4 patients, now has 200 active patients, and over the course of

two years, the clinic has treated over 400 people. Since the beginning, the patient mix has been approximately 65% IV drug users, and 35% "other." The "other," according to Haggerty, fluctuates between the risk categories of male homosexual contact and heterosexual contact. The clinic does not treat children or asymptomatic pregnant women for they are treated in more specialized and appropriate wards which can be more responsive to their needs. Haggerty also said that for the inpatient population of BCH as a whole, the gender breakdown for all known symptomatic HIV+ cases is 77% male, 23% female. She feels that this breakdown is also representative of the clinic's male to female ratio.

According to Ms. Haggerty, the number of monthly visits has steadily increased though she did not have the statistics available to illustrate the growth. She explained that some patients come in to the clinic once a month, some twice a week. It varies according to the type of infection and type of treatment. In October, 1988, for instance, the clinic counted 256 visits. Every visit includes counselling about medication or lifestyle concerns and in almost every visit a patient has blood drawn.

With some exceptions, the phlebotomist always draws the blood. Ms. Haggerty outlined the exceptions as follows:

- If the patient has a port-o-cath, the nurse draws the blood. Ms. Haggerty could not estimate how often that is the case.
- If the patient has arterial blood gases, the physician draws the blood. This occurs approximately 10 times a week.
- If a patient needs a treatment requiring IV medication, the nurse draws the blood. This occurs approximately 15 times a month. Ms. Haggerty explained that the clinic has been able to keep the amount of IV treatment low by encouraging the continued use of home care as the primary medium for IV treatment provision.
- If the patient needs flu shots or immunizations, the nurse draws the blood. This is rare.
- If the patient is skin tested, the nurse draws the blood. This too, is relatively rare -- approximately 5 - 10 times per month, but Ms. Haggerty expects that skin testing will become more common due to greater incidence of TB.

In her capacity as Clinical Program Co-ordinator over the last two years, Ms. Haggerty has seen no significant change in procedures or in who is conducting given procedures. New medications such as aerosolized pentamidine, have not affected the clinic much for the clinic provides referrals for that treatment, and does not provide it directly. Health care workers in the clinic all follow universal precautions, use needle boxes and gloves. No staff have become infected and there is very low staff turnover.

B.6 Diana Forrest, Director, Children's AIDS Program, Boston MA

As the numbers of HIV+ women increases, the number of HIV+ children also increases. 80% of all women with AIDS are in their active reproductive years. The children they bear have an estimated 50% chance of being seropositive. Some women, for a variety of personal, sociological, cultural and/or religious reasons, find that to be an acceptable level of risk and opt to go ahead with the birth. An estimated 60%, however, are not aware of their own HIV status until their child is diagnosed as infected. (Usually this occurs in HIV symptomatic children.)

Most infected children, in fact 74% of the nation's pediatric AIDS patients, have intravenous drug use by one or both parents as an associated risk factor. Approximately 80% are children of color, primarily Black and Latino, and most are born into very poor families. Since effective blood screening procedures have been universally implemented and pediatric infection due to transfusion or coagulation disorders has all but disappeared in this country, perinatal transmission has become the primary route. By definition then, mothers of infected children are also infected, raising issues of care, guardianship, love and nurturing, not only for the infected child but also for the mother, the mother's other children who may not be infected, and other family members who may or may not act as care givers.

In short, given the circumstances into which most most of these seropositive children are born, compounded with shorter incubation periods and other special medical considerations for pediatric AIDS, these kids face a whole host of problems which will soon need to be reckoned with on a rather large scale. In New York City, it is estimated that one out of every sixty one children now born, are HIV+, leading to approximately 1000 HIV+ children born in 1988 in New York City alone. This is not thought to be an anomaly either, for though the majority of pediatric AIDS cases are concentrated in New York City, Newark and Miami, cities such as Boston, Philadelphia and Chicago are thought to be just a couple of years behind. Indeed, if the wave of pediatric AIDS follows the preceding waves of this epidemic, we can expect these lower incidence areas to follow the lead of such higher incidence areas after a short lag time.

