2010 HIV Continuum of Care: Tennessee

Background: HIV in the United States

An estimated 1,148,200 persons aged 13 years and older were living with the human immunodeficiency virus (HIV) in the United States in 2009, with approximately 48,100 new cases reported annually.[1] Though the number of people living with HIV (PLWH) has increased over the past decade, the annual number of new infections has remained relatively stable. This incidence is not distributed evenly; some groups are affected more than others. Blacks/African Americans account for about 44% of all new infections despite representing only 14% of the U.S. population, and men who have sex with men (MSM) make up 79% of all new infections among males, regardless of race or ethnicity.[2,3] Past efforts to stem HIV incidence have focused primarily on behavioral interventions—emphasizing abstinence, limiting one's number of sexual partners, and practicing safe sex. In 2011, the prevention paradigm expanded in response to clinical trial findings demonstrating the utility of antiretroviral therapy (ART) and subsequent viral load (VL) suppression as important tools for HIV prevention.[4] Accordingly, HIV prevention efforts now include PLWH's timely access and optimal response to ART, in order to improve their own health as well as to further prevent transmission.[5]

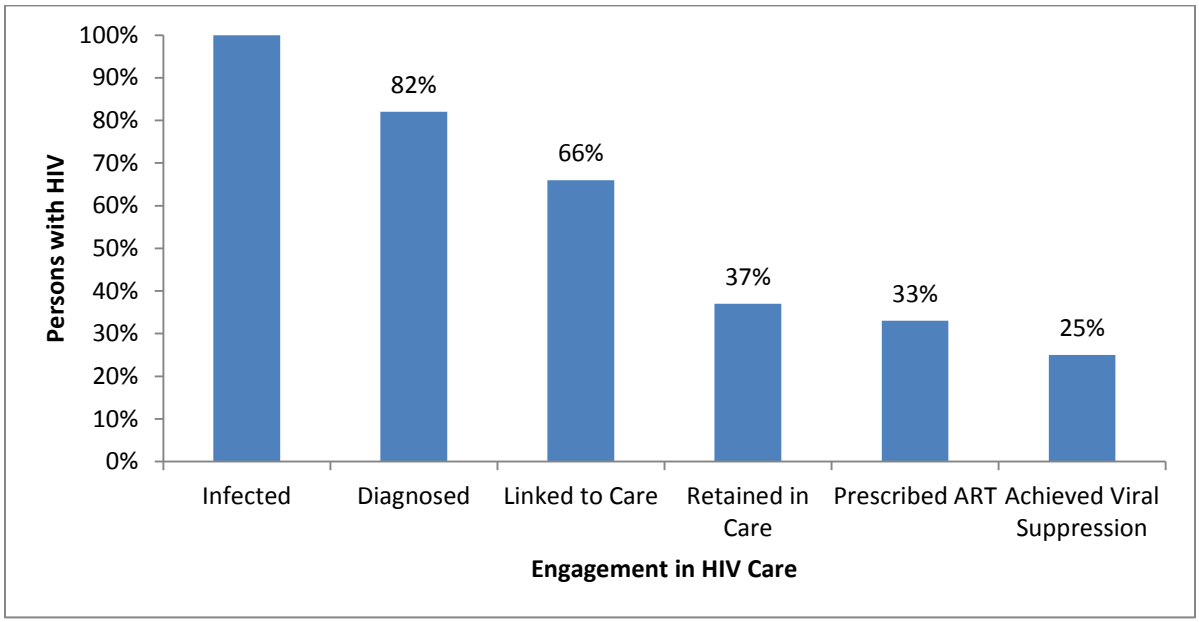
The importance of treatment as prevention is reflected in the United States' 2010 National HIV/AIDS Strategy (NHAS), which outlines three major goals for 2015:

1) Reduce New HIV Infections,
2) Increase Access to Care and Improve Health Outcomes for People Living with HIV, and
3) Reduce HIV-Related Health Disparities.[6]

Progress towards these goals is illustrated in the *HIV continuum of care*, a tool used to monitor HIV-infected persons' engagement in the various stages of HIV medical care. A 2013 assessment of a nationwide continuum of care used two surveillance systems to examine HIV care and treatment in the United States: the National HIV Surveillance System and the Medical Monitoring Project (MMP). Data were used to estimate how many persons were living with HIV, and of those living with the infection, how many were diagnosed, retained in medical care, prescribed ART, and achieved suppressed VL.[7]

Figure 1 illustrates engagement in care among the estimated 1,148,000 persons living with an HIV infection in the United States in 2010. Among PLWH, about 18% were unaware of their infection, 66% were linked to care, 37% were retained in care, 33% were prescribed ART, and 25% achieved suppressed VL.[7]

Figure 1. Estimated percentages of HIV-infected persons engaged in select stages of the continuum of care in the United States (2010).



