The 2020 National HIV/AIDS Strategy (NHAS) Indicators
Assessment of Michigan's Progress 2010 - 2017

data as of January 1, 2019

The indicators/objectives used to measure the National HIV/AIDS Strategy's (NHAS) goals were updated in 2015. The indicators now measure improvements between baseline, 2010, and 2020. The three main NHAS goals are the same: 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.

The indicators have been updated to reflect current need among persons over 12 years old living with HIV (PLWH).

Progress Key:

Met - 2020 goal is met.

On Track - Most recent annual goal was met.

Needs Improvement - Most recent annual goal was not met, but numbers are stable or heading in the right direction.

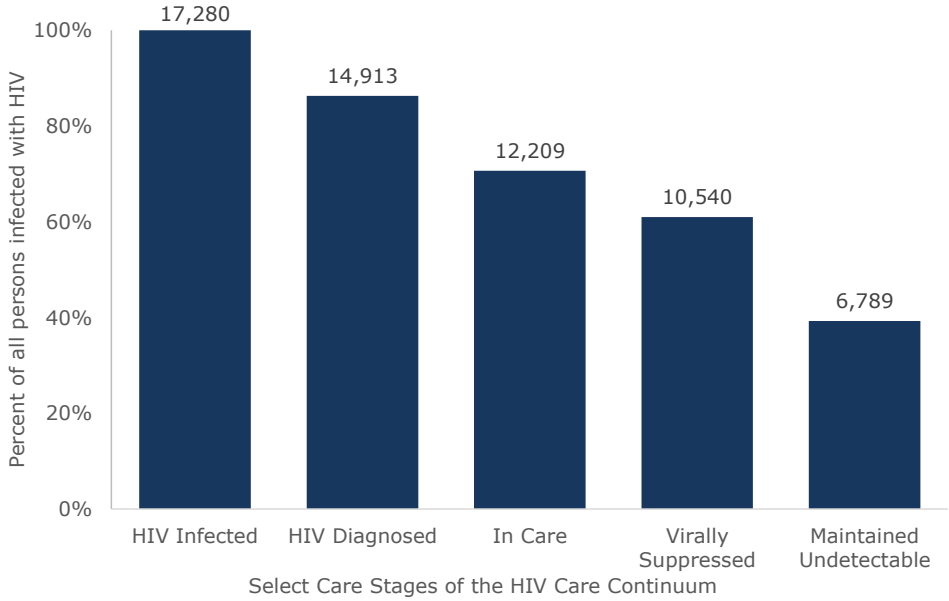
Worsening - Most recent annual goal was not met, and numbers are heading in the wrong direction.

Unknown - Unknown or Michigan specific data are not available at this time.

NHAS Goal 1 Indicators relevant to Michigan:	**Progress**
1) Increase the percentage of PLWH who know their status to 90%	Needs Improvement
2) Reduce the number of new diagnoses by 25%	Needs Improvement
3) Reduce the percentage of young gay and bisexual men who have engaged in HIV-risk behaviors by 10%	Unknown
NHAS Goal 2 Indicators relevant to Michigan:	
4) Increase one month linkage to care rates to 85%	Needs Improvement
5) Increase care retention rates among PLWH to 90%	Needs Improvement
6) Increase the proportion of virally suppressed PLWH to 80%	On Track
7) Reduce homelessness among PLWH to no more than 5%	Unknown
8) Reduce the death rate among PLWH by 33%	Nearly On Track
NHAS Goal 3 Indicators relevant to Michigan:	
9) Reduce new diagnosis rate disparities by 15% among:	
gay and bisexual men	Needs Improvement
young Black/AA gay men	Needs Improvement
Black/AA females	On Track
10) Increase to 80% the proportion of virally suppressed:	
youth (13-24 year olds)	On Track
persons who inject drugs	Nearly On Track

The HIV Care Continuum was developed by the CDC to assess gaps in care. It is presented here in order to provide context to many of the NHAS goals. Based on the care continuums and other trends observed, Michigan programs need to focus on linking and retaining PLWH in care. This, in turn will improve the maintenance of low viral load levels, improving the health of PLWH and reducing the risk of HIV transmission.

