The San Francisco Department of Public Health and AIDS Research Institute/UCSF Response to the Updated Estimates of HIV Infection in San Francisco, 2000

I. Why is this Happening?

There have been many reactions to the release of preliminary data suggesting a significant increase in HIV incidence in San Francisco. Many are alarmed, some are saddened, and more than a few have a great deal of anger. The one reaction nobody has had is surprise. While a few don't like the numbers and will argue about the analysis of them, there has been little shock that there appears to be a range of 750 – 900 new infections this year. That the majority of these infections are occurring in men who have sex with men (MSM) is also not surprising to most observers of or members of the San Francisco gay community.

The increase in numbers is based on several realities:

The AIDS epidemic changed forever when new treatments were unveiled in Vancouver in 1996. The perception of AIDS as a death sentence, already suspect among many gay men, is gone. If people see HIV as a death sentence, they make certain choices about risk. We know that when the perception of HIV becomes one of a chronic, manageable illness, people make different choices.

The perception of HIV has changed on the streets and in the minds of MSM. Most HIV prevention efforts have not caught up with that change. Prevention and health education efforts, which rely on death or danger-avoidance for motivation, may no longer resonate with gay men. Studies indicate that high risk sexual behavior is increasing among MSM in San Francisco.

Another factor contributing to the higher estimate of HIV incidence is that the population of gay men in San Francisco is larger than was previously thought. Because of recently improved data collection, such as survey work done for the Gay Men's Health Study and some groundbreaking work with homeless gay men in San Francisco, we now know that gay men comprise between 15-20% of the adult male population of San Francisco. This is a significant increase from the data available in 1997.

In San Francisco, one can look at gay men's communities as being divided into three distinct groups, all of whom need HIV prevention. The first group is those who have eliminated high-risk behavior from their lives. These people have a thorough knowledge of HIV transmission and risk reduction techniques. They have chosen to eliminate risk based on personal decisions about their risk and need.

Despite many years of risk reduction education and media, a second group of people have engaged in high-risk behavior throughout the epidemic. This has not changed. For these men, decisions about perceived risk are outweighed by their needs for identity, intimacy, pleasure, or other considerations. They know about risk, have made choices, and engage in behavior at the level of risk that they believe to be appropriate.

A third group of MSM has increased their risk behavior recently. This group makes situational decisions about risk behavior. These decisions are based on their knowledge

and understanding of HIV transmission, the perceived risk of the behavior in question, and the stated or presumed HIV status of their partner.

For nearly 20 years, we have conducted HIV prevention and education based on several theories, including cognitive learning theory. However, there are many issues that mediate people's risk assessment and behavior. The behaviors in questions are basic, often urgent, and engaged in without complex cognitive analysis. A brochure can be informative on Tuesday morning; in a moment of intense passion on Friday night, a different analysis occurs.

Substance use before and during sex is also a factor. Additionally, for some individuals chronic loneliness, isolation, and alienation lead to remedies, which may include high-risk behavior. The pursuit of pleasure in a society where discrimination can make life painful can be another motivation for pre-cognitive, high-risk behavior.

There are many complicated and compelling reasons why a person chooses his own acceptable level of risk. In the era of HAART (highly active anti-retroviral therapy), many men make an assessment based on their firm belief that living with HIV is an acceptable option. Others make a determination about the potential for transmission from a given partner based on information (or perception) about his HIV status or viral load.

The fact is, there is an increase in risk behavior amongst MSM in San Francisco. The AIDS epidemic has entered a new and complex era. It is time for prevention efforts to be based on these new realities.

In the next section, we will outline an 11-point Action Plan to revitalize the HIV prevention programs of the City and County of San Francisco. No increase in HIV infections is acceptable, regardless of the reason. This new plan will allow us to break this epidemic by realistically equipping MSM to take control of their health.

II. 11 Point Action Plan for HIV Prevention in San Francisco

San Francisco aggressively embraced the idea that its public health response to the HIV/AIDS crisis should serve those most in need, be driven by the immediacy of the problem, and be based in the community. This is the basis of the "San Francisco model". Through countless iterations, whenever San Francisco has strayed too far afield from the principal tenets of the original model, events and people have brought the city back.

What made the model work then was the passion and vision of the community. Passion and vision are needed once again. If we are to change the upward course of estimated new infections, we must change our perspective: improve rather than blame; address the immediate and challenging realities of the projected new HIV infections among gay men in our city; and deploy resources in a judicious, courageous and evidence-based fashion. We must not tolerate aberrance nor lose sight of the goal: no new HIV infections in San Francisco.

We need only remember that over past 15 years, San Franciscans turned the course of the epidemic around from a time when new infections numbered almost 8,000 cases per year to a time when that number dropped and was holding steady at only 500. This is a time when data needs to again drive our actions, and programs and people should respond to the new estimates with new determination.

The 11-Point Action Plan is an opening salvo in what must become dynamic process of dialogue, programmatic renovation, and community norm building among gay men in San Francisco. This plan is neither exhaustive nor complete. It is not intended as a blueprint. It is meant to represent the best foundational assumptions we, as public health experts, scientists, advocates, and consumers, can make when beginning to both revitalize HIV prevention in the city and the community's ownership of its own longevity.

In redoubling our belief and passion and science for effective HIV prevention interventions, we must also be vigilant in protecting the safety net of care and support services for San Franciscans with HIV disease. The challenge is to balance care and prevention as equally important. Lives depend upon our doing this, and we can do no less.

The new data stand as a reminder of what could be, if we do little or nothing more than we are currently doing. The promise of crippling the epidemic is equally a reminder of what also could be, if we can maintain our attention and programs and community vigilance towards the future. We know what the worst case scenario could be and we know the best case scenario. The rest--the path and the resolution--is now in our hands.

The 11 point Action Plan

1. **OWNERSHIP** -- Take ownership of the epidemic, implementing culturally-specific, community-driven responses. Prevention is not done to a community, but by and with a community.

2. **CONDOMS FOR HIV POSITIVE TOPS WITH HIV NEGATIVE BOTTOMS**. Assume responsibility.

3. **CONDOMS FOR HIV NEGATIVE BOTTOMS WITH HIV POSITIVE TOPS.** Assume responsibility.

4. **KNOW YOUR CURRENT HIV STATUS**. Get HIV tested every six months if you've had risky sex or needle use. Seek care if you are HIV+.

5. **PREVENTION FOR POSITIVES**. Develop and expand HIV prevention programs that are designed by and for HIV positive individuals.

6. **ERADICATE BACTERIAL STDs IN GAY MEN**. Rectal GC, syphilis, chlamydia.

7. **RECOVERY**. Expand drug treatment. Mature our substance abuse services to address real life issues facing gay men such as the relationship between speed use, Viagra, and unprotected sex.

8. **COUNSEL**. Rebuild the network and services for mental health and wellness.

9. **POSITIVE CARE**. Get more HIV positive people into care, onto appropriate anti-viral treatments, on better treatment regimens, improve adherence and provide individually tailored counseling and care.

10. **REALITY CHECK**.. It remains a fundamental truth that it is better to remain HIV uninfected. If you are HIV negative, stay that way!

11. **GAY MEN'S HEALTH MATTERS**. It is important that HIV prevention be nested within a broader health agenda for the community.

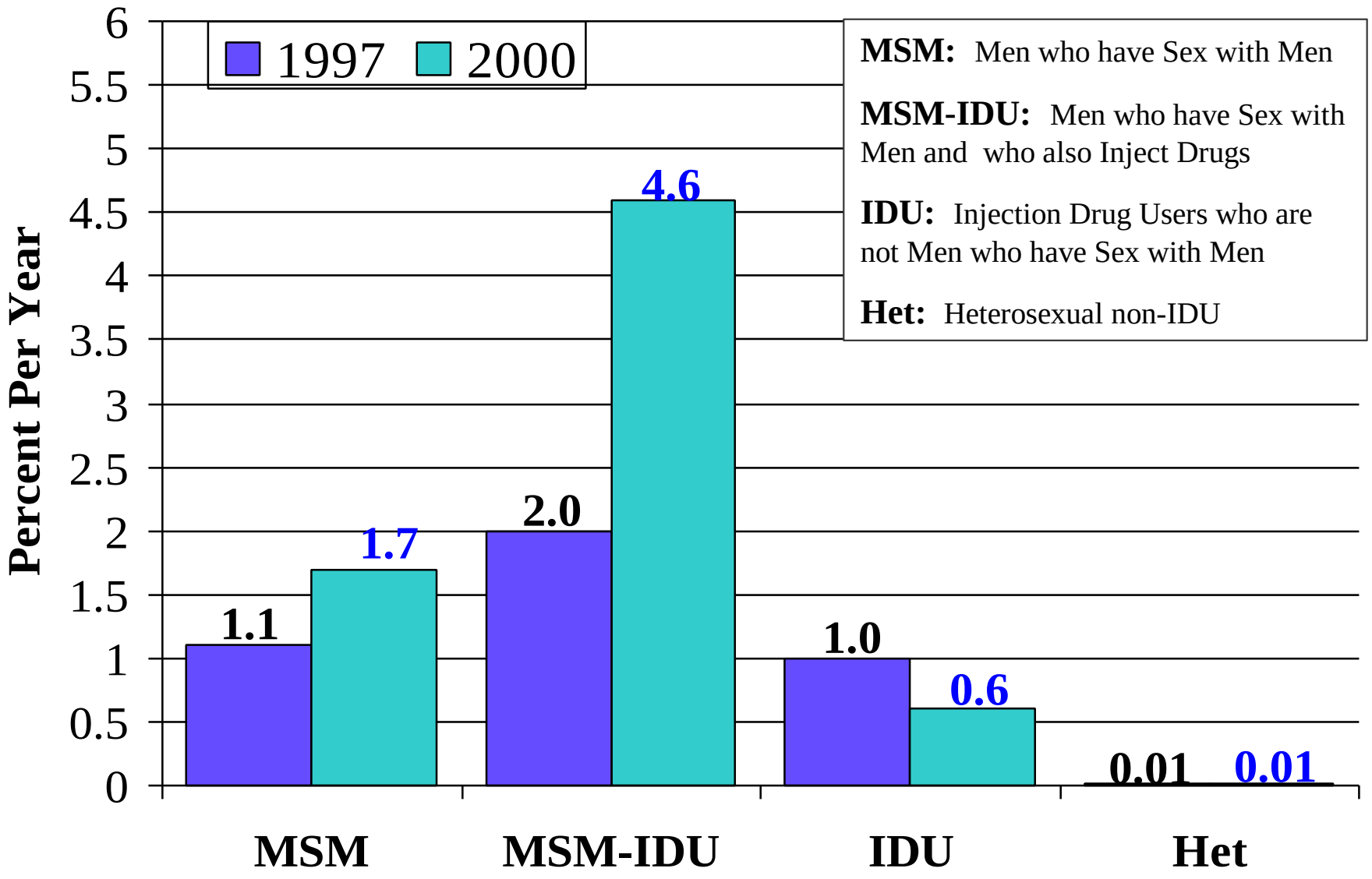
A Call To Action

- New HIV infections are going up among gay men in San Francisco.
- San Francisco needs a new prevention model -- one which recognizes the impact that successful HIV therapies have had on the gay community.
- The gay community needs to take the lead in developing a community response.