The Children's AIDS Program (C.A.P.) opened their doors in February 1987 when it was discovered that children were being discharged from hospitals in the city with no place to go. Sometimes their parents had died and sometimes the parents were simply unable to care for their children because of their own medical, social, or economic complications. Considering the national proportions discussed above, it is not surprising that all of the children living at the residence in October 1988 were Black.

With operating funds provided by the Massachusetts Department of Public Health, the program opened, and is presently operating, with a residential capacity for five children. C.A.P. is

currently housed in an empty wing of Boston City Hospital but it has just received $250,000 in HRSA funds to renovate a new site which is expected to accommodate 12 children. Diana Forrest, C.A.P.'s Director, is working with Boston's Public Facilities Department to locate a site in the community which is easily accessible to parents, family members, and friends of the children. Their goal is to find a site with more space, a backyard, and to expand services to include a day care program for 20 - 25 HIV+ children. The BCH site was a convenient place to open because it was available and there was easy access to medical support systems, but the wing is isolated from the rest of the building and has been vacant because it is not structurally sound or up to code. The site has therefore always been regarded as temporary. Furthermore, as Ms. Forrest explains, C.A.P. is trying very hard NOT to be a medical program.

C.A.P. is meant to be a residential and support program for HIV+ children and their families. In order to be admitted, you must be (1) between 0 - 5 years old, (2) a Massachusetts resident, and (3) HIV+. It is the first residential AIDS program for children to be developed in this country and others in New York and Newark have since been modeled after it. What is so special about C.A.P., Ms. Forrest believes, is its philosophy of care and the supportive role it plays in a child's life outside of this residential facility.

One of the primary goals of the program is to provide appropriate care for each child. This includes "normalizing" the children's lives as much as possible -- taking them on field trips so that they can get out in the world instead of being cooped up on the fifth floor of a hospital building, and encouraging a lot of interaction with the children's families. Parents and grandparents come to visit the children, and often parents spend the night in the residence. Parents are also encouraged to take children home for weekends, holidays and birthdays. Currently, two of the children go home regularly on the weekends to be with their families.

C.A.P. staff provide counselling for the family in a variety of ways ranging from bereavement therapy, financial management and drug counselling referrals, to basic parenting skills such as nutrition and basic infection control education regarding care for an HIV+ child. The C.A.P. staff tries to be very clear that they do not "own" these children's lives. Rather, they are a support mechanism. They can offer assistance and information but they cannot, and do not try, to dictate behavior. Thus, they educate parents about the importance of wearing gloves to change a diaper, or disinfecting bathtubs and potties after every use, but they cannot control what the parents do in their own homes.

Within the residence, Ms. Forrest feels that the staff are very conscientious about infection control. They do not wear gloves all day long, but they do whenever they change diapers, disinfect bathtubs or potties with bleach solutions, clean up vomit or diarrhea, or tend to a child experiencing night sweats. When they are able, the staff wash their hands before touching potentially infectious body areas, in order to prevent the child from acquiring any new infection

from a staff member. (See attached documentation on "Staff Wellness Policy" regarding when staff should not come come to work for fear of passing a seemingly minor illness on to the children.) There is not always time to wash hands, however, for children do not always give advance notice when they are about to spit up. Staff carry extra gloves with them at all times and in these cases, will often double-glove just to be sure. Also, at least once a day, they thoroughly rub down each child with cream in order to protect the integrity of the skin for the skin serves as the child's first line of prevention against infection. All of the infectious waste is red-bagged for safe disposal each day.

In addition to the Program Director, the staff is made up of a part time nurse, a part time social worker and eight full time child care workers. Each staff member receives full infection control orientation and there are regular support forums for staff members to share their experiences and their fears regarding working with HIV+ children and the possibility of infection. This is not the easiest environment in which to work. Often the children are suffering with fevers, diarrhea, fits of vomiting, upper respiratory infections, night sweats, or low energy, and the staff has to tailor the program accordingly. In the middle of October 1988, C.A.P. experienced the death of its first child, which, although not unexpected, was nevertheless quite difficult for both staff and the other children.