Michigan HIV Care Continuum, 2017



Select Care Stages of the HIV Care Continuum

HIV Infected - Persons aware and unaware of their infection.

Diagnosed - Persons diagnosed with HIV.

In Care - PLWH with at least 1 CD4, viral load, or genotype lab test.

Virally Suppressed - PLWH with less than or equal to 200 copies of HIV virus per milliliter of blood (≤200 copies/mL).

Maintained Undetectable - PLWH who maintained viral load levels ≤200 copies/mL for at least 4-8 months.

HIV and STD Surveillance & Epidemiology Section
Division of Communicable Disease
Bureau of Epidemiology and Population Health
Michigan Department of Health and Human Services

Lansing - HIV Surveillance Office
333 S. Grand Ave., 3rd Floor
Lansing, MI 48913
517-335-8165

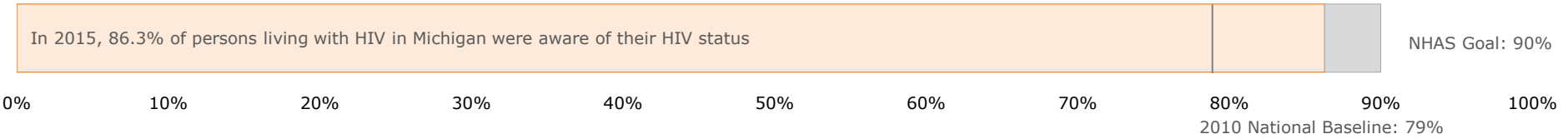
MDHHS - South Oakland Health Center
27725 Greenfield Rd, Office 57A
Southfield, MI 48076
248-424-7910

www.michigan.gov/hivstd

Goal 1: Reducing New HIV Infections

Indicator 1: By 2020, increase the proportion of PLWH who know their HIV status to 90%

In 2016, it is estimated 86.3% of persons living with HIV in Michigan were aware of their HIV status (i.e. diagnosed). This is the second year calculating a Michigan specific estimate was possible. There has been little change as the revised figure for 2015 is 86%. Persons 13-34 years old have the lowest estimated diagnosis rate by a large margin (under 75%). Because transmission is most likely to occur when an individual is undiagnosed[1] and most new diagnoses are among those 15-29 years old, it makes sense that this group has the highest proportion of PLWH unaware of their status.



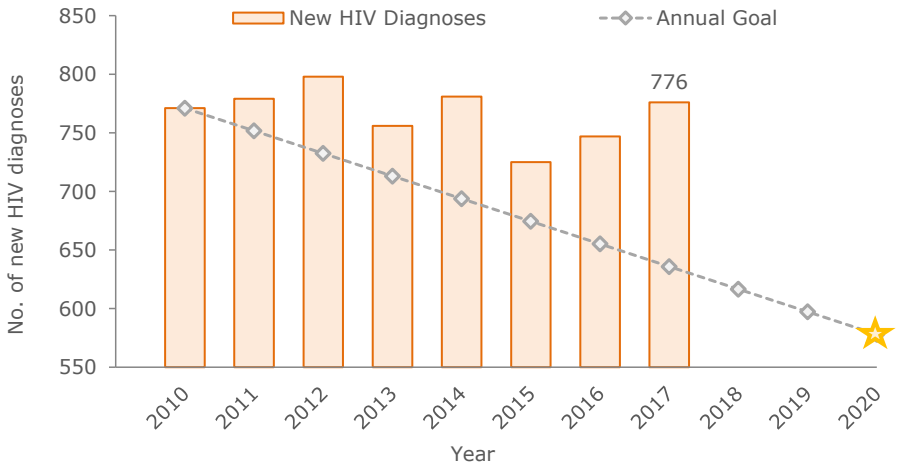
Indicator 2: By 2020, reduce the annual number of new HIV infections by 25%

To reach this goal, Michigan needs to reduce the annual number of new HIV infections from 744 (in 2010) to 581 by 2020. During 2017, there were 776 new diagnoses. In order to reach the 2020 goal, a reduction of 66 new cases per year is needed.