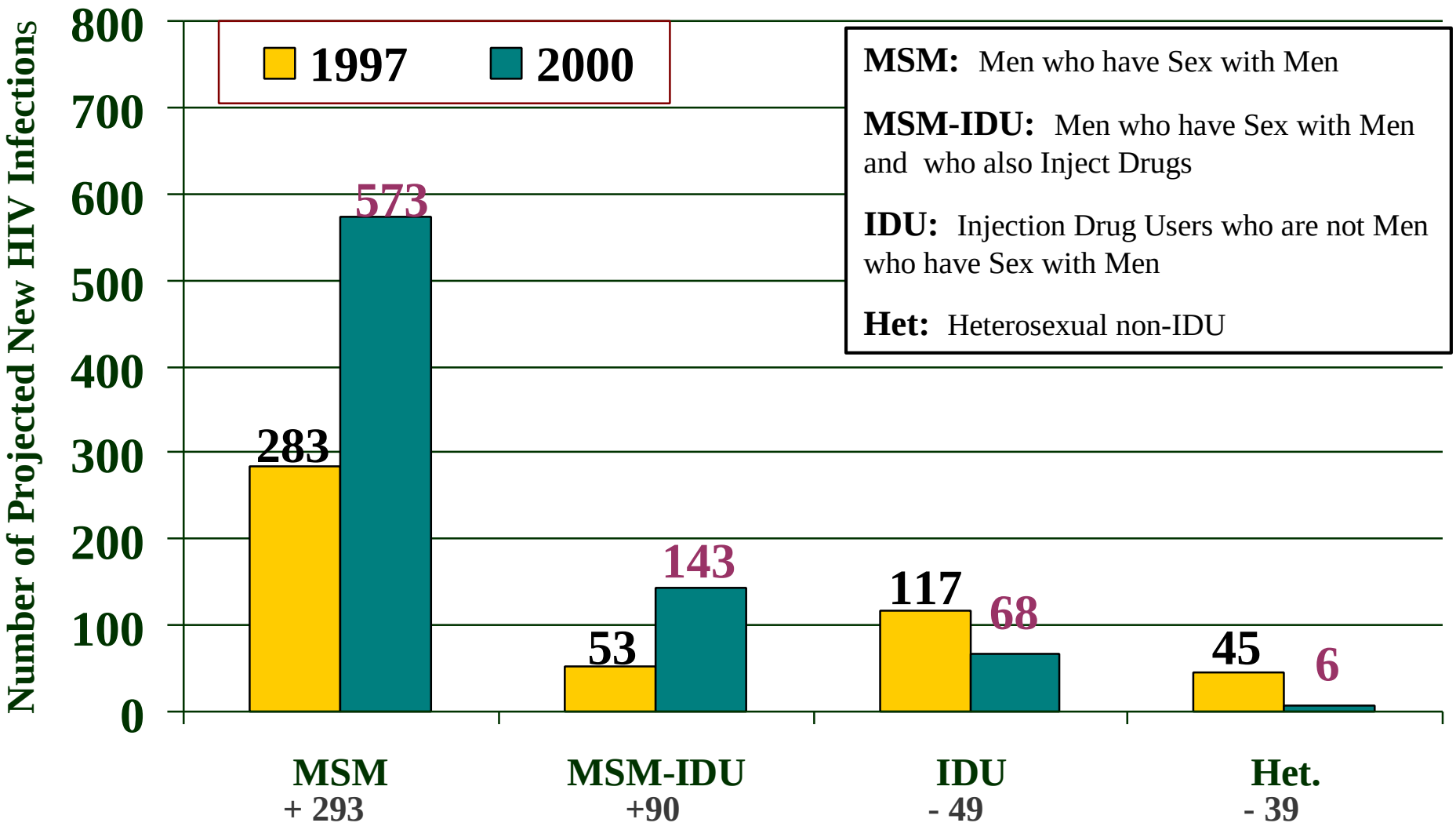
San Francisco has always been a leader in tracking the HIV epidemic.

- How: Convening expert panels to review HIV research, behavioral, evaluation and monitoring data. In May 2000, 25 studies were reviewed.
- Who: Epidemiologists, current & former HPPC & CARE Council members, DPH staff, SFGH staff, Office of the Mayor, UCSF researchers & clinicians, community members.
- What: Updated estimates on new HIV infection rates, prevalences, and trends in SF. This process allows opportunity to improve our programs.
- Why? Follow the trend.

Changes in Estimated Rate of New HIV Infections San Francisco, 1997 and 2000



Changes in Estimated Number of New HIV Infections San Francisco, 1997 and 2000



San Francisco HIV Prevention Indicators

- ↑ Incidence of HIV among a cohort study of Young MSM
- ↑ Incidence of HIV among MSM seeking anonymous HIV testing
- ↑ Incidence of HIV among MSM-IDU seeking HIV testing
- ↔ Stable, high HIV incidence in MSM seeking STD treatment
- ↑ Reports of rectal gonorrhea among MSM
- ↑ Frequency of STDs among MSM living with AIDS
- ↑ Number of MSM living with AIDS
- ↓ Consistent condom use among MSM
- ↑ Multiple partners and unprotected anal sex among MSM
- ↑ MSM engaging in unprotected anal sex with serodiscordant partners and/or with partners of unknown HIV status

11 Point Action Plan for HIV Prevention In San Francisco

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APPENDIX

part 1: ESTIMATES OF THE SIZE OF RISK POPULATIONS, HIV PREVALENCE AND HIV INCIDENCE FOR SAN FRANCISCO, CALIFORNIA.

part 2: TRENDS IN SAN FRANCISCO HIV INDICATOR DATA.

part 3: TABLES & TECHNICAL NOTES.

PART I

ESTIMATES OF THE SIZE OF
RISK POPULATIONS,
HIV PREVALENCE, AND
HIV INCIDENCE FOR
SAN FRANCISCO, CALIFORNIA.

FIGURE 1: Estimated Rate of New HIV Infections among MSM, 1997 and 2000

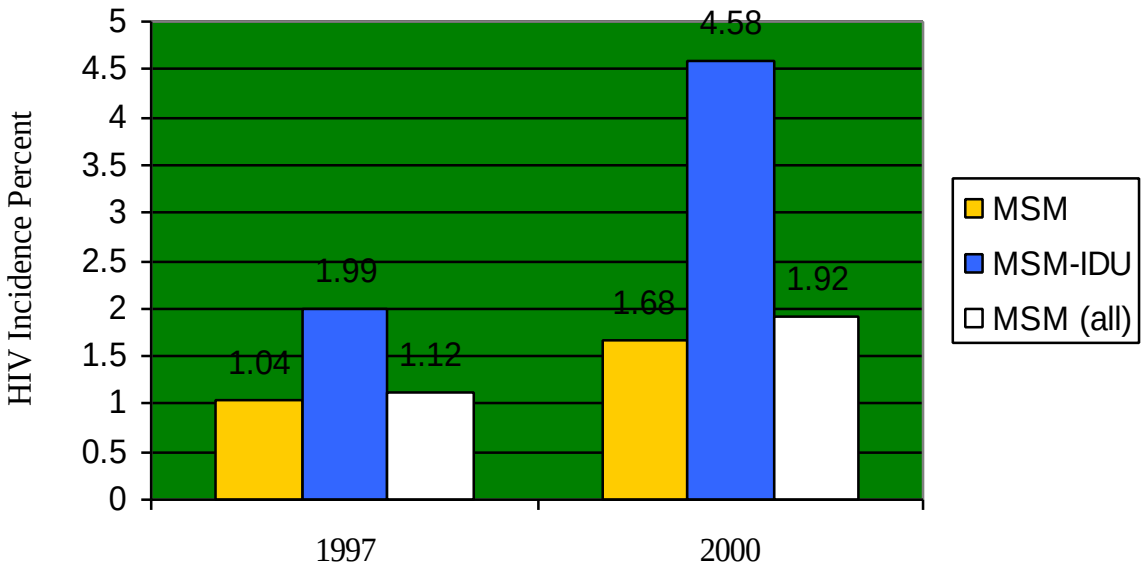


Table 1a. 1997 HIV Consensus Meeting estimates for HIV prevalence and incidence among men who have sex with men

Population	Size	HIV positive	HIV negative	Estimated new infections	Incidence % per year
MSM (non-IDU)	39,000	11,700	27,300	283	1.04
MSM-IDU	4,100	1,435	2,665	53	1.99
MSM all	43,100	13,135	29,965	336	1.12

Table 1b. Epidemiology 2000 Update Meeting estimates for HIV incidence and prevalence among men who have sex with men

Population	Size	HIV positive	HIV negative	Estimated new infections	Incidence % per year (range)
MSM (non-IDU)	46,800	12,786	34,014	573	1.68 (1.04 – 4.37)
MSM-IDU	5,200	2,080	3,120	143	4.58 (1.99 – 13.73)
MSM all	52,000	14,866	37,134	716	1.93 (1.21 – 4.76)

Table 1c. Epidemiology 2000 Update Meeting estimates for HIV incidence and prevalence among male-to-female transgendered persons

Population	Size	HIV-positive	HIV-negative	Estimated new infections	Incidence % per year (range)
MTF transgender	3,000	1,050	1,950	55	2.81 (1.68 – 4.58)

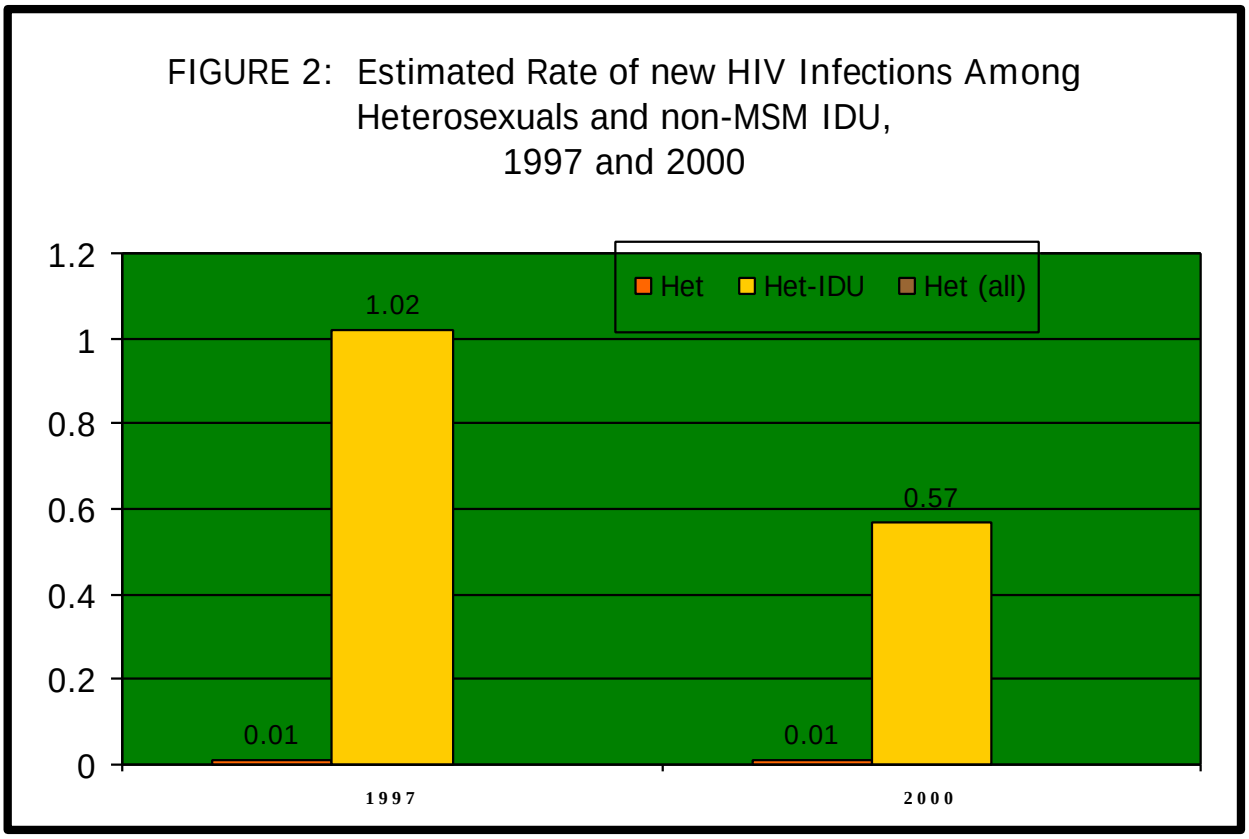


Figure 2a. 1997

Population	Size	HIV positive	HIV negative	Estimated new infections	Incidence % per year
Heterosexual	541,295	488	540,807	45	<0.01
Hetero-IDU	13,000	1,560	11,440	117	1.02
Hetero-all	554,295	2,048	552,247	162	<0.01

Figure 2b. 2000

Population	Size	HIV positive	HIV negative	Estimated new infections	Incidence % per year
Heterosexual	628,094	486	627,608	6	<0.01 (0 – 0.01)
Non-MSM-IDU	13,000	1,040	11,960	68	0.57 (0 -1.02)
Hetero-all	641,094	1,526	639,569	74	0.018 (0 – 0.01)

- We expect between zero and two new pediatric HIV cases in 2000
- No transfusion HIV cases are expected in 2000.