Not all populations exhibited the same amount of engagement in HIV care. Blacks/African Americans and Hispanics/Latinos had lower percentages than whites at every stage of the continuum of care. Engagement in care also differed by transmission category as well as by age group. Heterosexual males had the lowest percentages at every stage of the continuum, and persons aged 55 to 64 had significantly higher rates of HIV viral suppression than younger individuals.[7] Given these disparities, the NHAS has specifically outlined goals to increase the proportion of viral suppression among populations with disproportionately lower rates of engagement in care, including blacks/African Americans, Hispanics/Latinos, and MSM.[6]

Background: HIV in Tennessee

The HIV continuum of care has been used at a national level to highlight the overall need to improve access to HIV care, especially within certain groups. Similarly, jurisdictional-specific analysis can be utilized at the local level to better direct programmatic planning and service implementation. The Centers for Disease Control and Prevention (CDC) issued guidance in July 2013 providing local jurisdictions with specific recommendations for analyzing their own HIV continuum of care. Specifically, because the national estimates of those living and undiagnosed with HIV are not applicable at the local level due to variations in HIV testing and reporting, the CDC recommends that the overall denominator for local analyses of the continuum be the number of persons living with diagnosed HIV infection rather than all those estimated to be living with the infection. Another deviation from the national continuum of care at the local level is the elimination of the "Prescribed ART" indicator. Due to a lack of data from the MMP, Tennessee has not been able to assess this variable,[8] which is of minimal consequence given that U.S. guidelines recommend that ART be initiated for all HIV-infected people willing and able to commit to treatment, regardless of baseline CD4 count.[5]

In order to assess Tennessee's statewide HIV continuum of care, the Tennessee Department of Health (TDH) utilized CD4 and VL lab values entered into the Electronic HIV/AIDS Reporting System

(eHARS; a part of the National HIV Surveillance System) to ascertain linkage to, engagement in, and response to HIV care and treatment. Effective January 1, 2012, all laboratories performing CD4 and VL testing among clients in TN have been required to report these test results to TDH. Results from CD4 and VL testing conducted in 2010 and 2011 were updated and entered retrospectively into eHARS by TDH staff.

Based on CDC's guidance,[8] TDH created Tennessee's baseline 2010 HIV continuum of care utilizing the following definitions:

- **Diagnosed:** Persons diagnosed with HIV infection through December 31, 2009 who were alive and living in TN as of December 31, 2010.
- **Linked to Care:** Persons newly diagnosed with HIV infection in TN in 2010 who were linked to medical care within 3 months of diagnosis (as evidenced in eHARS by ≥ 1 CD4 or VL lab within 3 months of diagnosis).
- **Retained in Care:** Persons diagnosed with HIV infection who attended at least 2 medical visits in 2010 at least 3 months apart (as evidenced in eHARS by ≥ 2 CD4 and/or VL labs ≥ 3 months apart).
- **Achieved Viral Suppression:** Persons diagnosed with HIV infection who achieved HIV viral suppression by the end of 2010 (as evidenced in eHARS with ≥ 1 VL in 2010 and whose last VL result in 2010 was ≤ 200 copies/mL).

Per CDC recommendations, the number of persons diagnosed cumulatively through the end of 2009 who were still alive and living in TN at the end of 2010 (*n*=16,718) serves as the denominator for all columns in TN's cascade except for the "Linked to Care" column. The number of persons newly diagnosed with HIV in 2010 serves as the denominator for the "Linked to Care" column (*n*=843).