It is important to note that this objective does not account for HIV prevalence (higher prevalence rates increase the probability of new infections). Prevalence in Michigan has been climbing since the beginning of the epidemic, but the number of new diagnoses has remained stable in recent years[2] resulting in an 19% drop in the transmission rate.

This indicator, however, measures reported case counts, not transmission rate. Unfortunately, Michigan failed to meet the annual goal between 2011 and 2017. The increase of new diagnoses among Black/AA gay and bisexual men in their twenties is the primary reason new diagnoses are not decreasing in the state.

The number of new HIV diagnoses in Michigan has remained relatively stable since 2010



Indicator 3: By 2020, reduce the percentage of young gay and bisexual men who have engaged in HIV-risk behaviors by at least 10%

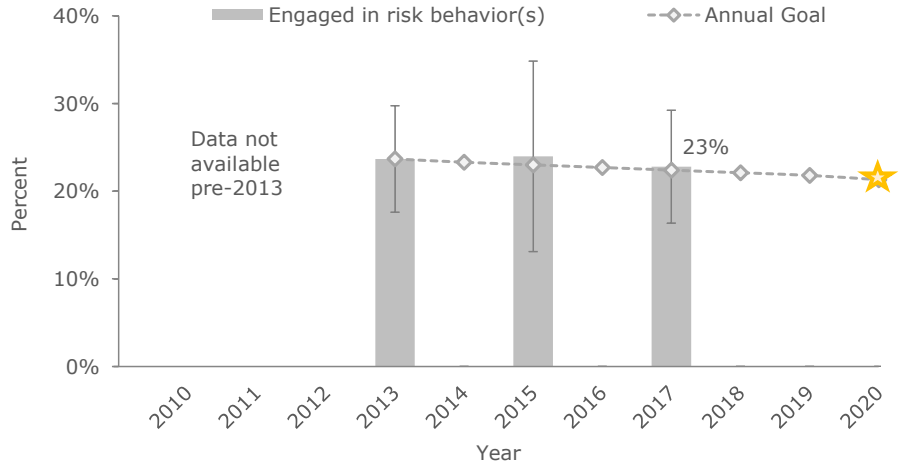
A sample of Michigan high school students (grades 9 - 12) participate in the Youth Risk Behavioral Surveillance System (YRBSS) survey biannually. Responses from male participants who have had sex with a male or do not identify as heterosexual are included in this indicator calculation. Gender identity data were not collected pre-2013; therefore data are not available for the years 2010 - 2012.

Of these male participants, those who reported one of the following are categorized as "engaging in HIV-risk behavior":

1) Multiple sex partners (3 or more) in the 3 months preceding the interview
2) Did not use a condom during last sexual encounter within 3 months
3) Ever injected an illegal drug

Michigan appears to be on track, however large confidence intervals inhibit conclusive assessment of directionality.

23% of included male 2017 Michigan YRBSS participants engaged in HIV-risk behavior



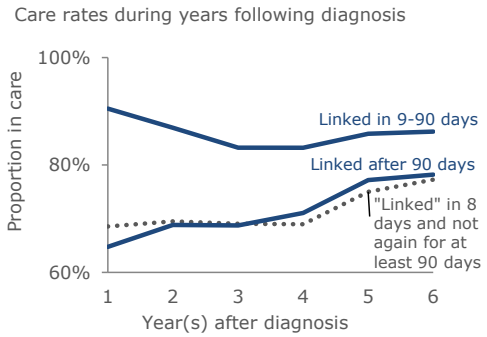
Goal 2: Increasing Access to Care and Improving Health Outcomes for People Living with HIV

Indicator 4: By 2020, increase the percentage of newly diagnosed persons linked to HIV medical care within one month of diagnosis to at least 85%

CD4, viral load (vl), and genotype lab tests are proxies for clinical care visits. The first of these lab tests collected is used to calculate the time between HIV diagnosis and linkage to care. The earlier persons are linked to care the more likely they are to be in care in the future and the better their prognosis as 85% are virally suppressed. This, in turn, reduces transmission risk to others.