PART I:

Technical notes:

The number of persons living with HIV and the number of new HIV infections likely to occur during the year cannot be determined precisely. Population-based surveys, considered the epidemiological gold standard for estimating disease prevalence and incidence, are not conducted on a frequent and timely basis due to their often high cost, duration of data collection, and technical complexity.

In order to arrive at city-wide estimates of HIV prevalence and incidence, we must review, interpret, and synthesize a variety of data collected by diverse methods. Caution must be exercised when extrapolating from studies conducted in small, defined populations to broader populations. No study is without potential biases and limitations. Nevertheless, drawing inference from limited studies to broader populations is strengthened when there is agreement between several studies conducted under different conditions by different methods. Fortunately, San Francisco benefits from a large number of studies on HIV prevalence, incidence, and risk behavior including several population-based surveys. Data are periodically reviewed by HIV researchers and epidemiologists to make estimates and projections of HIV prevalence and incidence in San Francisco as a whole.

The methods used to synthesize epidemiological data and arrive at city-wide estimates of population size, HIV prevalence, and HIV incidence follows the "components model" described by Holmberg (Holmberg, 1996). A panel of HIV researchers and epidemiologists reviews recent data, evaluates their strengths and weaknesses, arrives at a range of possible estimates, and revises the estimates as new data become available. The process is evidence-based but not the result of a single study. Approaches to synthesize diverse data include, but are not limited to: giving stronger consideration to rates derived from the most scientifically rigorous studies (e.g., population-based studies), defining lower bounds (e.g., unduplicated client registries), finding convergence of estimates across multiple studies, and identifying which populations are left out of current studies (e.g., homeless persons). After arriving at a range of estimates, figures are presented to back to the panel for comment and revision. The process is repeated until estimates converge on a central or overall "consensus" estimate. In San Francisco, we refer to the process as the "HIV Consensus Meetings" because the review of data culminates in a meeting of epidemiologists, researchers, and AIDS experts who present, discuss, and interpret recent data. To date, San Francisco has held two Consensus Meetings, one in 1992 and one in 1997. We anticipate that a third HIV Consensus Meeting will be held in the Fall of 2000.

The process of estimating HIV prevalence and incidence, however, is continuous or on-going as new data become available and if there is reason to believe current trends differ markedly from previous estimates. On 24 May 2000 a meeting was held that consisted of DPH, UCSF, and other HIV researchers to review recent data in order to assess changes in HIV prevalence and incidence since the 1997 Consensus Meeting. The meeting was

timed to assist the HIV Prevention Planning Council's update of the Epidemiological Profile of HIV in San Francisco and to help prepare for the 2000 HIV Consensus Meeting. While the process used at the 2000 DPH/UCSF HIV Epidemiology Update Meeting followed the Consensus Meeting format, the results of that meeting should not be mistaken as the 2000 Consensus Meeting estimates.

Because MSM constitute the majority of HIV cases in San Francisco and because the majority of new HIV seroconversions characterized in recent studies have been among MSM, this report focuses primarily on MSM. Data on non-MSM populations (IDU, heterosexuals) are also referenced.

Further detail on how HIV prevalence and incidence estimates were arrived at for MSM is presented here. While it is not possible to present the totality of the panel members' reasoning that constructed the estimates, the following recreates key arguments with reference to data sources (see table below for study abbreviations and published references). Estimates of the population size, HIV prevalence, and HIV incidence among MSM in San Francisco were constructed by reviewing several population-based surveys, venue-based studies, and clinic databases. Overall, 52,000 San Franciscans are estimated to be MSM, comprising between 15% and 20% of the adult male population. The population size of MSM was estimated based on the results of telephone surveys (UMHS and SF-BRFS) conducted in San Francisco. The estimate was increased from what was observed in the UMHS study to account for the likely under-estimation of MSM who decline to state their sexual orientation or gender of their sex partners over the phone and the non-inclusion of MSM without phones (e.g., homeless MSM, REACH). Approximately 10% of MSM (5,200) were estimated to also be injection drug users (IDU) based on the same studies and other national surveys. HIV prevalence was estimated both by building upon a minimum estimate of known AIDS and HIV cases and point prevalence estimates from UMHS and REACH. The number of MSM known to be living with AIDS (7,385) (HARS, 2000), the unduplicated HIV-positive MSM clients in REGGIE (an unduplicated anonymous roster of HIV-positive clients eligible for services, in preparation DPH, 2000), the prevalence of HIV in the UMHS, SFYMS, and REACH studies, and review of HIV prevalence data from venue and clinic studies (STD, CF, YMS) arrived at an estimate that approximately 27% of MSM (12,786) are living with HIV (AIDS plus non-AIDS). The estimate of HIV prevalence among MSM-IDU was higher (approximately 2,080 or 40%) based on the consistently higher prevalence of HIV among MSM-IDU in multiple studies (REACH, YMS, UHS, UFO, CTRPN, STD, DTC, DETOX, CF, HRYS, RBIS). HIV incidence among MSM was estimated to be 1.68% per year (a total 573 new infections in 2000 among MSM uninfected in the beginning of the year) and was based on the incidence of HIV observed in the most recent wave of the SFYMHS and by seroconversion rates among MSM observed in other studies (CTRPN, UFO, UHS, STD, CF, RBIS). The estimate of HIV incidence among MSM-IDU was higher (approximately 143 or 4.58% per year) based on the point estimates and higher seroconversion rates among MSM-IDU in multiple studies (CTRPN, UHS, UFO, STD, DTC, DETOX, CF, RBIS).

Researchers from the DPH and UCSF who reviewed studies with recent HIV prevalence, incidence, and risk-related data included those listed below. Some researchers and AIDS experts reviewed the estimates subsequent to the meeting.

Joseph Catania, Ph.D., CAPS, UCSF
Edwin Charlebois, Ph.D., UCSF
Thomas Coates, Ph.D., AIDS Research Institute, UCSF
Myrna Cozen, AIDS Policy Research Center, UCSF
Michael Crosby, Ph.D., CAPS, UCSF
Michael DeMayo, Technical support for HPPC
Michael Discepola, M.S.W., AIDS Health Project, UCSF
Maria Ekstrand, Ph.D., CAPS, UCSF
Delia Garcia, DPH
Steven Gibson, M.S.W., The Stop AIDS Project
Cynthia Gomez, Ph.D., CAPS, UCSF
Ellen Goldstein, M.A., CAPS, UCSF
Mitchell H. Katz, MD, DPH
Alex Kral, Ph.D., Urban Health Studies, UCSF
Byron Mason, CAPS, UCSF
Willi McFarland, MD, Ph.D., DPH/UCSF
Steve Morin, Ph.D., AIDS Policy Research Center, UCSF
Dennis Osmond, Ph.D., CAPS, UCSF
Tracey Packer, DPH
Valerie Kegebein-Rose, DPH
Sandra Schwarcz, MD, MPH, DPH/UCSF
Kimberly Page-Shafer, Ph.D., MPH, UCSF
Jeff Sheehy, AIDS Research Institute, UCSF
Mike Shriver, AIDS Policy Research Center, UCSF
Steve Lew, M.A., Compass Pointe
Laura Thomas, MPP, MPH, DPH
Steven Tierney, EdD., DPH

The following data were reviewed and discussed at the 2000 DPH/UCSF HIV Epidemiology Update:

Research Projects	Acronym	PI/ contact	Population*	Major objective	Study design	Years	References
San Francisco Young Men's Health Study	SFYMHS	Osmond	MSM (<30 years at baseline in 1992)	HIV prevalence and incidence	Population-based longitudinal	1992-1999	Osmond D et al, 1994; Osmond et al, 1996
Young Men's Study	YMS	McFarland	MSM (<22 years)	HIV prevalence	Venue sample; cross-sectional	1992-1995	Katz et al, 1998
Young Women's Study	YWS	McFarland	Women (HRH); TG	HIV, STD prevalence	Population-based low income areas	1996-1998	Ruiz et al, 2000
Urban Health Study	UHS	Edlin/Kral	IDU	HIV prevalence and incidence	Street-based convenience; serial crossectional/pros-pective cohort	1986-1998	Kral et al, 2000
Homeless Study	REACH	Moss/Charle-bois	Homeless/ Marginally-Housed Adults	HIV prevalence	Random-sample; SR0's; food lines, shelters	1996-1999	Bangsberg et al, 2000
Young Injectors Study	UFO	Moss/Page-Shafer	IDU (<30years)	HIV prevalence	Street-based convenience; cross-sectional	1997-1999	Page-Shafer et al, 2000
Seropositive Urban Men's Study	SUMS	Gomez/ Hoff	MSM HIV+	HIV prevalence and incidence	Convenience sample	1998	Gomez et al, 2000
Seropositive Urban Drug Injectors Study	SUDIS	Gomez/ Hoff	IDU HIV+	Behavioral survey	Convenience sample	1998	Knight et al, 1999

HIV Prevention Indicators	HPI	McFarland	MSM, HRH, IDU, CBW	HIV prevention indicators	Examination of existing data	1990-1999	Page-Shafer et al, 2000
Urban Men's Health Study	UHMS	Catania	MSM	HIV prevalence	Population-based telephone survey	1986-2000	Publication under review.
Transgender Community Health Project	TCHP	Clements	TG (MTF, FTM)	HIV prevalence	Convenience, snowball sample	1997	SFDPH, 1999
Asian Counseling and Testing Study	ACT	McFarland	Young Asian MSM	HIV prevalence	Venue-based convenience; cross-sectional	2000	Not available at time of writing.
STD Case Registry	STDS	Klausner	MSM, HRH, IDU, CBW	HIV, STD prevalence and incidence	Surveillance	Ongoing	SFDPH, 2000
SF Behavioral Risk Assessment	SF-BRFS	Schwarcz	MSM, HRH, IDU, CBW	Behavioral data	Population-based telephone survey	1997	SFDPH, 2000
AIDS Case Registry	HARS	Schwarcz	MSM, HRH, IDU, CBW, TG	AIDS prevalence and incidence	Surveillance	Ongoing	SFDPH, 2000
Client Database	REGGIE	DPH	MSM, IDU, HRH, CBW, TG	HIV prevalence	Unduplicated client records	On-going	Not available at time of writing.
AIDS Health Project/CTRPN Database	CTRPN	Dilley/Mc-Farland	MSM, HRH, IDU, CBW	HIV incidence	Testing data	Ongoing	McFarland et al, 1999

STD HIV Seroincidence Surveys	STD	Schwarcz	MSM, HRH, IDU, CBW	HIV prevalence and incidence	Blinded serosurvey	1989-1999	SFDPH, 2000
Drug Treatment Centers HIV Seroicidence Surveys	DTC	McFarland	IDU, MSM-IDU	HIV prevalence and incidence	Blinded serosurvey	1989-1998	SFDPH, 2000
Detoxification Program HIV Seroprevalence Surveys	DETOX	McFarland	IDU, MSM-IDU	HIV prevalence	Blinded serosurvey	1990-1992	SFDPH, 2000
Correctional Facility HIV Seroprevalence Surveys	CF	McFarland	MSM, HRH, IDU, CBW	HIV prevalence and incidence	Blinded serosurvey	1998-1999	Kim et al, 2000
Homeless Runaway Youth HIV Seroprevalence survey	HRYS	McFarland	MSM, HRH, IDU, CBW	HIV prevalence	Serosurvey	1990-1996	SFDPH, 2000
Family Planning Clinic Seroprevalence Survey	FPC	McFarland	HRH	HIV prevalence	Blinded serosurvey	1989-1992	SFDPH, 2000
HIV Survey of Childbearing Women	SBCW	CA DHS	CBW	HIV prevalence	Blinded serosurvey	1989-1995	SFDPH, 2000
HIV Prevalence among Blood Donors		Blood Centers of the Pacific	HRH	HIV prevalence	Testing data	1985-1998	SFDPH, 2000
HIV Survey of Military Recruits	SMR	CDC	HRH	HIV prevalence	Testing data	1989-1998	SFDPH, 2000

