WISCONSIN AIDS/HIV PROGRAM NOTES

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Wisconsin HIV Care Continuum: Statewide and Select Population Groups

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Access to HIV medical care is critical for improving individual health outcomes, reducing HIV transmission, and linking to other needed health and social services. To identify service gaps and evaluate linkage to care, retention in care, and health outcomes, many jurisdictions are developing local HIV care continuums. The Wisconsin AIDS/HIV Program has developed a care continuum based on an evaluation of:

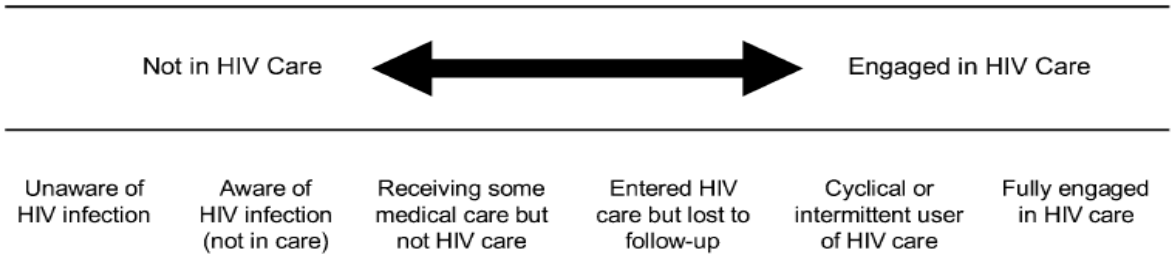
- Linkage to care for those diagnosed in Wisconsin during 2011, and
- Retention in care and viral suppression during 2012 for those presumed to be alive and living in Wisconsin at the end of 2011.

Overall, 81% of new diagnoses during 2011 were linked to HIV medical care within three months of diagnosis, only slightly less than the national goal of 85%.[1] However, only half (51%) of those living with HIV in Wisconsin met the two-visits-per-year HIV care standard during 2012, well below the national goal of 80%.[1] As a result, only 46% of individuals known to be living with HIV in Wisconsin had suppressed viral load by the end of 2012. The high proportion of people with suppressed viral load among those in care (82%) suggests that medical care in Wisconsin is effective and of high quality; therefore, additional efforts should focus primarily on engaging and retaining people in HIV medical care over the long term.

Background

The HIV care continuum is a way to visually display estimates of the proportion of those living with HIV/AIDS who are receiving needed medical care and treatment. In 2011, Gardener and colleagues published the first engagement in HIV care continuum and used published literature to estimate the number of people in the United States in various stages of the HIV care continuum (Figure 1).[2]

Figure 1. Health Resources and Services Administration (HRSA) continuum of HIV care, adapted by Gardener EM, et al.



[1] Office of National AIDS Policy. National HIV/AIDS Strategy for the United States. White House; Washington, DC: 2010.
[2] Gardener EM, et al. The Spectrum of Engagement in HIV Care and its Relevance to Test-and-Treat Strategies for Prevention of HIV Infection. *CID*. 2011:52; 793-800.

As a follow-up to the Gardener findings, the Centers for Disease Control and Prevention (CDC) and many local jurisdictions have used HIV surveillance data to estimate linkage to HIV care, retention in HIV care, and viral load suppression. A visual representation of these important patient outcomes in the form of an HIV care continuum can be helpful for depicting gaps along the care continuum, setting goals, and measuring program improvement.

Methods

Individual-level information and laboratory data from the Enhanced HIV/AIDS Reporting System (eHARS) were used to develop HIV care continuums for various populations in Wisconsin. Because eHARS does not contain clinical visit dates, CD4 and viral load test results routinely reported to the Wisconsin HIV surveillance unit were used as proxy indicators of clinical care. SAS statistical software was used to evaluate the percentage at each stage of the care continuum. Cases were evaluated for linkage to care if they were diagnosed for the first time in Wisconsin during 2011 and were ≥13 years of age at the time of diagnosis. Retention in care and viral suppression were evaluated during 2012 among 2011 prevalent cases that were ≥13 years of age and were alive and living in Wisconsin at the end of 2012. Subpopulations were defined based on the demographic characteristics stored in eHARS. Ninety-five percent confidence intervals were used to determine statistically significant differences between groups.