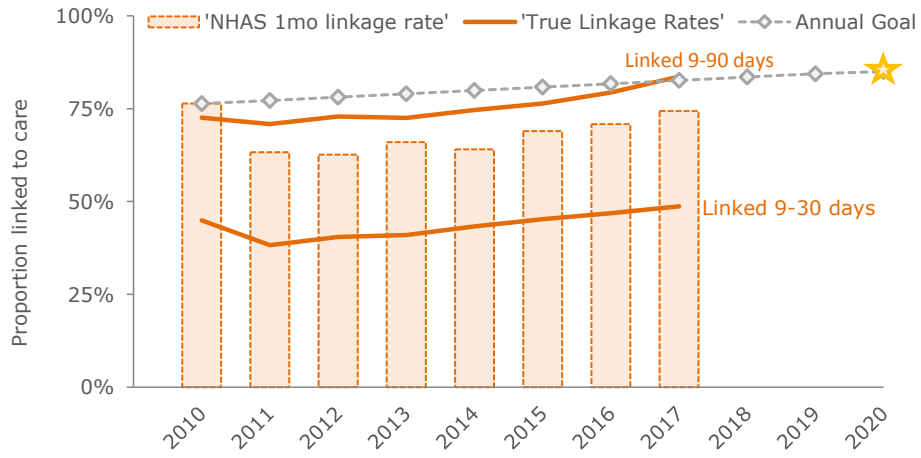
This NHAS indicator measures the proportion of persons newly diagnosed with HIV who received one of these lab tests within one month (≤1 mo) of diagnosis. Tests run on the day of diagnoses are counted. The '**NHAS 1 month linkage rate**' is represented by the light orange bars below.

However, the future care rate of persons "linked" within 8 days of diagnosis is similar to those linked more than 90 days after diagnosis (right). The '**true linkage rate**' is the proportion linked in 9-30 or 9-90 days. This is represented by the solid, orange lines below. These rates are not expected to reach 85%, however they are important to track.



Programs should focus on increasing the 'true linkage rates'

'True linkage rates' are steadily increasing among persons diagnosed in Michigan



Linked to Care: At least 1 CD4, vl, or genotype test within given time frame

Indicator 5: By 2020, increase the percentage of persons with diagnosed HIV infection who are retained in HIV medical care to at least 90%

CD4, viral load (vl), and genotype lab tests are proxies for clinical care visits. Persons who received at least one of these lab tests within one calendar year are **'in care'**. Persons who received at least two of these tests are **'retained in care'**. Receiving HIV care is extremely important in improving individuals' prognoses and, in turn, reducing transmission risk to others by achieving viral suppression and maintaining a low viral load. 'Retention in care' is not necessary to achieve viral suppression. However care retention is essential for monitoring and maintaining a low viral load.

In 2017, the care rate among PLWH increased to 82% and the retention rate increased to 58%.

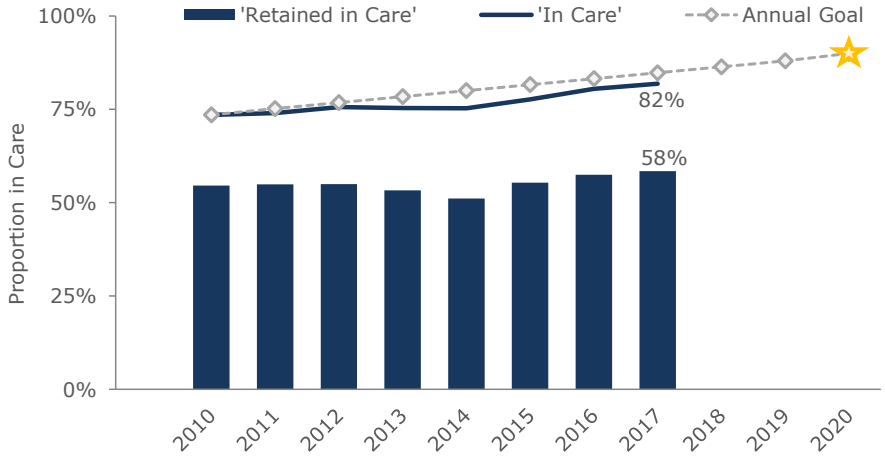
There are four groups with care rates substantially lower than the state average of 80%:

1) Males of Hispanic/Latino descent - 76% in care
2) Heterosexual males - 76% in care
3) Persons who inject drugs - 77% in care
4) Persons 25-29 years old - 77% in care

Respectively, these groups account for 5%, 4%, 6% and 9% of all PLWH in Michigan (persons may occupy more than one group). These same groups, as well as Black/AA persons, and 20-39 year olds have lower retention rates than the state average.

New initiatives such as Link Up Michigan and Link Up Detroit should improve care

The rate of Michiganders living with HIV 'in care' and 'retained in care' increased 2015-2017



In Care: At least 1 CD4, vl, or genotype lab test within the given calendar year
Retained in Care: At least 2 CD4, vl, or genotype lab tests within the given calendar year

Goal 2: Increasing Access to Care and Improving Health Outcomes for People Living with HIV (continued)

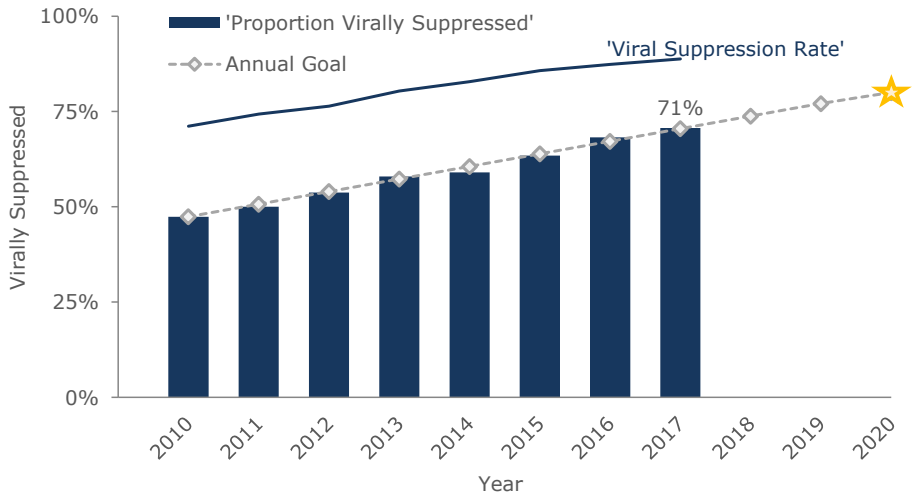
Indicator 6: By 2020, increase the percentage of persons with diagnosed HIV infection who are virally suppressed to at least 80%

An individual is considered to be virally suppressed if he/she has less than or equal to 200 copies of HIV virus per milliliter of blood (≤200 copies/mL). Consistent suppression of the virus in an individual is an indication of routine access to care and treatment adherence. Those who maintain low viral loads have the best long term prognosis, and transmission of HIV is extremely low among virally suppressed individuals. Those who monitor and maintain an undetectable viral load for over 6 months have effectively no risk of transmitting HIV[3]. The transmission rate among persons diagnosed but not retained in care is much higher: 5.3 transmissions per 100 PLWH not retained in care per year[1].

The NHAS indicator measures the proportion of PLWH whose last viral load during a given year was suppressed (percent virally suppressed out of all PLWH in Michigan). This is referred to as the **'Virally Suppressed Proportion**'. For context the **'Viral Suppression Rate**' - the percent virally suppressed out of those who received a viral load (aka 'in care') - is also displayed below. The 'Viral Suppression Rate', indicates that once Michiganders with HIV are in care, the likelihood of achieving viral suppression is high; emphasizing the need to improve care rates. Neither of these measure, however, assess the maintenance of viral suppression over time.