Reflective of national statistics, individuals diagnosed with HIV in TN in 2010 were: 74% male and 26% female; 54% black/African American, 41% white, and 3% Hispanic/Latino; 57% reported being MSM, 23% heterosexual (HRH), 9% intravenous drug users (IDU), 6% no identified risk (NIR), and 3% MSM/IDU. Of known diagnosed individuals, 5% were less than 25 years old, 16% were 25 to 34 years old, 31% were 35 to 44 years old, 33% were 45 to 54 years old, and 15% were 55 years or older. At year-end 2012 (when the data for 2010 were pulled from eHARS), most persons with an HIV diagnoses in TN lived in either Shelby county (33%) or Davidson county (22%); 45% lived in the other counties.

While there are demographic similarities between TN's "all diagnosed" and "newly diagnosed" populations (e.g., gender), some differences exist as well. Specifically, in 2010 a higher proportion of newly diagnosed individuals (as compared to all diagnosed) were black/African American, younger, and reported no identifiable risk for acquiring HIV, as illustrated in the following table.

Table 1. Characteristics of persons known to be living with and newly diagnosed with HIV in Tennessee (2010).

Characteristic	Diagnosed & Living (*n*=16,718)	Newly Diagnosed (*n*=843)
Gender		
Male	74%	77%
Female	26%	23%
Race/Ethnicity		
Blacks/AA (NH)	54%	64%
White (NH)	41%	27%
Hispanics/Latinos	3%	7%
Exposure		
MSM	57%	48%
HRH	23%	23%
IDU	9%	2%
NIR	6%	27%
Age (years)		
<25	5%	25%
25-34	16%	25%
35-44	31%	24%
>44	48%	26%
AIDS ≤1 year of Diagnosis	--	32%

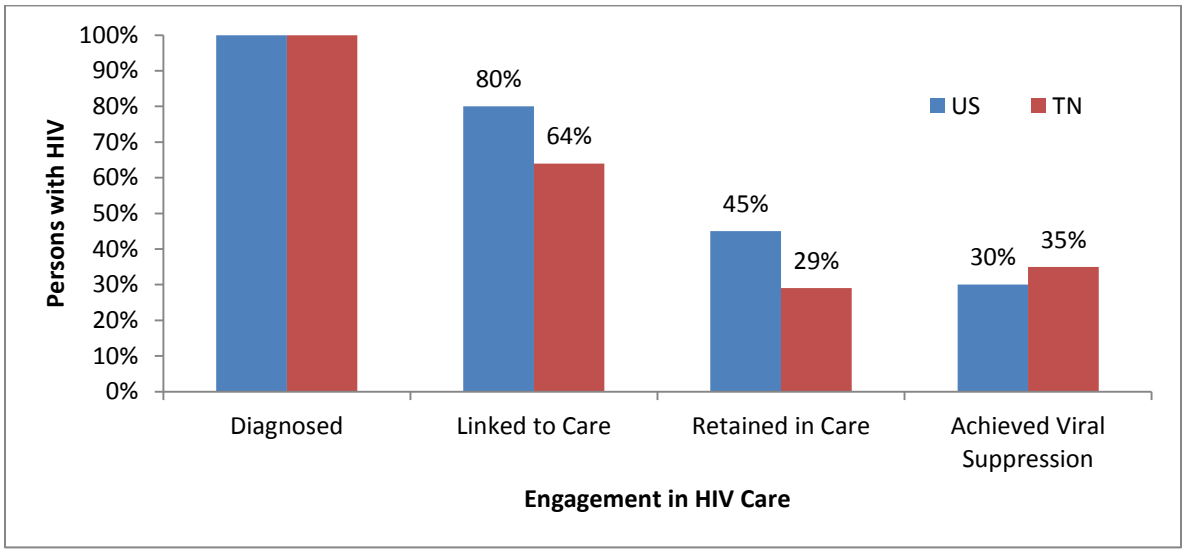
AIDS = Acquired Immunodeficiency Syndrome

Among individuals newly diagnosed with HIV in 2010, nearly one-third were diagnosed with acquired immunodeficiency syndrome (AIDS) within 1 year of HIV diagnosis, indicating initial testing did not occur until advanced HIV infection.

