Companion Text for the Slide Set: *Minnesota HIV Surveillance Report, 2004*

INTRODUCTION

Overview

The *Minnesota HIV Surveillance Report, 2004* describes the occurrence of reported HIV infections in Minnesota by person, place, and time through December 31, 2004. Such data provide information about where and among whom HIV transmission is likely occurring. This knowledge can in turn be used to help educate, target prevention efforts, plan for services, and develop policy.

Data Source

The data in this report are based on confidential case reports collected through the Minnesota Department of Health (MDH) HIV/AIDS Surveillance System. In Minnesota, laboratory-confirmed infections of human immunodeficiency virus (HIV) are monitored by the MDH through this active and passive surveillance system. State law (Minnesota Rule 4605.7040) requires both physicians and laboratories to report all cases of HIV infection (HIV or AIDS) directly to the MDH (passive surveillance). Additionally, regular contact is maintained with several clinical sites to help ensure completeness of reporting (active surveillance).

Data in this report include cases diagnosed with HIV as of December 31, 2004 and reported to the MDH as of April 2005. All data are displayed by earliest date of HIV diagnosis. Refer to the *HIV Surveillance Technical Notes* for a more detailed description of data inclusions and exclusions.

Data Limitations

Factors that impact the completeness and accuracy of the available surveillance data on HIV/AIDS include the level of screening and compliance with case reporting. Thus, any changes in numbers of infections may be due to one of these factors, or due to actual changes in HIV/AIDS occurrence.

The data presented in this report are not adjusted for reporting delays. Thus, the case number presented for the most recent reporting year can be viewed as a minimum and will likely increase in the future as further case reports are received. Changes in past years' totals are updated in every new annual surveillance report.

HIV/AIDS in the UNITED STATES

Compared with the rest of the nation, Minnesota is considered to be a low to moderate HIV/AIDS incidence state. In 2003, state-specific AIDS rates ranged from 0.5 per 100,000 persons in North Dakota to 34.8 per 100,000 persons in New York. Minnesota had the 12th lowest AIDS rate (3.6 AIDS cases reported per 100,000 persons). Compared with states in the Midwest region, Minnesota had a moderate AIDS rate. State-specific HIV rates cannot be compared nationally because some states have just begun HIV case surveillance. At present 39 states have name-based HIV reporting.

HIV/AIDS IN MINNESOTA

MDH HIV/AIDS Surveillance: Cumulative cases

AIDS has been tracked in Minnesota since 1982. In 1985, AIDS officially became a reportable disease to state and territorial health departments nationwide. Also in 1985, when the Food and Drug Administration approved the first diagnostic test for HIV, Minnesota became the first state to make HIV infection a reportable condition. As of December 31, 2004, a cumulative total of 7,547 cases of HIV infection have been reported among Minnesota residents.[1] This includes 4,571 AIDS cases and 2,976 HIV, non-AIDS cases. Of these 7,547 HIV/AIDS cases, 2,697 are known to be deceased through correspondence with the reporting source, other health departments, reviews of death certificates and obituaries, active surveillance, and matches with the National Death Index.

[1] This number includes persons who reported Minnesota as their state of residence at the time of their HIV and/or AIDS diagnosis. It also includes persons who may have been diagnosed in a state that does not have HIV reporting and who subsequently moved to Minnesota and were reported here. HIV-infected persons currently residing in Minnesota, but who resided in another HIV-reporting state at the time of diagnosis are excluded.

Overview of HIV/AIDS in Minnesota, 1990-2004

The annual number of new AIDS cases increased steadily from the beginning of the epidemic to the early 1990s, reaching a peak of 370 cases in 1992. Beginning in 1996, both the number of newly diagnosed AIDS cases and the number of deaths among AIDS cases declined sharply, primarily due to the success of new antiretroviral therapies including protease inhibitors. These treatments do not cure, but can delay progression to AIDS among persons with HIV (non-AIDS) infection and improve survival among those with AIDS. Thus over the past three years we have seen a slow increase in the number of AIDS cases diagnosed, from 161 in 2002 to 196 in 2004, a 22 percent increase. The number of HIV (non-AIDS) diagnoses has remained fairly constant since the mid 1990s at approximately 200 cases per year, despite consistent increases in the number of people living with HIV/AIDS. By the end of 2004, an estimated 5,002 persons with HIV/AIDS were assumed to be living in Minnesota.[2]

NEW HIV INFECTIONS IN MINNESOTA

In this report, the term "new HIV infections" refers to HIV-infected Minnesota residents who were diagnosed in a particular calendar year and reported to the MDH. This includes persons whose first diagnosis of HIV infection is AIDS (AIDS at first diagnosis). HIV infection data are displayed by earliest known date of HIV diagnosis.