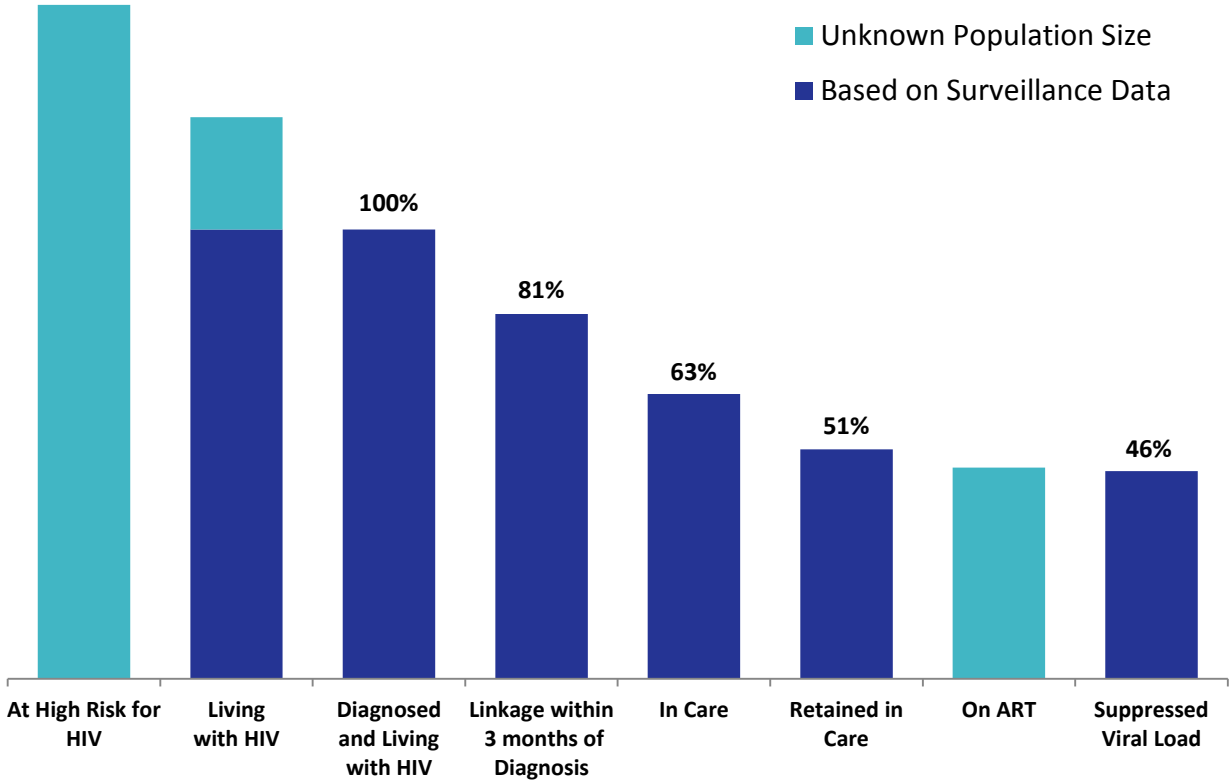
Definitions used for the HIV care continuum stages are shown in the box below.

- ***At High Risk for HIV***: People engaging in HIV risk behaviors, including unprotected male-to-male sex, sharing of injection drug-using equipment, and heterosexual sexual contact with a member of these groups or with an HIV-infected partner.
- ***Living with HIV***: Number living with HIV in Wisconsin, including those unaware of their HIV infection.
- ***Diagnosed and Living with HIV***: Cases ≥13 years of age who were presumed to be alive and living with HIV in Wisconsin at the end of 2011 and who were alive and living in Wisconsin at the end of 2012.
- ***Linkage within Three Months of Diagnosis***: Evidence of a CD4 or viral load test with a specimen collection date within three months of the HIV diagnosis date, among those diagnosed with HIV in Wisconsin during 2011. CD4 or viral load tests done on the date of diagnosis were excluded as they are considered part of the person's diagnostic workup.
- ***In Care***: Evidence of at least one CD4 or viral load test during 2012, among those diagnosed and living with HIV.
- ***Retained in Care***: Evidence of at least two CD4 or viral load tests that are ≥ 90 days apart during 2012, among those diagnosed and living with HIV.
- ***On ART***: Prescribed antiretroviral therapy (ART) during 2012, among those diagnosed and living with HIV.
- ***Suppressed Viral Load***: Last viral load test result during 2012 was ≤ 200 copies/mL, among those diagnosed and living with HIV. Those without a viral load test were considered not virally suppressed.
- ***Viral Suppression among Those in Care***: Last viral load test result during 2012 was ≤ 200 copies/mL, among those who had at least one viral load test during 2012.