Results: Tennessee's HIV continuum of care

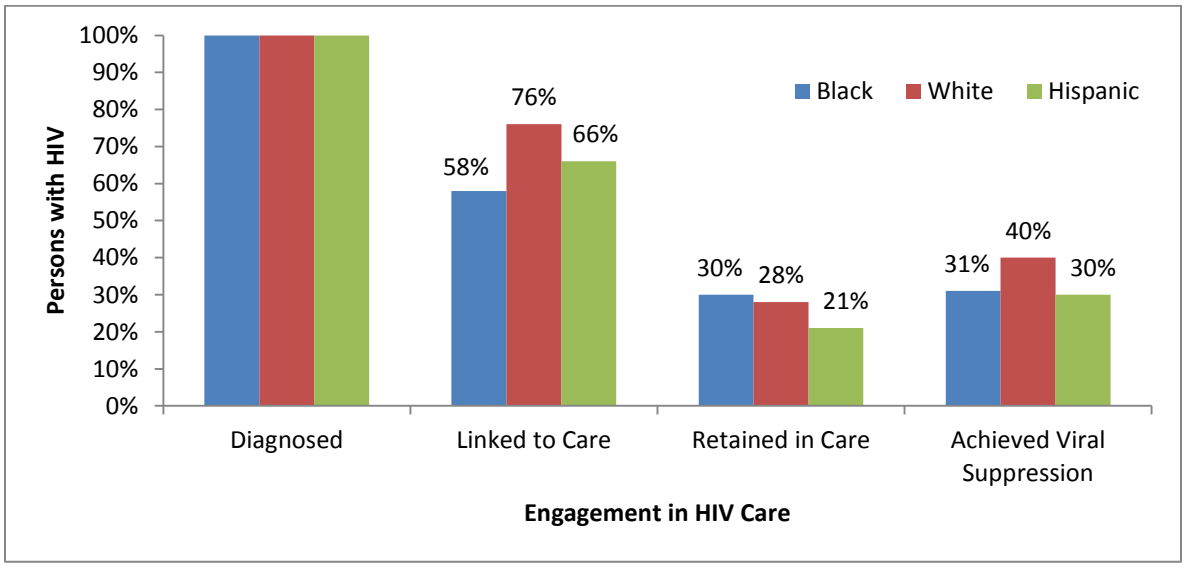
Figure 2 illustrates TN's 2010 HIV continuum of care alongside U.S. data (the latter adjusted to begin with all individuals diagnosed with HIV infection). The comparison reveals similar rates of viral suppression between TN and the United States. Of the 16,718 persons living with an HIV diagnosis in TN in 2010, 29% were retained in care and 35% achieved viral suppression (which was slightly greater than the 30% who achieved viral suppression in the United States). When examining linkage to care for the newly diagnosed, 64% of the 843 new diagnoses in TN were linked to care within three months of their diagnosis compared to 80% of new diagnoses nationwide in the same evaluation year.

Figure 2. Estimated percentages of persons living and diagnosed with HIV engaged in select stages of the continuum of care in the United States and Tennessee (2010).