New HIV Infections by Geography

Historically, about 90% of new HIV infections diagnosed in Minnesota have occurred in Minneapolis, St. Paul and the surrounding seven-county metropolitan area. This has not changed over time. Although HIV infection is more common in communities with higher population densities and greater poverty, HIV or AIDS has been diagnosed in over 80% of counties in Minnesota.

New HIV Infections by Gender

Since the beginning of the epidemic, males have accounted for a majority of new HIV infections diagnosed per year. However, the number and the proportion of cases among females

[2] This number includes persons whose most recently reported state of residence was Minnesota, regardless of residence at time of diagnosis. This estimate does not include persons with undiagnosed HIV infection.

have increased over time. In 1990, males accounted for 90% of new HIV infections. In 2004, 71% of new infections occurred among males and 29% among females.

New HIV Infections by Race/Ethnicity[3]

Trends in the annual number of new HIV infections diagnosed among males differ by racial/ethnic group. New cases among White males drove the epidemic in the 1980s and early 1990s. Although Whites still account for the largest number of new infections among males, this number has generally been decreasing since 1991.

In contrast to the overall large decline in the annual number of cases among White males, the decline among African American males was more gradual. The annual number of cases for African American males peaked in 1992 at 81 and gradually decreased to 33 in 2003. In 2004, the number increased to 40 cases. The numbers of new cases in all other racial/ethnic groups during this same time remained stable or increased. Increases in the annual number of HIV infections diagnosed among Hispanic and African-born males, in particular, have been recorded since the late 1990s. The percentage of new HIV infections diagnosed among men of color as a whole has been increasing over time as the number of cases among White males has dropped.

Similarly, trends in the annual number of HIV infections diagnosed among females differ by racial/ethnic group. In the beginning of the epidemic, White women accounted for a majority of newly diagnosed cases among females. Since 1991, the number of new infections among women of color has exceeded the number among White women. Since 2000, the annual number of new infections diagnosed among African American females has remained stable at around 20 cases per year (18 cases in 2004) and doubled among African-born females in the same time period (18 cases in 2000 and 35 cases in 2004). The annual number of new infections diagnosed among Hispanic, American Indian, and Asian females continues to be quite small (10 cases or fewer per year for each of these groups).

The most recent data illustrate that men and women of color continue to be disproportionately affected by HIV/AIDS. Whites make up approximately 88% of the male population in Minnesota and 57% of the new HIV infections diagnosed among men in 2004. Men of color make up approximately 12% of the male population and 43% of the infections

[3] Black race was broken down into African-born and African American (Black, not African-born). The numbers exclude 20 persons arriving through the HIV-Positive Refugee Resettlement Program.

diagnosed among men in 2004. Similarly for females, Whites make up approximately 89% of the female population and 23% of new infections among women in 2004 whereas women of color make up approximately 11% of the female population and 77% of the new infections among women.[4]

Note that race is not considered a biological reason for disparities in the occurrence of HIV experienced by persons of color. Race, however, can be considered a marker for other personal and social characteristics that put a person at greater risk for HIV exposure. These characteristics may include, but are not limited to, lower socioeconomic status, less education, and greater prevalence of drug use.

Average Age at HIV Diagnosis, Three-year Averages

In recent years, Hispanic males were slightly younger (approximate age = 32 years) than White, African American, African-born, American Indian, and Asian males (approximate age = 38 years) at the time of HIV diagnosis. During the past three years, the average age at HIV diagnosis has been approximately 31 years among African American, African-born and Hispanic females. White and American Indian females were slightly older (approximate age = 34 years) and Asian females were somewhat older (approximate age = 40 years). Age at HIV diagnosis can be used as a proxy for age at HIV *infection*. However, due to differences in testing behavior (e.g. variable lengths of time between HIV infection and diagnosis) across time and between sociodemographic groups, comparisons of average age at diagnosis are difficult to interpret.