SFGH Record Based Incidence Study	RBIS	Bangsberg/Mc-Farland	MSM, HRH, IDU, CBW	HIV prevalence and incidence	Record-based incidence study	1994-1998	Kellogg, et al, 2000
The Stop AIDS Project	StopAIDS	Gibson/Mc-Farland	MSM	Behavioral data	Rapid Assessment Survey	1994-1999	Page-Shafer et al, 1999

*MSM=men who have sex with men; IDU=injection drug user; HRH= High Risk Heterosexual; CBW=Childbearing women; TG=Transgender

PART II

TRENDS IN HIV INDICATOR DATA IN SAN FRANCISCO

Summary of HIV Indicator trends among MSM in San Francisco

- ↑ Incidence of HIV in a cohort of MSM
- ↑ Incidence of HIV among MSM seeking anonymous HIV testing
- ↑ Incidence of HIV among MSM-IDU seeking HIV testing
- ↔ Stable, high HIV incidence in MSM seeking STD treatment
- ↑ Reports of rectal gonorrhea among MSM
- ↑ Frequency of STDs among MSM living with AIDS
- ↑ Number of MSM living with AIDS at year-end
- ↓ Constant condom use among MSM
- ↑ Multiple partners and unprotected anal sex among MSM
- ↑ MSM engaging in unprotected anal sex with serodiscordant partners and/or with partners of unknown status