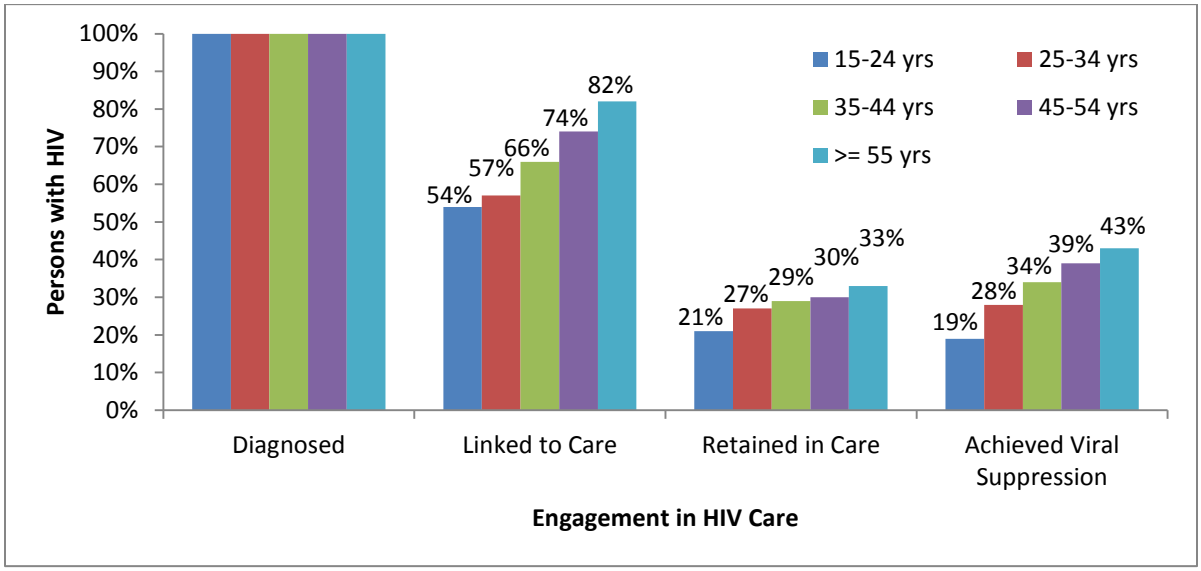
Mirroring national findings, Tennessee's 2010 HIV continuum of care reveals disparities among certain groups along each step in the cascade. Figure 3 illustrates racial and ethnic disparities in engagement in HIV care. Not only were blacks/African Americans more heavily burdened with HIV than whites in Tennessee, but they were also less likely to be engaged in selected stages of HIV care. Of those newly diagnosed with HIV in 2010, 76% of whites attended an HIV medical care appointment within three months of their diagnosis, compared to 66% of Hispanics/Latinos and 58% of blacks/African Americans. These disparities persist further down the continuum, with only 31% of blacks/African Americans and 30% of Hispanics/Latinos achieving viral suppression by the end of 2010, compared to 40% of whites.

Figure 3. Estimated percentages of persons living and diagnosed with HIV engaged in select stages of the continuum of care in Tennessee, by race/ethnicity (2010).



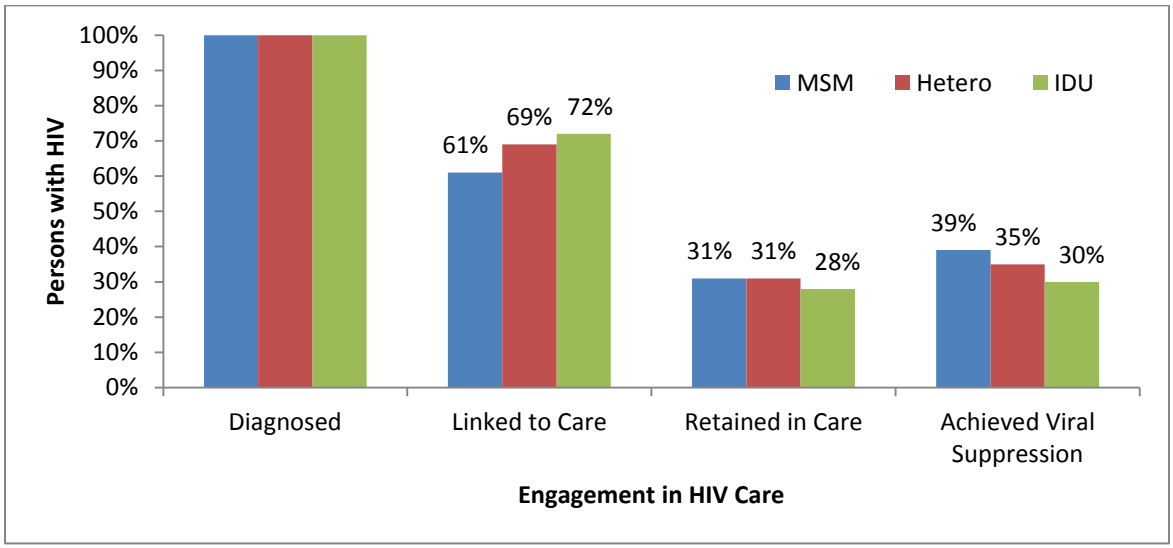
Different age groups also had varying levels of engagement in Tennessee's continuum of care, illustrated in Figure 4. Across all stages of HIV care, persons aged 15 to 24 years had the lowest participation, with 54% linked to care, 21% retained in care, and 19% achieving viral suppression in 2010. Engagement in the continuum of care increased as patient age increased, so that persons older than 54 years had the highest rates of engagement in care, with 82% linked to care, 33% retained in care, and 43% achieving viral suppression.

