NEW YORK CITY AIDS CASE MORTALITY RATES IN THE ERA OF POTENT ANTIRETROVIRAL THERAPY

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Dramatic declines in deaths attributed to human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) have been observed since potent antiretroviral therapy first became available in late 1995.^{1,2} In New York City, deaths due to HIV/AIDS declined 72%, from 7,046 in 1995 to 1,978 in 1998. The number of deaths occurring in the first and last 6 months of 1998 was the same (989), suggesting that deaths due to HIV/AIDS may have reached a plateau. Overall, more than 114,000 cases of AIDS have been reported in New York City through July 1999—about 16% of all US cases. As a result of declining AIDS mortality and continuing diagnosis of new AIDS cases, the number of people living with AIDS in New York City has increased 30% (from 32,107 to 41,839) since 1995.³

Although declines in the number of deaths are large and began simultaneously in all demographic groups, mortality rates have varied by gender, race/ethnicity, and transmission category. The purpose of this analysis is to examine AIDS case mortality data by HIV transmission category and demographic variables to describe differential declines between 1995 and 1998 further.

This descriptive analysis used data from the New York City Department of Health HIV/AIDS reporting system (HARS) designed by the Centers for Disease

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Control and Prevention. AIDS cases included in the analysis were those diagnosed through December 31, 1998, and reported to the health department through July 27, 1999. AIDS deaths (ICD-9 HIV/AIDS-specific categories 042-044) were identified through routine matches with the New York City Vital Statistics Registry. Since 1981, the proportion of people diagnosed with AIDS who have died in New York City and have HIV/AIDS reported as the cause of death has varied annually from 83% to 91% (New York City Department of Health, unpublished data).

The outcome of interest was 6-month mortality rates, defined as the number of people dying of AIDS divided by the number of people in the subgroup of analysis living with AIDS during the interval. The use of mortality rates controls for changes in the relative sizes of the at-risk populations. HARS data were used in this analysis because information on HIV transmission risk is available from the database. It has been shown previously that, in New York City, the number of HIV/AIDS deaths obtained from the Vital Statistics Registry (the gold standard because of rapid and complete reporting) and from HARS are comparable except for the most recent 6-month period, when a reporting lag is evident for AIDS cases.¹ Thus, between-group comparisons end with the 900 deaths in HARS occurring in the first half of 1998.

For all AIDS cases, the mortality rate declined steadily, from 9.3% in the first half of 1995 to 2% in the first half of 1998. In general, mortality rate declines followed similar patterns in men and women, although rates consistently were higher for women. In the first half of 1998, the relative risk (RR) of death for women compared to men was 1.33, $P < .001$. Other significant differences in mortality in the first half of 1998 included those for blacks compared to whites ($RR = 2.16$, $P < .001$) and Hispanics ($RR = 1.37$, $P < .001$): Black women had the highest mortality rate (2.98%) compared to the lowest for white men (1.23%) ($RR = 2.46$, $P < .001$).

Surprisingly, both men and women who acquired HIV heterosexually had the highest mortality rates among all transmission categories (men who have sex with men [MSM], injecting drug users, heterosexuals, and all others). The 25% mortality rate seen in the first half of 1995 for men who acquired HIV heterosexually was far higher than that for any other demographic group or transmission category. By the first half of 1998, mortality rates declined to 5.2% for heterosexual men, compared to 1.8% ($RR = 2.89$, $P < .001$) for all other transmission categories combined, and to 3.2% for heterosexual women, compared to 2.2% ($RR = 1.45$, $P < .002$) for all other transmission categories combined. One plausible explanation for the very high mortality rates in persons infected het-

erosexually may be that these individuals were unaware of their risk for HIV infection and entered treatment late in the course of their disease.

Within HIV transmission categories, differences in mortality rates by race/ethnicity in MSM were among the most striking. From the first half of 1995 through the first half of 1998, mortality rates converged for white and Hispanic men, while remaining consistently higher in black MSM. In the first half of 1998, black men were significantly more likely to die than white or Hispanic MSM (RR = 1.93, $P < .001$). During this period, the mortality rate for black MSM was 2%, compared to approximately 1% for both white and Hispanic MSM.

In summary, HIV/AIDS mortality rates in New York City vary widely by demographic group and transmission category, although all groups have experienced dramatic declines in mortality since 1995. In the first half of 1998, women were 1.3 times more likely to die than men; blacks were 1.4 times more likely to die than Hispanics and more than twice as likely to die than whites. Among men living with AIDS in 1998, those who were infected heterosexually were nearly 3 times more likely to die than MSM, injecting drug users, or others. Women infected heterosexually were nearly 1.5 times more likely to die than women infected through other routes. Among MSM, blacks were 2 times more likely to die than whites or Hispanics.

These findings suggest that new therapies and care are available broadly to people with AIDS in New York City. Nevertheless, the mortality rate appears to have stabilized at 1% to 2% per year. The large shift in the demographics of people with AIDS in New York City—from an epidemic in white, middle class, gay men to one primarily affecting socially and economically marginalized populations—greatly complicates provision of and access to care.⁴ For many clinical and social reasons, treatment is not always available or successful; some people refuse antiretroviral therapy, and some do not receive treatment because they do not even know they are HIV infected. HIV prevention remains a critical health goal.

REFERENCES

1. Palella FJ, Delaney KM, Moorman AC, et al. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. *N Engl J Med.* 1998; 338:853–860.
2. Chiasson MA, Berenson L, Li W, et al. Declining HIV/AIDS mortality in New York City. *J Acquir Immune Defic Syndr Hum Retrovirol.* 1999;21:59–64.
3. New York City Department of Health. *Estimates of Persons Living with AIDS.* New York: New York City Department of Health; 1998.
4. Fordyce EJ, Singh TP, Vazquez FM, et al. Evolution of an urban epidemic: the first 100,000 AIDS cases in New York City. *Popul Res Policy Rev.* 1999;18:523–544.