Figure 1. Incidence of HIV in a cohort of MSM

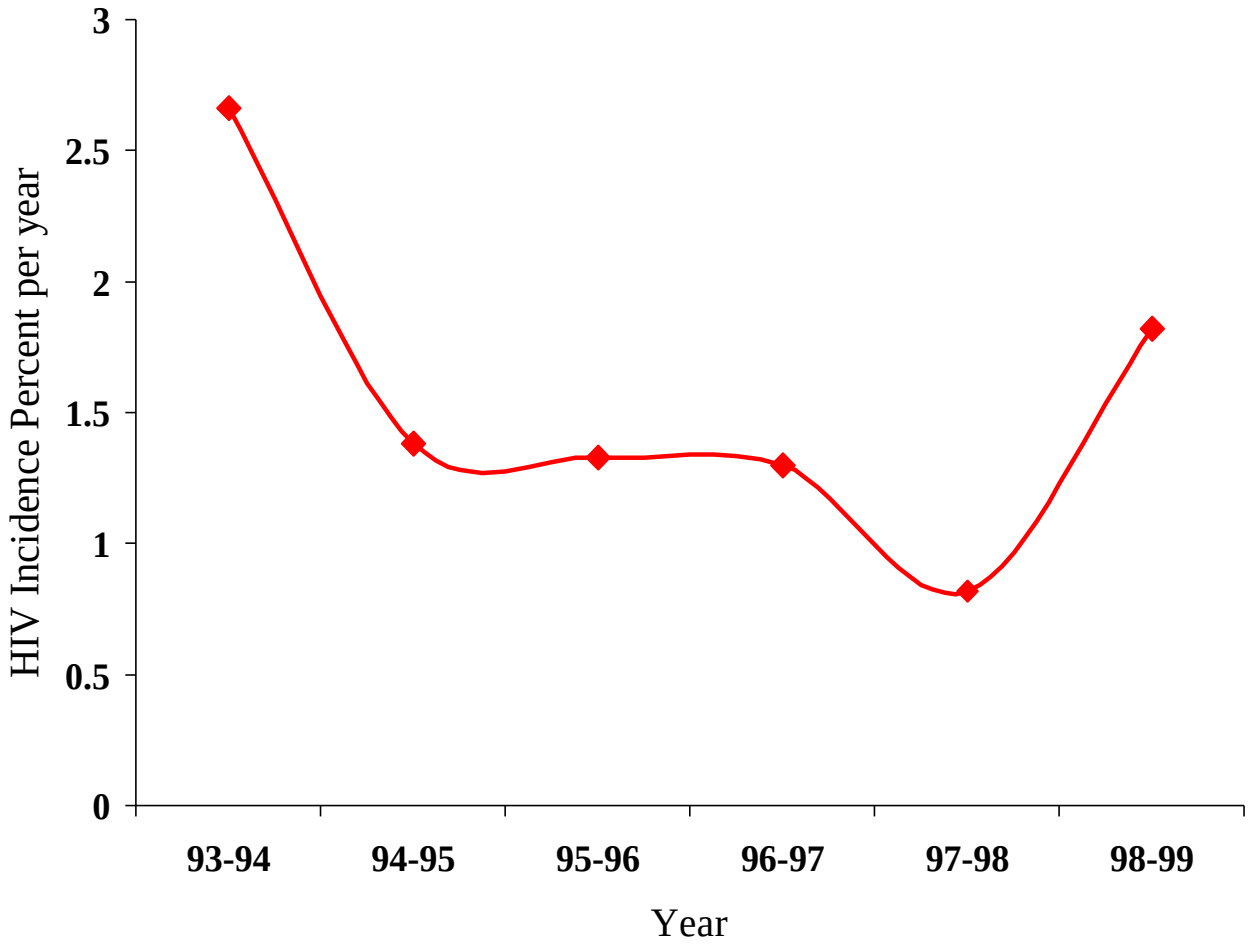


Figure 2: Incidence of HIV among MSM seeking anonymous HIV testing

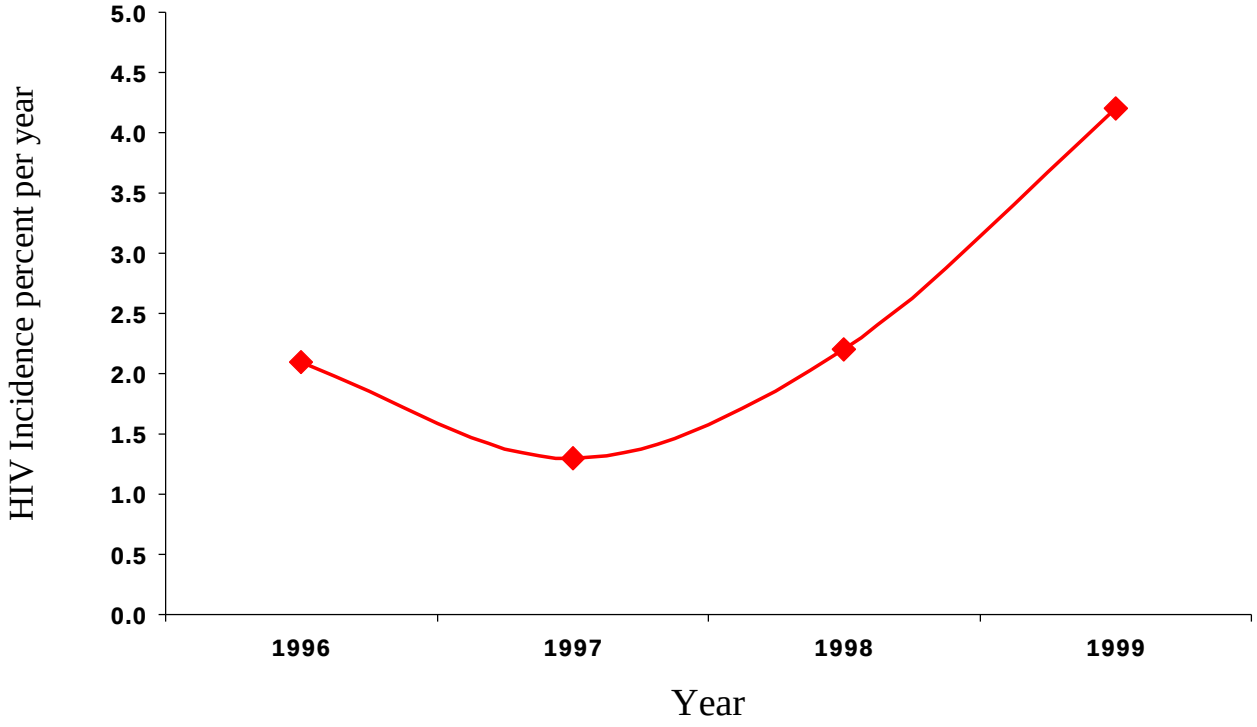


Figure 3: Incidence of HIV among MSM-IDU and Non MSM-IDU

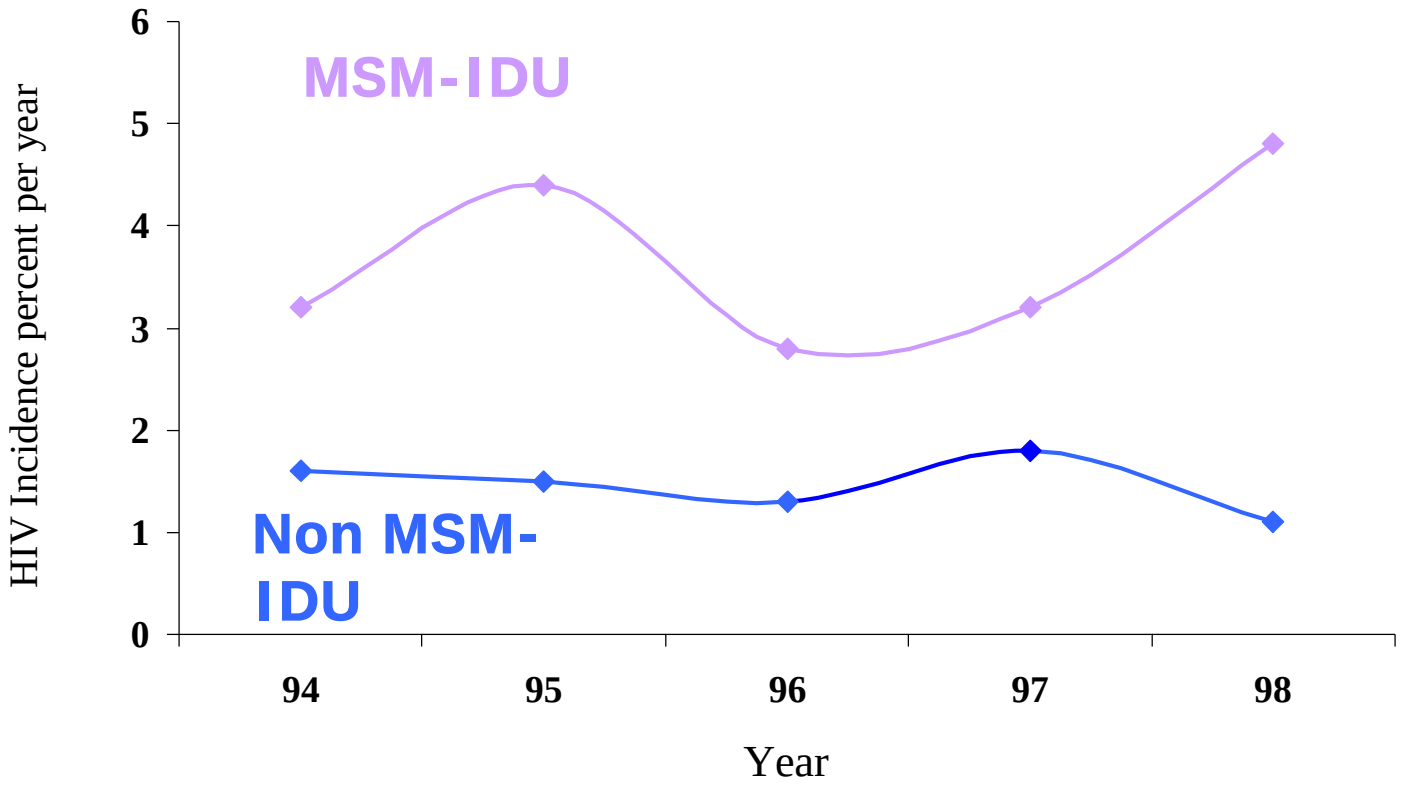


Figure 4: Incidence of HIV incidence among MSM seeking STD treatment

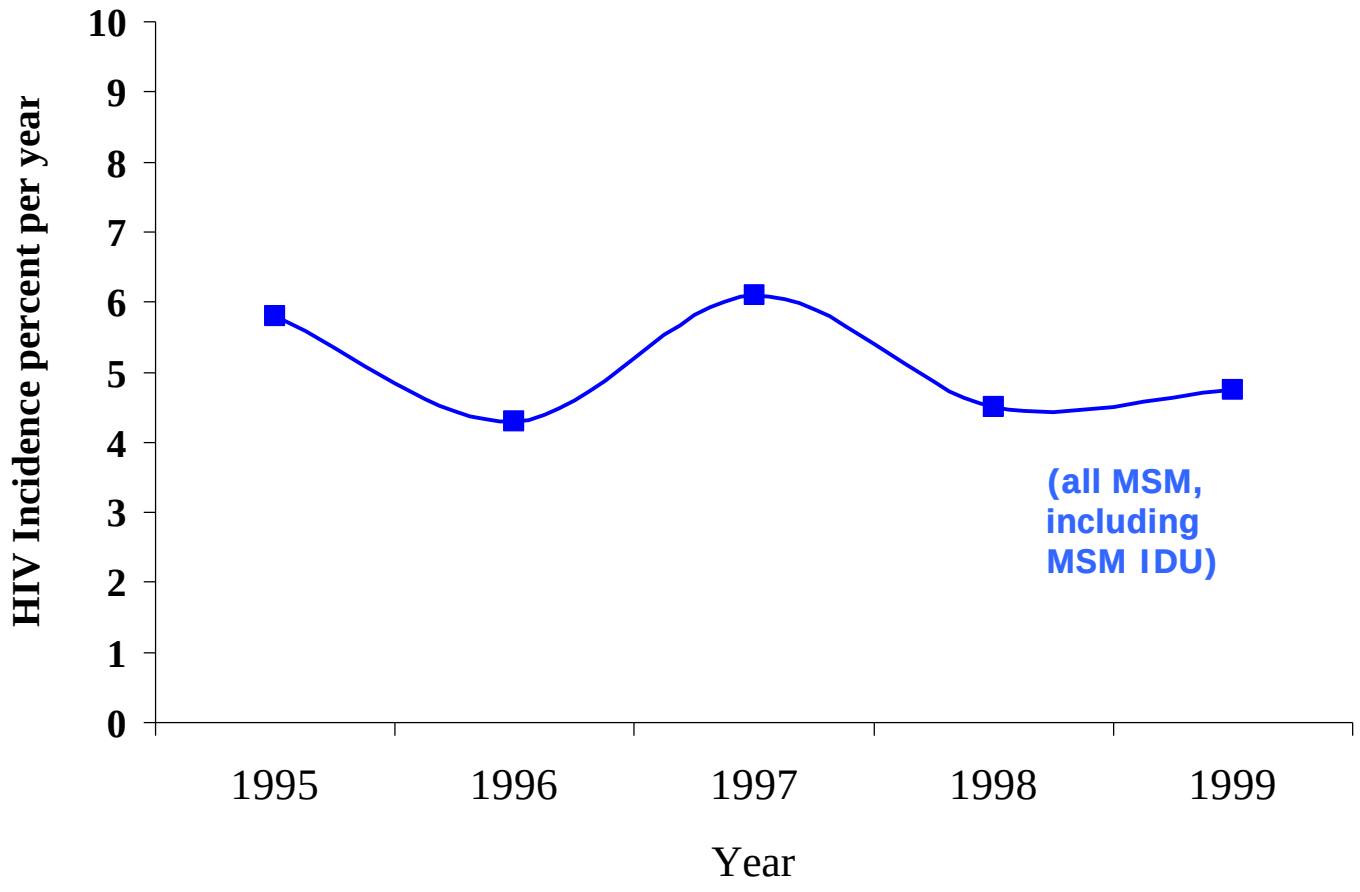


Figure 5: Number of reported cases of rectal gonorrhea (GC)