Results

Figure 2 shows the HIV care continuum for all Wisconsin cases.

Figure 2. Wisconsin HIV Care Continuum, 2011 New Diagnoses and Prevalent Cases



- *At High Risk*: These are people most likely to become infected with HIV. The size of this population is unknown but is larger than the number of people infected with HIV in Wisconsin.
- *Living with HIV*: The CDC estimates that 18% of those infected with HIV are unaware of their infection, although the percent unaware may vary by population. Therefore, those living with HIV in Wisconsin are comprised of both those aware and unaware of their HIV infection.
- *Diagnosed and Living with HIV*: An estimated 6,244 of the 2011 prevalent cases were alive and living in Wisconsin at the end of 2012.
- *Linkage within Three Months of Diagnosis*: Among the 245 new diagnoses statewide during 2011, 81% showed evidence of linkage to care within three months of diagnosis. An additional 15% of people newly diagnosed were linked to care more than three months after diagnosis, and 4% had no evidence of linkage at the time of analysis. Of the nine persons never linked to care, all were male, eight were non-White, all were MSM or had unknown risk, and six were under age 30 at the time of HIV diagnosis.
- *In Care*: Of those diagnosed and living with HIV, 63% had at least one care visit during 2012.
- *Retained in Care*: Of those diagnosed and living with HIV, 51% had at least two visits, 90 days apart, during 2012.
- *On ART*: ART usage is not reported in Wisconsin and therefore the proportion of people on treatment in Wisconsin is unknown.

- *Suppressed Viral Load*: Of those diagnosed and living with HIV, 46% had suppressed viral load as of their last viral load test in 2012.
- *Viral Suppression among Those in Care*: Most (82%) of those who had at least one viral load test (indicating some care) were virally suppressed as of their last viral load test during 2012 (data shown in Table 1, page 6).

Table 1 (page 6) shows the estimated percentages at each stage of the HIV care continuum by individual characteristics. The populations are mutually exclusive within categories (e.g., within race/ethnicity) but not across categories. Reading the table by row shows the HIV care continuum for a specific population, while reading the table by column allows a comparison across populations for each stage in the care continuum. Relationships not mentioned in the "Statistically Significant Differences" column may be numerically different but not statistically different.

Discussion

Access to HIV medical care is critical for improving individual health outcomes, reducing HIV transmission, and linking to other needed health and social services. Overall, 81% of new diagnoses during 2011 were linked to HIV medical care within three months of diagnosis, only slightly less than the national goal of 85%. However, only half of those living with HIV in Wisconsin met the HIV care standard during 2012, while a slightly higher proportion had at least one medical visit during 2012. As a result, only 46% of those known to be living with HIV in Wisconsin at the end of 2011 had suppressed viral load by the end of 2012. The high proportion with suppressed viral load among those retained in care suggests that medical care in Wisconsin is effective and of high quality; therefore, additional efforts should focus primarily on engaging and retaining people in HIV medical care over the long term. Differences in the HIV care continuum by population are described below.

Geography

In Wisconsin, people living with HIV in the City of Milwaukee were more likely than their non-Milwaukee counterparts (those living in Wisconsin outside Milwaukee City limits) to have accessed care during 2012. This may be due to higher access to care in an urban environment or to the high proportion of health care providers receiving Ryan White funding in the Milwaukee area. Ryan White providers are required to closely monitor performance on key care indicators for local and federal reports, and patients of these providers have been shown nationally to have better care outcomes than previously reported for all those estimated to be living with HIV.[3]

Sex

Females had among the highest percentages at each stage of the care continuum and were more likely than males to have accessed and engaged in care during 2012; however, among those in care, men were more likely to be virally suppressed.

Race/Ethnicity

Similar to the national data, there are disparities in HIV care by race/ethnicity in Wisconsin. Whites had among the highest percentages at each stage of the care continuum and, among those in care, were more likely than Blacks to have accessed care and to be virally suppressed. In addition, while the difference was not statistically significant, Blacks were among the least likely

[3] Continuum of HIV care among Ryan White HIV/AIDS Program clients, U.S., 2010. Available from http://hab.hrsa.gov/data/reports/continuumofcare/ .

to be linked to care within the desired timeframe. HIV care patterns among Hispanics were similar to those of Whites.