Also working at the facility are volunteers. Each volunteer receives a two hour orientation regarding C.A.P.'s philosophy of care and infection control procedures. For their first three months, volunteers work four hour shifts under the guidance of a staff person. After that time they can do all the work of a child care worker except dispense medication or do case documentation.

B7. Robin Kalaidjian and Linda Baldini, Infection Control Nurses, Beth Israel Hospital, Boston, MA

Both Robin and Linda felt that the general atmosphere in Beth Israel Hospital, with respect to fear of HIV infection, had changed quite substantially over the last couple of years. When they did AIDS education workshops and infection control trainings a couple of years ago, health care workers in the hospital expressed a lot of curiosity, fear and anxiety. Robin and Linda said that now, demand for those trainings is a lot lower, people who work in the hospital seem to know a lot about AIDS and HIV transmission, feel that the risk is low, and do not have the same sense of immediate concern as they once did. For example, the hospital recently organized an AIDS Awareness Week for health care workers and their families, and only three families came!

By request, Robin and Linda do all of the AIDS education trainings in the hospital except for doctors as they receive their information from other doctors. In addition, during the orientation

that health care workers receive when they are first hired as staff in Beth Israel Hospital, the workers are oriented to AIDS/HIV infection control policies and universal precautions procedures. Robin and Linda conduct these orientations for all hospital staff except for the doctors and those who work in Environmental Services, for they also conduct their own orientation.

In addition to the workshops and orientations, there are a number of other avenues being pursued to reduce fear and reduce risk. Information about AIDS and transmission precautions, is periodically included in employee paychecks. The hospital recently developed a film on Hepatitis B Virus and HIV which is available to staff in both English and Spanish. Since all needlesticks are supposed to be reported to Employee Health, the Infection Control Unit has begun working with Employee Health to count all the needlesticks in a given unit, and on a monthly basis, inform the respective units of that monthly total. Rather than a scare tactic, this effort is meant to not let the staff become negligent around following universal precautions as anecdotal evidence suggests might be happening.

Such evidence includes reports of recapped needles in the needle boxes, and lab technicians still wanting to know when they are dealing with known HIV infected blood. Furthermore, a recent problem has developed around pregnant health care workers' reluctance to treat known HIV infected patients. This circumstance contradicts hospital policy but protectionism on the wards allows it to continue; it contradicts hospital philosophy which is that anybody should be able to take care of anybody if the proper precautions are taken; and it contradicts Robin's and Linda's sense that among the staff, knowledge is high and the perception of risk is low.

What it indicates is that despite the availability and accessibility of AIDS information and education, there still exists an undercurrent of irrational fear. Pregnant women are no more susceptible to risk than non pregnant persons, but their fear is intensified because they are pregnant and others on the ward validate that fear by excusing them from the care of known HIV infected patients. In fact, one could make a strong argument that their risk may even increase given this exemption, for they may feel that they need not take all the recommended precautions and unbeknownst to them, one of their patients could be HIV+.

According to Robin and Linda, this undercurrent of fear manifests like clockwork whenever the media comes out with a story about the seroconversion of a health care worker. Whenever those stories break, Robin and Linda's phone is off the hook with question, concerns and requests for information. As the news coverage wanes, so too does staff concern.

Robin and Linda, like the infection control nurse in Boston City Hospital, were critical of OHSA's ways and means of regulating infection control procedures in hospitals. They felt like OHSA treated hospitals too much like incinerators, and had very little appreciation for, or sensitivity to, what comprises patient care. They complained that OHSA's guidelines were too rigid and often inappropriate, unnecessarily requiring barriers such as gowns and masks for

procedures or contact which involve no risk. Also, the retributive aspects of their policies were seen as too harsh. If a health care worker, chooses not to wear gloves on a given occasion where OHSA mandates their use, the guidelines say the worker should be dismissed. These nurses feel such policies are misguided in the health care profession. Workers should be given as much information and education they need to make informed choices, but should not be punished for those choices if they are not harming the patient.