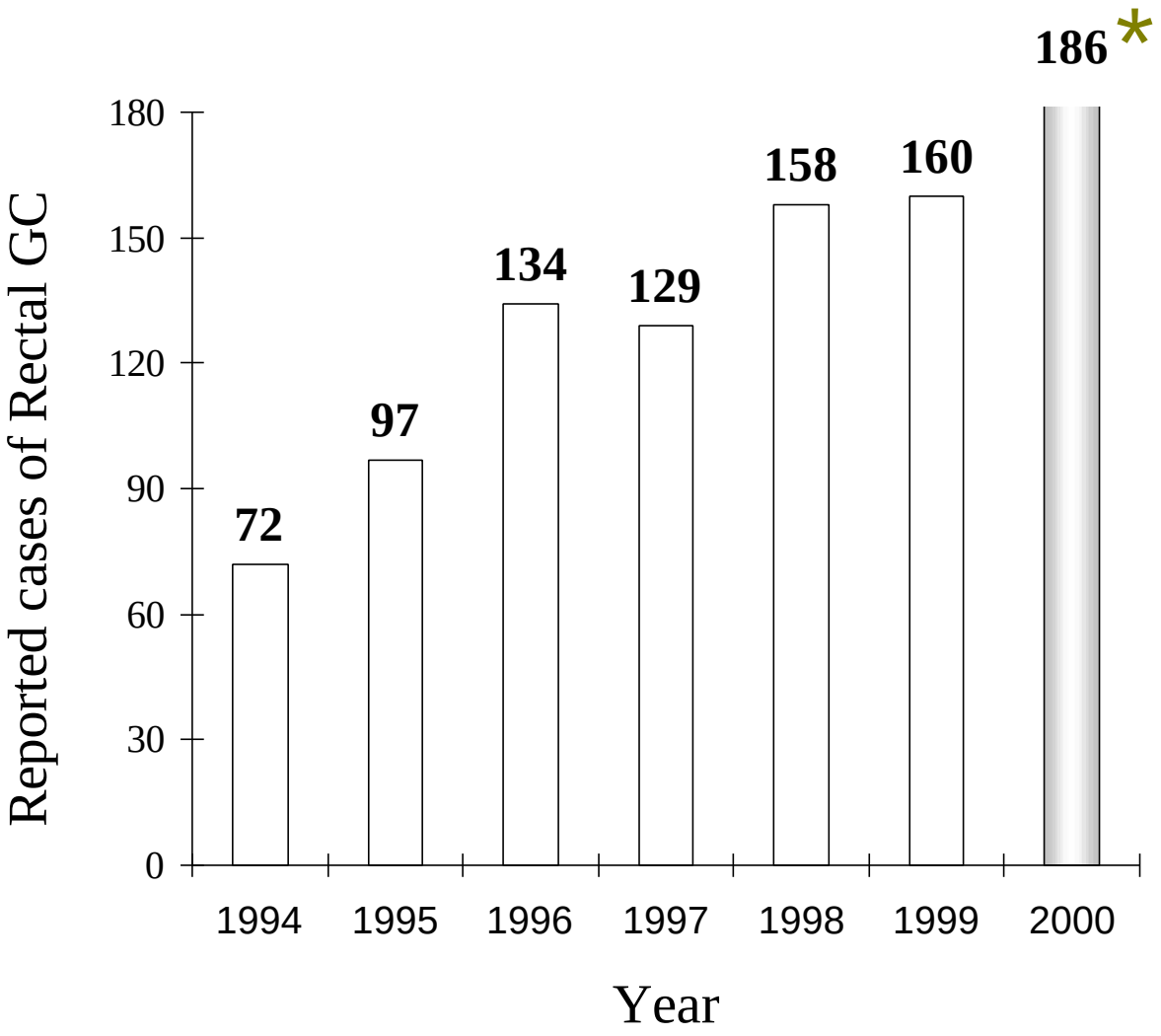


Figure 6: Frequency of STDs among MSM living with AIDS

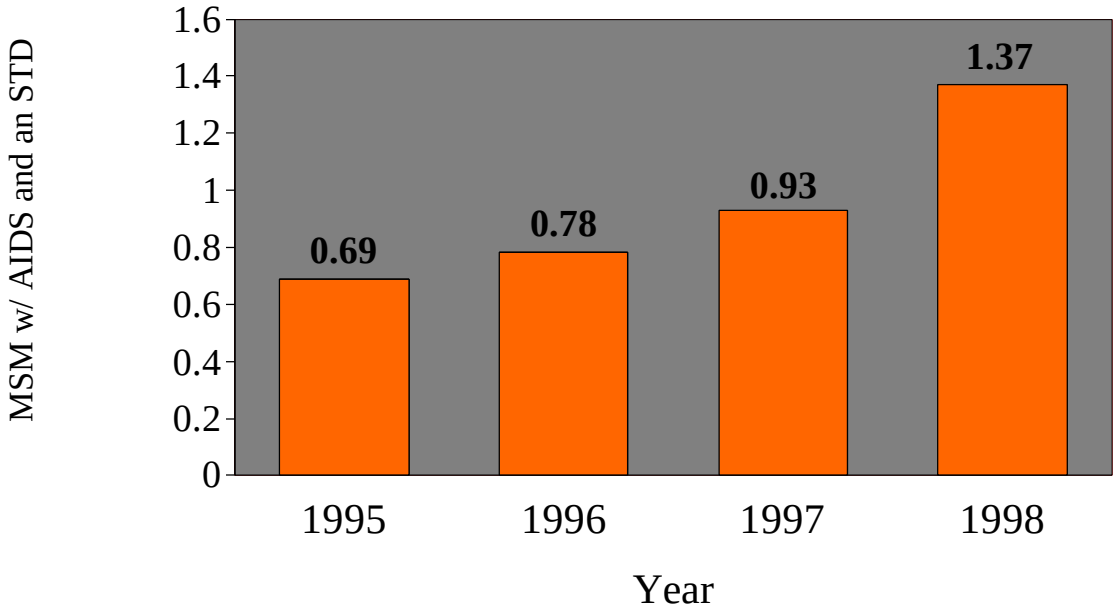


Figure 7: Number of MSM living with AIDS at year-end

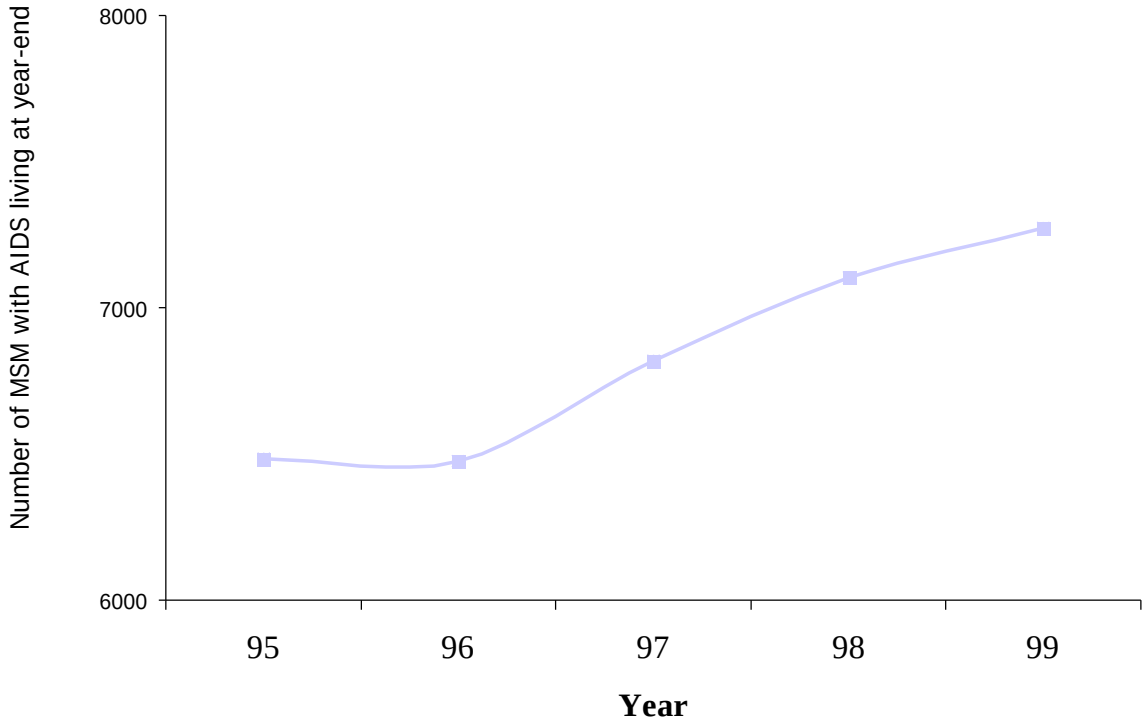


Figure 8: 100% Condom Use among MSM

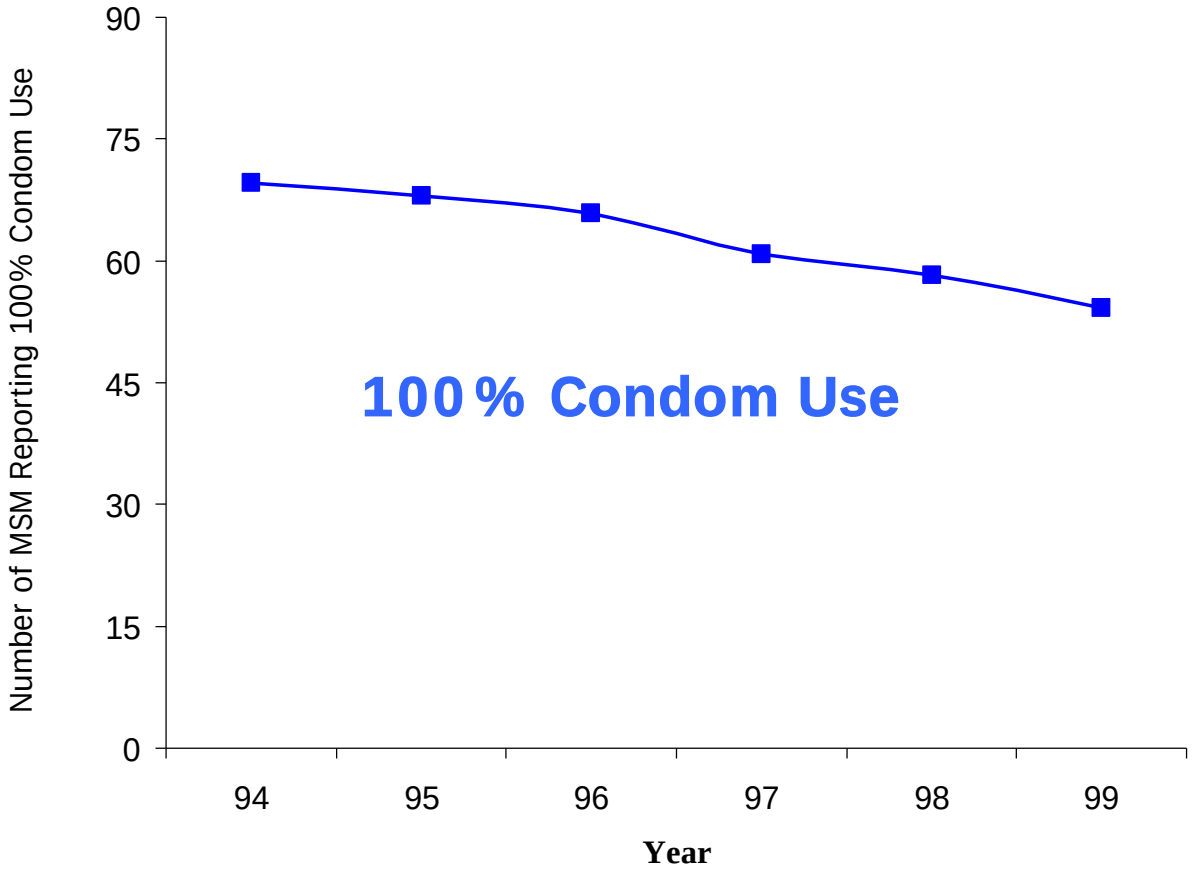


Figure 9: Self-reported sexual risk behavior among MSM

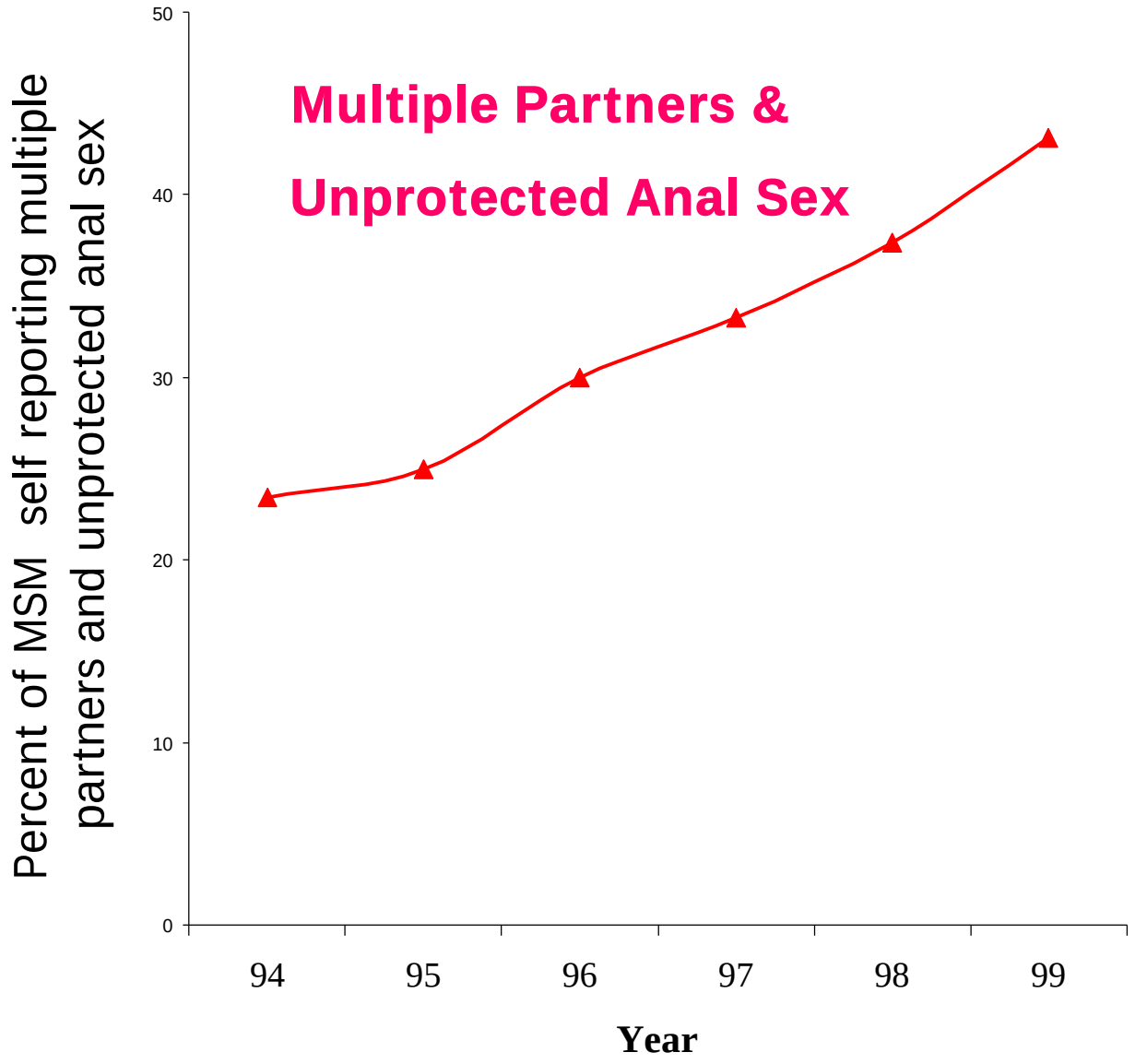
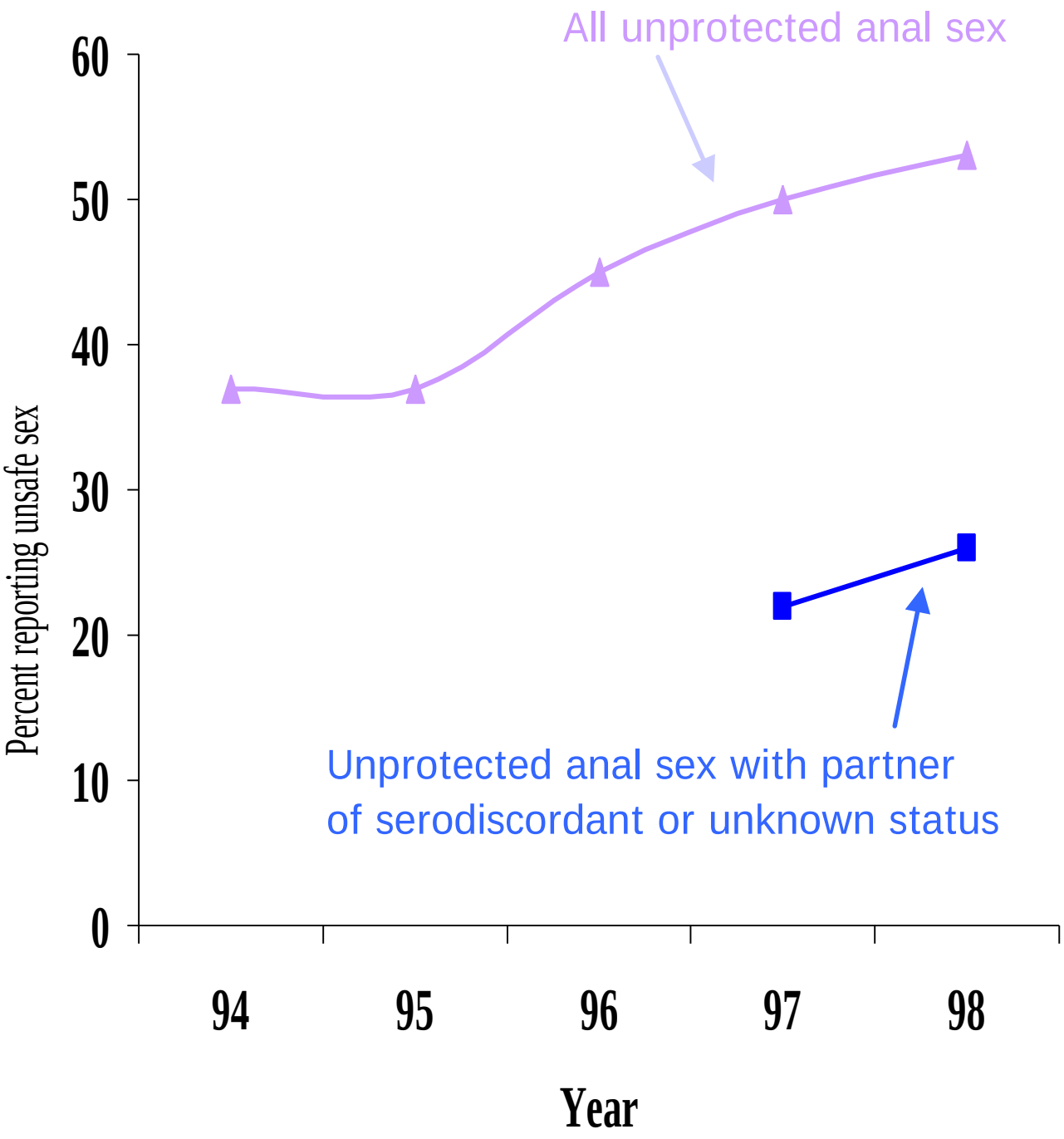


Figure 10: Unprotected anal sex w/ partner of serodiscordant or unknown status



PART III

TABLES & TECHNICAL NOTES

PART III: TABLES AND TECHNICAL NOTES ON HIV INDICATOR DATA

HIV indicator data originate from San Francisco Department of Public Health (SFDPH) efforts such as AIDS case surveillance, STD case surveillance, unlinked anonymous HIV serosurveys in sentinel high-risk populations, analysis of DPH client data, and periodic community and population-based surveys of HIV infection and risk behavior (Page-Shafer, 2000; McFarland, 1999; Kellogg, 2000; SFDPH, 2000; Page-Shafer, 1999; Osmond, 1994; Ekstrand, 1999; Bangsberg, 2000). The DPH also relies upon studies conducted by other institutions and organizations in San Francisco.