New HIV Infections among Adolescents and Young Adults[5], 1990-2004

Many people are infected with HIV for years before they actually seek testing and become aware of their HIV status. This phenomenon especially affects the observed case counts for younger age groups. As a result, the reported number of HIV infections among youth[5] (with few or no reports of AIDS at first diagnosis) is likely to underestimate the *true* number of new infections occurring in the population more than the reported number of cases in older age groups does.

[4] Population estimates based on U.S. Census 2000 data.
[5] In this report, adolescents are defined as 13-19 year-olds and young adults as 20-24 year-olds; these two groups are jointly referred to as "youth." Analyses are performed for adolescents and young adults combined because case numbers are too small to present meaningful data separately for each.

In 1990, 10% (45/436) of new HIV infections reported to the MDH were among youth. In 2004 this percentage was 16% (48/307). Among young men, the number of new HIV diagnoses peaked in 1992 at 46 cases and then declined through the mid 1990s to a low of 14 cases in 1997. Since 1997 the annual number of cases diagnosed among young men increased steadily to 28 in 2000, but then dropped to 18 cases in 2002. In 2004, the number of cases among young men was 25.

Unlike young men, the annual number of new HIV infections diagnosed among young women has remained relatively consistent over time. For example, 19 cases of HIV infection were diagnosed among young women in 1992 and 23 cases in 2004. Females accounted for 48% (23/48) of new HIV infections diagnosed among adolescents and young adults in 2004. In contrast, adult females (25 years of age or older) accounted for only 26% (67/192) of all adult cases. Additionally, young women accounted for 25% (23/90) of new infections among females, while young males only accounted for 12% (25/217) of new infections among males.

Similar to the adult HIV/AIDS epidemic, persons of color account for a disproportionate number of new HIV infections among adolescents and young adults. Among young men, Whites accounted for 35% of new HIV infections diagnosed between 2002 and 2004, African Americans accounted for 28%, Hispanics 24%, and African-born 10% of the cases. Among young women, Whites accounted for 17%, African Americans 28%, African-born 34%, and Hispanics 15% of the new infections diagnosed during the same time period.

In 2004, MDH used a risk re-distribution method to estimate mode of exposure among those cases with unknown risk. For additional details on how this was done please read the *HIV Surveillance Technical Notes*. All mode of exposure numbers referred to in the text are based on the risk re-distribution.

Men having sex with men (MSM) was the predominant mode of HIV exposure among adolescent and young adult males, accounting for an estimated 90% of the new HIV infections diagnosed between 2002 and 2004. The joint risk of MSM and injecting drug use (IDU) accounted for an estimated 6%, and heterosexual contact and injecting drug use each accounted for an estimated 2% of the cases in the same time period.

Heterosexual contact accounted for an estimated 83% of new HIV infections diagnosed among adolescent and young adult females between 2002 and 2004, while IDU accounted for an estimated 17% of the cases.

New HIV Infections by Mode of Exposure

Since the beginning, men have driven the HIV/AIDS epidemic in Minnesota and male-to-male sex has been the predominant mode of exposure reported. Though still the majority, both the number and proportion of new HIV infections attributed to MSM have been decreasing since 1991 reaching an apparent plateau in 2000 at just under 130 cases per year. On a much smaller scale, the numbers of male cases attributed to IDU and MSM/IDU also have been decreasing over the past decade, while the number of cases attributed to heterosexual contact has been increasing. The number of cases without a specified risk has also been increasing.

Throughout the epidemic, heterosexual contact has been the predominant mode of HIV exposure reported among females. IDU is the second most common mode of transmission making up 6% of cases among women in 2003. Unspecified risk has been designated for a growing percentage of cases for the past several years. In 1996, 7% of women diagnosed with HIV infection did not have a specified mode of transmission. This percentage grew to 30% in 2004 with an additional 34% of female cases who would not agree to or could not be interviewed by a Disease Intervention Specialist[6] from the MDH. Some cases may yet be interviewed, thus, a portion of these women will later have an identified mode of transmission. This explains *part* of the higher percentage of cases in recent years with an unspecified mode of exposure. According to a study conducted by the Centers for Disease Control and Prevention (CDC)[7], it is likely that at least 80% of women with unspecified risk acquired HIV through heterosexual contact. Heterosexual contact as a mode of HIV transmission is currently only assigned to a female case if she knows that a male sexual partner of hers was HIV-infected or at increased risk for HIV. As mentioned above, in 2004 MDH used a risk re-distribution method to estimate mode of exposure among those with no risk and the numbers below reflect the risk re-distribution (see *HIV Surveillance Technical Notes* for further details).