Figure 4. Estimated percentages of persons living and diagnosed with HIV engaged in select stages of the continuum of care in Tennessee, by age category (2010).



Differences in engagement in selected stages of HIV care in Tennessee also exist by transmission category, as can be seen in Figure 5 below. When looking at the three most common transmission categories, a lower percentage of MSM (61%) were linked to HIV care within 3 months of their HIV diagnosis compared to heterosexual (69%) and IDU (72%) new diagnoses. However, 31% of both MSM and heterosexuals living with an HIV diagnosis in 2010 were retained in care, compared to 28% of those who reported IDU. A greater percentage of MSM achieved suppressed VL (39%) than either heterosexuals (35%) or those reporting IDU (30%).

Figure 5. Estimated percentages of persons living and diagnosed with HIV engaged in select stages of the continuum of care in Tennessee, by transmission category (2010).



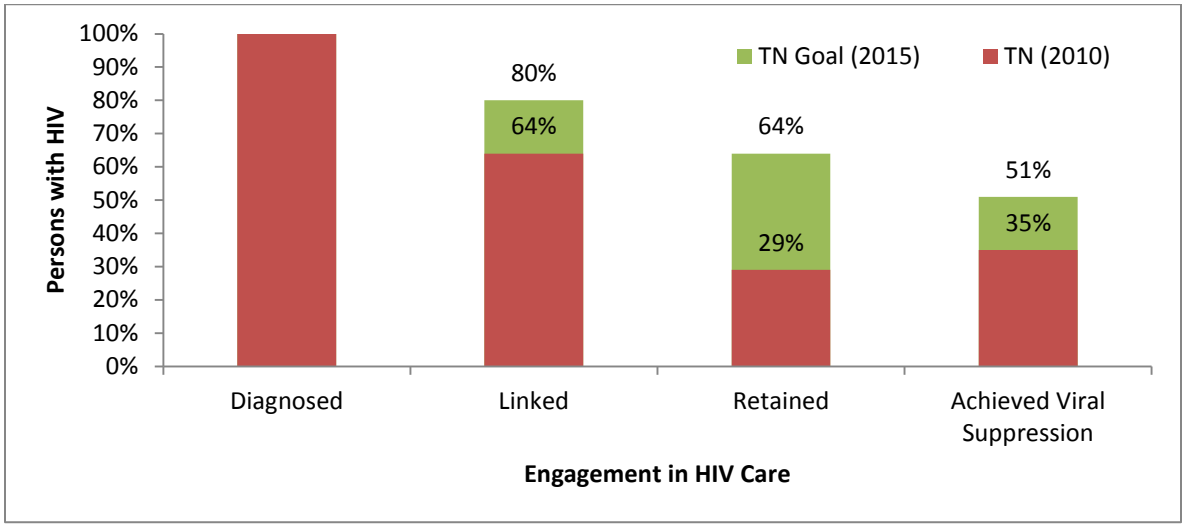
2015 Goals: Tennessee's HIV continuum of care

Staff from TDH's HIV/STD Section met with partners throughout the state (consumers, public health professionals, and HIV providers) to establish Tennessee-specific goals for 2015 that are both bold and achievable. The resulting goals established for Tennessee's 2015 HIV continuum of care are delineated below and illustrated in Figure 6. While the ultimate goal is that all individuals diagnosed with HIV infection will achieve viral suppression, 2015 goals reflect that no more than 20% of individuals are lost at each step of the cascade. Meaning, that by 2015, at least 80% of individuals newly diagnosed with HIV infection will be linked to medical care within 3 months of diagnosis, at least 64% of individuals living with diagnosed HIV infection will be retained in medical care, and at least 51% of individuals living with diagnosed HIV infection in TN will have achieved HIV viral suppression.