The following data present 10 HIV indicators available as of this writing. Figures, particularly those presented for recent years, are preliminary and may be revised with the availability of additional or confirmatory data. While the exact figures are subject to change before finalization, we feel that it is unlikely that overall trends and interpretation will be reversed by subsequent data analyses. We also firmly believe in the importance of timely use of epidemiological data for public health, a position that may result in some differences between preliminary and final figures. The alternative, to wait to release only finalized data, may miss prevention opportunities. Time periods covered by the indicators vary according to the period of study implementation and availability of data as of writing. The following presents the preliminary numbers from HIV prevention indicator data. Overall interpretation, methods, and key potential biases and limitations of each HIV indicator dataset are discussed. When interpreting the data, we recommend following the overall trends rather than the absolute numbers.

No single study, no matter how rigorously designed and painstakingly implemented can precisely measure the city-wide incidence of HIV or predict the number of new infections occurring in a given year. All data have limitations. In order to make inference on the direction of the HIV epidemic/endemic in San Francisco, we therefore rely on the aggregate interpretation of several sources of data drawn from diverse populations and employing diverse methods. We refer to these multiple data sources as "HIV indicators". The rationale is that inference drawn from multiple data sources collected under a variety of conditions is less likely to be vulnerable to the biases and limitations of any particular study. HIV indicator data are often drawn from existing sources and can therefore identify emerging trends in a more timely manner than a single, comprehensive study. However, we recognize that HIV indicator data may also replicate common errors. We believe, therefore, that it is also important to periodically validate indicator data with population-based studies. Finally, HIV indicators are intended to provide evidence that overall prevention efforts in the city are reducing or failing to reduce HIV incidence rather than evaluate specific prevention projects. The HIV indicator approach was proposed by World Health Organization's Global Programme on AIDS and supported by UNAIDS and the CDC (UNAIDS, 2000; Mertens, 1994; Page-Shafer, 2000).

We conclude that the HIV indicator data currently available provide evidence of increased sexual risk behavior and biological markers of increased risk behavior among MSM in San Francisco. Data on HIV incidence among MSM itself is mixed: some data point to increased incidence of HIV among MSM, other data point to steady but high

incidence among MSM. HIV incidence data are consistent on one point: HIV incidence among MSM in San Francisco is increasing and remains at a rate significantly higher than the population as a whole. Of note, limited data available point to high prevalence and incidence of HIV among the male-to-female transgender population in San Francisco. HIV indicator data and HIV incidence data among non-MSM populations, including non-MSM IDU and heterosexual non-IDU are low and decreasing or staying low. We recognize, however, that increases in HIV incidence may lag behind behavior trends, may be missed by our system of detection, or may more strongly manifest with continued trends in risk behavior.

Table 1. Incidence of HIV in a cohort study of MSM

Year	Number of subjects	HIV seroconversions	Person-years of observation	HIV incidence % per year
1993-94	261	5	188	2.7
1994-95	660	7	507	1.4
1995-96	545	10	751	1.3
1996-97	481	7	537	1.3
1997-98	437	3	363	0.83
1998-99	322	9	492	1.8

Comment:
HIV incidence among MSM in a longitudinal cohort study increased in 1998-99 following a period of decreasing or level incidence since 1993.

Technical notes:
The San Francisco Young Men's Health Study (SFYMHS) is a longitudinal cohort measuring HIV incidence and risk related behavior in MSM. A strength of cohort studies is that they measure individuals' changes in risk behavior over time. MSM were recruited using two sampling methods. The baseline sample (n=420) was a multistage probability sample of single men 18 to 29 years of age residing in households from the 21 census tracts in San Francisco with the highest number of cumulative AIDS cases in 1992. Snowball methods were used to recruit an additional 622 men. Study participants are seen and tested for HIV yearly. HIV incidence is estimated based on person-years of observation (Osmond et al, 1994; Osmond et al, 1996). The recent (1998-1999) increase noted in HIV incidence follows several years of documented risk behavior increases (see table 10 below).

Key potential biases and limitations are recognized. MSM recruited from the target areas may not be representative of MSM in San Francisco as whole. A second limitation is that many subjects are lost to follow-up; subjects not continuing in the cohort may be of higher or lower risk than those with continued follow-up visits. It is also possible that participation in the cohort will have a prevention effect on those remaining longer as prevention messages are reinforced with each visit and each episode of counseling and testing. In a closed cohort, a temporal decrease in seroconversion may be expected as

those at highest risk seroconvert early. The latter two biases, however, would most likely result in an under-estimation of HIV incidence in more recent years.

Table 2. Incidence of HIV among MSM seeking anonymous testing

Year	Number tested	Recent HIV infections	Person-years of observation	HIV incidence % per year
1996	3,488	26	1,233	2.1
1997	3,123	14	1,104	1.3
1998	2,910	23	1,028	2.2
1999	1,826	27	645	4.2

Comment:
HIV incidence among MSM seeking anonymous testing in San Francisco increased significantly from 1996 to 1999. No recent HIV infections were detected among heterosexual IDU (N=703) and heterosexuals non-IDU (N=9,858) seeking anonymous testing during the same period.

Technical Notes:
Subjects were MSM seeking HIV antibody testing at all publicly-funded anonymous test sites in San Francisco who provided a blood specimen. MSM was defined as someone who reported being male and reported any male sex partner or who identified as being a gay male. HIV incidence is estimated using the Serological Testing Algorithm for Recent HIV Seroconversion (STARHS, also known as the detuned ELISA) (Janssen et al, 1998). The assay distinguishes persons whose seroconversion occurred within the last 129 days or sometime beyond the last 129 days. Given a "window period" of two to three months, STARHS detects HIV infection within approximately six months after exposure. HIV incidence is annualized by the following formula: (number of seroconversions / number tested) x 365 days/129 days x 100%. Of note, an increase in HIV incidence was also found using a different methodology that relied on self report of prior HIV test results among repeat testers (Kellogg et al, 1999).

Several potential biases and limitations must be considered when interpreting these data. A serious potential bias arises from the decline in the overall number of MSM tested. The decline is partly due to a shift towards oral fluid testing (0 in 1996; 90 in 1997, 387 in 1998; 1108 in 1999); STARHS cannot be used on oral fluid specimens. The decline makes it possible that the increase in HIV incidence is a result of lower risk MSM not testing or not testing by blood. While we cannot know the rate of seroconversion among MSM not testing, the potential bias resulting can be assessed. If we conservatively assume that none of the MSM "not testing" seroconverted (i.e., all remained HIV-negative) and include them back into the denominator to offset the decline in number of tests for each year (i.e., set all tests to 3,488 per year), then the incidence of HIV would be: 2.1% in 1996, 1.1% in 1997, 1.9% in 1998, and 2.2% in 1999. The results would be lower incidence in more recent years, but still a two-fold increase from 1997 to 1999. This exercise would be inherently conservative as it is likely that some of the MSM "not

testing" and some testing by oral fluid did in fact seroconvert. Of note, the HIV prevalence among oral fluid tests (3.2%) was only slightly lower than the overall prevalence among blood tests (3.7%, including recent and longer-standing infections).

A second potential bias would arise if MSM are now seeking testing sooner after a risky event or period of risk thus increasing the likelihood of detecting recent vs. long-standing infection by STARHS. We may expect that such a testing pattern would result in shorter intervals between tests for repeat tester with multiple periods of high risk. Of note, among MSM repeat testers the interval between tests actually lengthened from an average of 12.7 months in 1996 to 13.7 months in 1999. Moreover, we have observed a similar recent increase in HIV incidence using a method of self-reported date of prior negative test (McFarland, 1997; Kellogg, 1999). Finally, we have also observed recent increases in HIV seroconversion among MSM tested through San Francisco General Hospital's counseling and testing programs based on a record-based method that links repeat tests over time (Kellogg, 2000). Unlike STARHS, theses methods are not dependent upon testing shortly after seroconversion and detect persons who seroconverted up to five years since their previous test.

MSM seeking anonymous testing may also not be representative of the community of MSM as a whole. MSM seeking anonymous testing might be a higher risk of seroconversion (i.e., they are testing shortly after high risk exposures) or lower risk (i.e., they have had greater exposure to counseling and other prevention messages). Moreover, persons with multiple tests may be over-represented. To avoid duplicate tests, we used a Unique Testing Code (Dilley, 2000), however many duplicates may have been missed and cannot be identified due to the anonymous nature of the data. For persons who tested HIV-positive and subsequently repeated their test, the second test is removed from analysis. Finally, changes in estimates presented here differ from those previously presented (McFarland, 2000) due to laboratory validation of which tests were oral fluid tests and the identification and removal of additional repeated tests. These changes, however, did not alter the overall conclusion of increased HIV incidence among MSM anonymously tested for HIV in San Francisco.

Table 3a. HIV incidence among MSM-IDU seeking repeat HIV testing at San Francisco General Hospital facilities

Year	HIV seroconversions (pro-rated over interval)	Person-years of observation	HIV incidence % per year
1994	4.43	139	3.2
1995	8.14	186	4.4
1996	5.18	186	2.8
1997	4.36	135	3.2
1998	3.90	82	4.8

Table 3b. Incidence of HIV among heterosexual IDU seeking repeat HIV testing at San Francisco General Hospital facilities

Year	HIV seroconversions (pro-rated over interval)	Person-years of observation	HIV incidence % per year
1994	6.65	413	1.6
1995	9.12	623	1.5
1996	8.70	683	1.3
1997	9.97	557	1.8
1998	3.64	335	1.1

Comment:
HIV incidence among MSM-IDU who were voluntarily tested for HIV at SFGH facilities ranged from a low of 2.8% per year in 1996 to a high of 4.8% per year in 1998. In the most recent year, HIV incidence was highest among MSM-IDU yet lowest among heterosexual IDU. Among SFGH patients who did not report being MSM or IDU, only 5 HIV seroconversions were detected during the study period for an overall incidence 0.27% per year.

Technical Notes:
Subjects were persons who were confidentially tested for HIV at San Francisco General Hospital's facilities more than once between 1994 and 1998 (N=3,432). In the analysis of trend, an HIV seroconversion was assumed to have equal probability of occurring at any point between the last negative and first positive test and is pro-rated over the interval between tests (Suligoi et al, 1999). The period of observation (denominator) is determined as the sum of intervals between tests. HIV incidence is calculated as the pro-rated number of seroconversions divided by the person-years of observation.

Key potential biases and limitations are noted. Patients tested for HIV at SFGH may not be representative of the overall communities at risk for HIV in San Francisco. The SFGH patient population includes a large number of active IDU, uninsured persons, and homeless persons. Identification of seroconversion is dependent upon having multiple tests performed by SFGH and does not include persons only tested once or tested outside of SFGH and its satellite clinics. Overall number of MSM-IDU subjects is small and the margin of error around estimates is therefore large.