Age

HIV care patterns also varied by age. Younger people (13-29 years of age) had among the lowest percentages linked to care within three months of diagnoses but had among the highest proportions to have accessed and engaged in care during 2012. Younger people in care were less likely than those ages 30 and older and in care to have suppressed viral load.

Risk

Those with MSM (men who have sex with men) and high-risk heterosexual transmission risk had among the highest proportions at each stage of the HIV care continuum. Those with unknown and IDU (injection drug user) risk consistently had the lowest percentage at each stage of the care continuum. People who use injection drugs are known to have significant barriers to HIV care; and many people with HIV have unknown risk as a result of being out of care, as providers are an important source of risk information.

Limitations

In this analysis, the presence of laboratory data was used as a proxy for receiving HIV medical care. This method assumes that laboratory reporting of CD4 and viral load test results to the HIV surveillance program is high and that laboratory data correlate highly with an HIV medical visit. Based on a recent eHARS validation study, reporting of HIV-related laboratory data is high and the correlation between laboratory data and medical visits over a one-year period is also high. Therefore, use of eHARS laboratory data is a reasonable approximation for care over a one-year period. The correlation of HIV laboratory data and clinic visit dates within a 90-day period is lower and, therefore, the linkage estimates presented here may overestimate the true linkage rates. Finally, this analysis is based on people with HIV presumed to be alive and living in Wisconsin and, therefore, those who unknowingly moved out of state or who died during 2012 may have been included. While some data presented in these analyses may over- or under-represent the actual proportion linked, retained or virally suppressed, it is likely that the trend for each population is representative of the actual care pattern, despite these data limitations.

Conclusion

Visual displays of the HIV care continuum can be useful for identifying gaps in the various stages of HIV care and for measuring the impact of various interventions and programs. Interventions and programs designed to address these gaps should focus on the many known factors that impact linkage to and retention in HIV care and viral load suppression. These factors include both individual characteristics (e.g. housing instability, lack of health insurance, and mental health or substance abuse problems) and system-level characteristics (e.g. limited clinic hours, lack of translation services, or difficulty navigating complex health systems). The Wisconsin AIDS/HIV Program will continue to monitor statewide trends in the HIV care continuum overall and among population subgroups.

Table 1. Wisconsin HIV Care Continuum, 2011 New Diagnoses and Prevalent Cases by Select Demographic Characteristics

	Linkage Within 3 Months Of Diagnosis	In Care	Retained In Care	Suppressed Viral Load	Viral Suppression Among Those in Care	Statistically Significant Differences
Statewide	81%	63%	51%	46%	82%	Not applicable
Geography						
City of Milwaukee	79%	66%	56%	48%	79%	• City > Non-City in care • City > Non-City retained in care • Non-City > City virally suppressed among those in care
State excluding City of Milwaukee	83%	62%	48%	45%	85%	
Sex						
Male	80%	62%	50%	45%	83%	• Female > Male in care • Female > Male retained in care • Male > Female virally suppressed among those in care
Female	85%	70%	56%	50%	78%	
Race/Ethnicity						
White	88%	66%	52%	49%	88%	• White > Black and Hispanic in care • White > Black virally suppressed • White and Hispanic > Black virally suppressed among those in care
Black	76%	61%	49%	43%	75%	
Hispanic	82%	60%	51%	46%	83%	
Age						
13-29 Years (Younger)	73%	72%	57%	47%	67%	• Younger > Older in care • Younger > Older retained in care • Older > Younger virally suppressed among those in care
30+ Years (Older)	87%	62%	50%	46%	84%	

Table 1 (continued from page 6)

	Linkage Within 3 Months Of Diagnosis	In Care	Retained In Care	Suppressed Viral Load	Viral Suppression Among Those in Care	Statistically Significant Differences
Risk						
MSM (including MSM/IDU)	84%	66%	53%	49%	84%	• MSM and Heterosexual > Unknown and IDU risk in care • MSM and Heterosexual > Unknown and IDU risk retained in care • MSM and Heterosexual > Unknown and IDU risk virally suppressed • MSM > Unknown risk virally suppressed among those in care
High Risk Heterosexual	79%	70%	57%	52%	80%	
Unknown Risk	76%	55%	43%	38%	77%	
IDU	79%	54%	46%	39%	79%	

Note: MSM is men who have sex with men. IDU is injection drug users.