TN's 2015 goals to increase access to care and improve health outcomes for people with diagnosed HIV infection:

- Reduce HIV transmission rate to 3.5 per 100,000
- Reduce late stage diagnosis (proportion of AIDS within 1 year of diagnosis) by 20%
- Increase proportion linked to HIV medical care within 3 months of diagnosis to 80%
- Increase proportion retained in HIV medical care to 64%
- Increase proportion achieving viral suppression to 51%

Figure 6. Tennessee's HIV continuum of care: 2010 achievements and 2015 goals

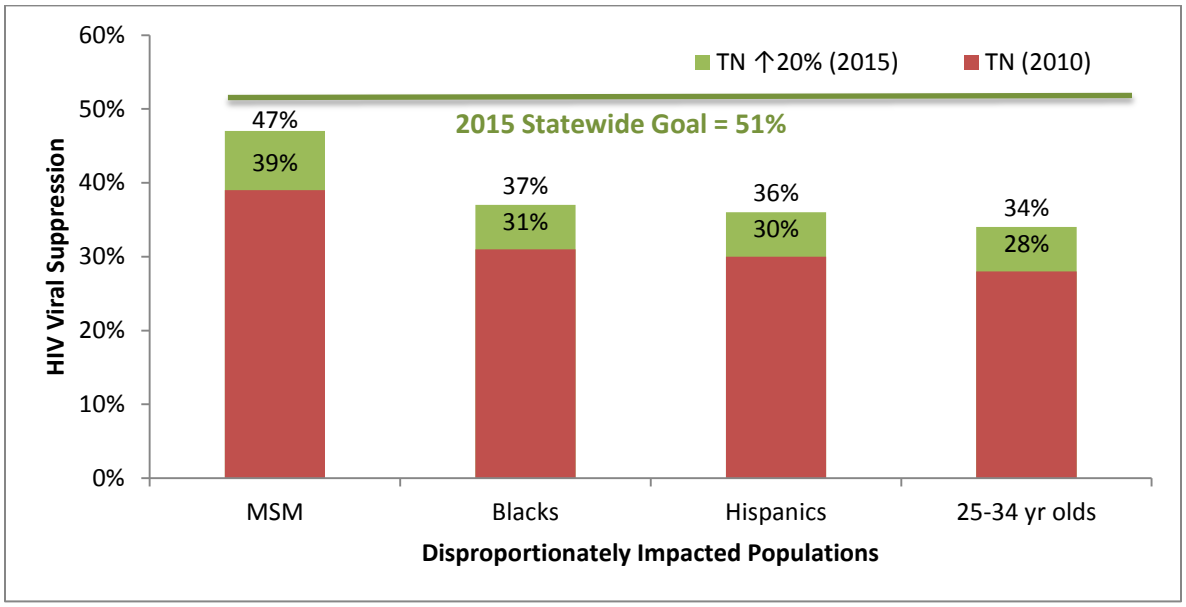


While Tennessee's 2015 goals apply to all populations within the state, it is evident that not all populations have the same starting point. Consistent with the National HIV/AIDS Strategy, Tennessee seeks to achieve at least a 20% improvement in HIV viral suppression rates among disproportionately affected populations by 2015, including MSM, blacks/African Americans, Hispanics/Latinos, and younger individuals. As delineated below and illustrated in Figure 7, TDH and its partners strive to achieve at least a 51% viral suppression rate statewide by 2015, while simultaneously achieving at least a 20% increase in viral suppression rates among disproportionately impacted populations.

TN's 2015 goals to reduce HIV-related disparities:

- Increase HIV viral suppression rate by 20% among HIV-diagnosed men who have sex with men (MSM)
- Increase HIV viral suppression rate by 20% among HIV-diagnosed blacks/African Americans
- Increase HIV viral suppression rate by 20% among HIV-diagnosed Hispanics/Latinos
- Increase HIV viral suppression rate by 20% among HIV-diagnosed 25–34 year olds

Figure 7. Tennessee's 2015 HIV viral suppression goals: Special considerations among disproportionately impacted populations



Conclusion

Each step of the continuum of care is an opportunity for HIV-infected people to engage in care. While engagement in care is viewed as a continuum, each step is impacted by a variety of factors, often operating independently of the others. Efforts at strengthening each step in the continuum must be addressed collaboratively, which means inviting patients, public health officials, and medical providers into the discussion. From early HIV diagnosis to optimal response to antiretroviral therapy, each step in the cascade is vital for HIV-infected individuals to achieve better health outcomes and to reduce HIV transmission. Let us work together as we collectively strive to achieve the 2015 HIV continuum of care goals outlined in this paper, thereby protecting, promoting, and improving the health and prosperity of people in Tennessee.

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