Table 4a. Incidence of HIV among MSM seeking care at the municipal STD clinic

Year	Number tested	Number recent infections	Person-years of observation	HIV incidence (%/year)
1995	634	13	224	5.8
1996	664	10	235	4.3
1997	936	20	331	6.0
1998	817	13	289	4.5
1999	1071	18	379	4.7

Table 4b. Incidence of HIV among heterosexual IDU seeking care at the STD clinic

Year	Number tested	Number recent infections	Person-years of observation	HIV incidence (%/year)
1995	136	0	48	0
1996	123	0	43	0
1997	150	0	53	0
1998	106	1	37	2.7
1999	88	0	31	0

Comment:
HIV incidence at the municipal STD clinic (City Clinic) among MSM (including MSM-IDU) has been high and has changed little between 1995 and 1999. HIV incidence among heterosexual IDU has been low; between 1995 and 1999 only one seroconversion among heterosexual IDUs was observed. There were also 13,460 heterosexual, non-IDUs tested between 1995 and 1999. Of these, only 21 seroconversions were observed and the incidence remained stable at less than 1% per year. These data demonstrated steady but high HIV incidence among MSM and stable and low incidence among non-MSM.

Technical notes:
Data were collected as part of annual blinded HIV seroprevalence surveys. In these surveys, residual blood specimens originally collected for routine syphilis tests from persons seeking care at the STD clinic were tested for HIV antibodies after all personal identifying information was removed from the specimen. Demographic and risk data were obtained from the medical record. Neither HIV test results nor risk information can be linked to individuals. Detailed descriptions of these surveys have been previously published (Dondero et al, 1990; Pappainoanou et al, 1990; CDC, 1998; SFDPH, 2000).

HIV seroincidence was estimated using STARHS (Janssen et al, 1998) to identify recent HIV seroconversions among the stored HIV positive specimens collected from 1989 to 1998. As described in table 2 above, annual HIV incidence was calculated as: (number of seroconversions / number tested) x 365 days/129 days x 100%.

Of note, STD clinic patients may not be representative of the wider MSM or IDU populations. Because subjects were attending an STD clinic, they are likely to be at higher risk for sexual acquisition of HIV. Moreover, the margin of error around HIV incidence estimates is wide due to the low number of seroconversions detected.

Table 5. Reported cases of male rectal gonorrhea

Year	Number of reported cases of male rectal gonorrhea	Number cases of male rectal gonorrhea diagnosed at City Clinic (tests performed)
1994	72	49 (531)
1995	97	61 (576)
1996	134	54 (660)
1997	129	85 (803)
1998	158	113 (1111)
1999	160*	111* (1474*)
2000	186**	108** (1516**)

*Preliminary number for 1999
**Projected based on cases reported to end of June 2000.

Comment:
The number of reported cases of rectal gonorrhea among men in San Francisco increased between 1994 and 1999, the largest number diagnosed at the city's municipal STD clinic (City Clinic). There were 93 cases of male rectal gonorrhea cases reported in the first six months of 2000. Given reporting delays in physician and laboratory reporting, we project the annual number of cases in 2000 to exceed the number reported in 1999 at the present rate. Men with rectal gonorrhea represent persons who have engaged in unprotected receptive anal intercourse, a behavior that carries a high risk for acquisition of HIV and a co-factor in HIV transmission (Vittinghoff et al, 1999; Fleming, 1999).

Technical notes:
Physicians and laboratory directors are required by law to report cases of gonorrhea to the health department. Because some persons with gonorrhea may receive empiric treatment without laboratory diagnosis, these numbers are likely to be underestimates of the true number of rectal gonorrhea cases. Although rectal gonorrhea is often symptomatic, some infected persons may not be aware of their infection or seek treatment. Delays in reporting and reassignment of dates of diagnosis may changes preliminary figures, particularly for more recent years.

Key potential biases and limitations may result from temporal changes in screening practices. While there have been increases in the number of cases of rectal GC reported to SFDPH, part of this increase may be explained by increases in case-detection from increased screening. Since 1994, the municipal STD clinic has experienced an increase in the number of MSM patients, the number of tests performed to detect rectal gonorrhea, and a decrease in the prevalence of gonorrhea among screening tests performed. Nonetheless, increased disease transmission in the city cannot be ruled out.

Table 6. Frequency of STD among MSM living with AIDS

Year	MSM with AIDS diagnosed prior to 1995	STD diagnosis after AIDS diagnosis	Percent
1995	7995	55	0.69
1996	7451	58	0.78
1997	7204	67	0.93
1998	7385	101	1.37

Comment:
The acquisition of an STD among persons with AIDS is a marker of high-risk sexual behavior among persons who may transmit HIV to others. The number and proportion of STD diagnoses among MSM living with AIDS increased from 1995 to 1998. The total number of STD among non-MSM with AIDS was 26 with the highest number (12) occurring in the most recent year of available data (1998). Among the 11,832 persons living with AIDS after 1994, those taking HAART were more likely to acquire a STD after their AIDS diagnosis than persons with AIDS who were not taking HAART.

Technical notes:
Subjects were persons who were diagnosed with AIDS in 1995 or earlier and were alive at anytime during the study period (figures therefore differ from those presented in table 7). Diagnosis of STD occurring among persons with AIDS was determined through a computerized match of the AIDS and STD case registries. A match was verified by name, date of birth, and gender. The STD registry included persons reported with gonorrhea, chlamydia, nongonococcal urethritis, or infectious syphilis. The number of persons living with HIV-non-AIDS who acquired an STD is not known.

Table 7. Temporal trends in the number of persons living with AIDS

Year	Number of persons living with AIDS	
	MSM	*Non-MSM*
1995	6485	949
1996	6474	1017
1997	6817	1108
1998	7102	1199
1999	7272	1348

Comment:
There are now more persons (MSM and non-MSM) living with AIDS in San Francisco than ever before. The number of new AIDS cases peaked in 1992 and has declined since. The number of AIDS deaths plateaued between 1992 and 1994 and declined in 1995. AIDS deaths have declined each year since 1995. Survival after AIDS increased between 1994 and 1998. The result of these events has been an increase in the number of persons living with AIDS. The increased survival after AIDS is attributable largely to the use of antiretroviral therapies. The number of persons living with AIDS comprises an unknown

fraction of the persons living with HIV infection. Persons living with HIV/AIDS, particularly those who are unaware of their infection and not receiving antiretroviral therapy, may transmit HIV infection to others through unsafe sexual or needle sharing.

Technical notes:
By law, persons with an AIDS diagnosis are reported to the health department. Subjects were persons whose AIDS diagnosis had been reported to the health department and who was verified to be alive as of the 31st of December for the year indicated in the table (figures therefore differ from those presented in table 6). Records are periodically reviewed for health outcomes and vital status. Deaths among persons with AIDS in San Francisco are determined through weekly review of local vital statistics records, through reports from the state Office of AIDS, and through periodic matches with the National Death Index. Persons living with HIV-non-AIDS are not reported to the DPH.

Table 8. 100% Condom use among MSM

Year	Number interviewed	Number reporting 100% condom use with anal sex	Percent
1994	3556	2474	69.6
1995	3526	2393	67.9
1996	3276	2131	65.0
1997	2544	1546	60.8
1998	2813	1634	58.1
1999	2179	1180	54.2

Comment:
The proportion of men reporting using condoms “always” during anal sex in the last six months has decreased from 1994 to 1999 as measured in outreach surveys conducted by the STOP AIDS Project.

Technical notes:
The STOP AIDS Project, a community-based organization focusing on MSM in San Francisco, obtained data from rapid assessment questionnaires administered during outreach efforts. Volunteers and staff from the STOP AIDS Project conducted standardized surveys whereby MSM were approached in various settings (e.g., clubs, bars, outdoor events, and areas of high pedestrian activity such as the Castro and Polk neighborhoods) and asked to respond to a peer-administered, one-page questionnaire. In analysis, persons were excluded if they had participated previously in the same year. Unprotected anal intercourse (UAI) was defined as engaging in insertive or receptive anal sex in the past 6 months and not always using condoms (Page-Shafer et al, 1999). Data were collected primarily for the purpose of designing and targeting prevention interventions.

Key potential biases and limitations include selection of subjects (non-population-based sampling), the decrease in the number of subject included in the analysis over time

(resulting in part from removal of repeat interviewees), the inability to distinguish insertive and receptive anal sex, and the inability to distinguish serostatus of partners and with which partners condoms were or were not used. Although the sample may not be representative of the MSM population in San Francisco, the large sample size each year, the diversity of sampling venues, and the consistency in findings across all age and ethnic groups support the validity of the data.

Table 9. Multiple sex partners and unprotected anal sex among MSM

Year	Number interviewed	Number reporting multiple partners and unprotected anal sex	Percent
1994	2387	563	23.6
1995	2454	615	25.1
1996	2304	647	28.1
1997	1784	594	33.3
1998	1466	540	36.8
1999	1152	496	43.1

Comment:
The proportion of men reporting two or more anal sex partners who reported not using condoms “always” in the last six months has increased from 1994 through 1999 as measured in outreach surveys conducted by the STOP AIDS Project.

Technical notes:
As described for Table 8 above, the STOP AIDS Project obtained data from rapid assessment questionnaires administered during outreach efforts. Volunteers and staff from the STOP AIDS Project conducted standardized surveys whereby MSM were approached in various settings (e.g., clubs, bars, outdoor events, and areas of high pedestrian activity such as the Castro and Polk neighborhoods) and asked to respond to a peer-administered, one-page questionnaire. In analysis, persons were excluded if they had participated previously in the same year. Unprotected anal intercourse (UAI) was defined as engaging in insertive or receptive anal sex in the past 6 months and not always using condoms. Having multiple partners was defined as having more than one anal sex partner in the past 6 months (Page-Shafer et al, 1999). Data were collected primarily for the purpose of designing and targeting prevention interventions.

Key potential biases and limitations include selection of subjects (non-population-based sampling), the decrease in the number of subject included in the analysis over time (resulting in part from removal of repeat interviewees), the inability to distinguish insertive and receptive anal sex, and the inability to distinguish serostatus of partners and with which partners condoms were or were not used. Although the sample may not be representative of the MSM population in San Francisco, the large sample size each year, the diversity of sampling venues, and the consistency in findings across all age and ethnic groups support the validity of the data.

Table 10. Unprotected anal intercourse (UAI) in a cohort study of MSM

Year	Number interviewed	Number reporting UAI	Percent
93-94	502	184	37
94-95	510	189	37
95-96	504	228	45
96-97	504	254	50
97-98	576	305	53

Comment:
Unprotected anal intercourse among MSM in the SFYMHS increased from 1993-94 to 1997-98 (Ekstrand et al, 1999). UAI was determined from the number of participants who reported engaging in either unprotected receptive, unprotected insertive, or both types of anal sex. Participants who reported UAI were asked whether any of it had occurred with a partner of "unknown or different HIV status" from 1996-97 to 1997-98 only. The proportion of those reporting UAI with a partner of opposite or unknown serostatus increased from 22% in 1996-97 to 26% in 1997-98.

Technical notes:

The San Francisco Young Men's Health Study (SFYMHS) is a longitudinal cohort measuring HIV incidence and risk related behavior in MSM. A strength of cohort studies is that they measure individuals' changes in risk behavior over time. MSM were recruited using two sampling methods. The baseline sample (n=420) was a multistage probability sample of single men 18 to 29 years of age residing in households from the 21 census tracts in San Francisco with the highest number of cumulative AIDS cases in 1992. Snowball methods were used to recruit an additional 622 men. Study participants are seen and interviewed yearly. Behavioral data are collected using a self-administered questionnaire each year. Of note, the increases in UAI were observed several years before the increase in HIV incidence itself (table 1) highlighting the prevention opportunity afforded by monitoring risk behavior.

Key potential biases and limitations are recognized. MSM recruited from the target areas may not be representative of MSM in San Francisco as whole. A second limitation is that some subjects are lost to follow-up; subjects not continuing in the cohort may be of higher or lower risk than those with continued follow-up visits. It is also possible that participation in the cohort will have a prevention effect on those remaining longer as prevention messages are reinforced with each visit and each episode of counseling and testing. Self-reported information may also be influenced by the social desirability of providing the "correct" answer. This last potential bias, however, is likely to result in an under-estimation of risk if subject perceive that the "safer sex" answers are more desirable compared to acknowledging risky behaviors.

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