The proportion of cases attributable to a certain mode of exposure differs not only by gender, but also by race. Of the new HIV infections diagnosed among males between 2002 and 2004, MSM or MSM/IDU accounted for an estimated 95% of cases among White males, 85% of cases among Hispanic males, 72% of cases among African American males, and 6% of cases among African-born males. The latter three also had the highest proportions of cases with

[6] Disease Intervention Specialists attempt to contact all persons recently diagnosed with HIV in order to provide HIV education, partner notification, and connect the person with medical care or other resources.
[7] MMWR 2001; 50(RR-6):31-40.

unspecified risk (34%, 40%, and 95%, respectively – this includes cases for whom no interview has been obtained; see *HIV Surveillance Technical Notes* for further information about re-distribution of mode of exposure categories). It is hypothesized that due, in part, to social stigma many of the cases with unspecified risk were unclassified MSM cases and is reflected in the risk re-distribution. This may not hold as true for African-born cases given that heterosexual contact and contaminated medical equipment have been established modes of HIV exposure in their countries of origin. IDU or MSM/IDU was estimated as a risk in 19% of male African American cases, 10% of male White cases and 7% of Hispanic cases diagnosed during 2002-2004. The number of cases among Asian and American Indian men during the years 2002-2004 was insufficient to make generalizations regarding risk (less than 20 cases in each group), but male-to-male sex appears to be the most prominent mode of exposure among Asian males, while IDU or MSM/IDU appears to be most prominent among American Indian males.

Heterosexual contact with a partner who has or is at increased risk for HIV infection accounted for an estimated 80% of cases among African American females, 86% of cases among White females, and 93% of cases among African-born females between 2002 and 2004. More than 30% of cases in each of these groups had no specified risk (including cases for whom no interview has been obtained; see *HIV Surveillance Technical Notes* for further information about re-distribution of mode of exposure categories). IDU was estimated as a risk for 14% of cases among Whites, 10% among African Americans, and 0% among African-born. The number of cases among Hispanic, Asian, and American Indian women during the years 2002-2004 were insufficient to make generalizations regarding risk (less than 20 cases in each group).

Mother-to-Child HIV Transmission

The ability to interrupt the transmission of HIV from mother to child via antiretroviral therapy and appropriate perinatal care is an important accomplishment in the history of the HIV/AIDS epidemic. Newborn HIV infection rates range from 25-30% without antiretroviral therapy, but decrease to 1-2% with appropriate medical intervention. Unfortunately, these benefits have largely only been realized in the developed world where antiretroviral therapies are more accessible than in undeveloped countries.

Over the past 10 years the number of births to HIV-infected women has increased steadily from 19 in 1994 to 49 in 2004. During the same time period the rate of transmission has decreased from 15% between 1994 and 1996 to 2% in the past three years.

The rate of transmission in Minnesota between 1982 and 1994 (before widespread use of zidovudine[8] to prevent mother-to-child HIV transmission) was 25%. Proper prenatal care, including HIV screening for all pregnant women and appropriate medical intervention for those infected, is a vital element in preventing the spread of HIV.

Special Populations: New HIV Infections among Foreign-born Persons

The number of new HIV infections diagnosed among foreign-born persons in Minnesota has steadily increased from 19 cases in 1990 to 87 cases in 2004. This increase has been largely driven by the increase of cases among African-born persons from 7 cases in 1990 to 59 cases in 2004. Among new HIV infections diagnosed in 2004, 28% were among foreign-born persons. Based on U.S. Census 2000 data, foreign-born persons make up 5% of the total Minnesota population and are, therefore, disproportionately affected by HIV[9]. Among African-born this disparity is even more evident, while African-born persons make up less that 1% of the Minnesota population they accounted for 19% of new HIV infections in 2004.

[8] A common antiretroviral drug.

[9] Based on U.S. Census 2000 data, 260,463 foreign-born persons, including 35,188 African-born persons are living in Minnesota out of a total population of 4,919,479. Because there are many reasons foreign-born persons may not be included in the census count (e.g. difficulties with verbal or written English), these numbers are likely an underestimate of the actual size of the foreign-born population living in Minnesota.