Michigan is on track to increase the proportion virally suppressed to 80% by 2020.

'Proportion Virally Suppressed' and 'Viral Suppression Rate' continue to rise

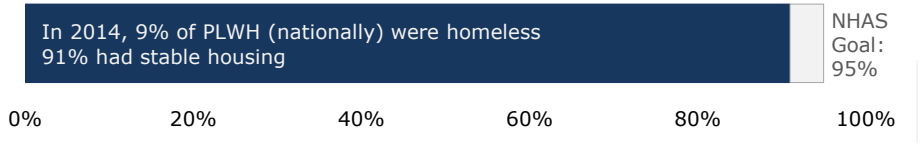


Virally Suppressed: ≤200 copies/mL at last lab during given year (of all PLWH)
Viral Suppression Rate: ≤200 copies/mL at last lab during given year of PLWH who received a viral load

Indicator 7: By 2020, reduce the percentage of persons in HIV medical care who are homeless to no more than 5%

At this time, Michigan does not have an estimate of how many PLWH are homeless. Until an estimate can be calculated, the national rate is displayed - In 2014, 9% of PLWH were homeless (91% had stable housing).

Homelessness has increased from 7.7% of PLWH (nationally) in 2010.

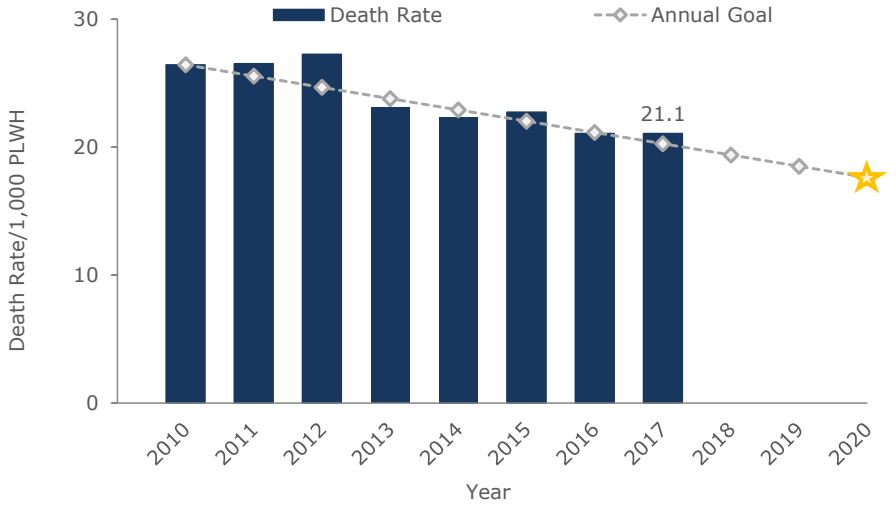


Indicator 8: By 2020, reduce the all-cause death rate among persons with diagnosed HIV infection by at least 33%.

Michigan conducts three death matches each year with the Social Security and National Death Indices, and Michigan Vital Records. Michigan's death data is very complete, however, a lag in death data reporting causes underestimates for recent years. 2017 data may not be complete at this time.

The all-cause death rate among Michiganders living with HIV was 21.1 deaths per 1,000 PLWH during 2016 & 2017. Michigan is nearly on track to reach the 2020 goal provided the death rate is reduced by 1.5 deaths per 1,000 per year.

The all-cause death rate among PLWH in Michigan declined slightly in 2016



Goal 3: Reducing HIV-Related Health Disparities

Indicator 9: By 2020, reduce disparities in the rate of new diagnoses by at least 15% among gay/bisexual men, young gay/bisexual black men, and black women.

It is well known that the gay and black communities shoulder a disproportionate burden of the HIV epidemic. This goal aims to reduce the new diagnosis rate *disparity* (ratio) observed between these groups and the overall population by at least 15%.

Ratio calculation:

New Diagnosis Rate Ratio = $\frac{Rate\ of\ new\ diagnoses\ among\ group\ of\ interest}{Rate\ of\ new\ diagnoses\ among\ Michiganders}$

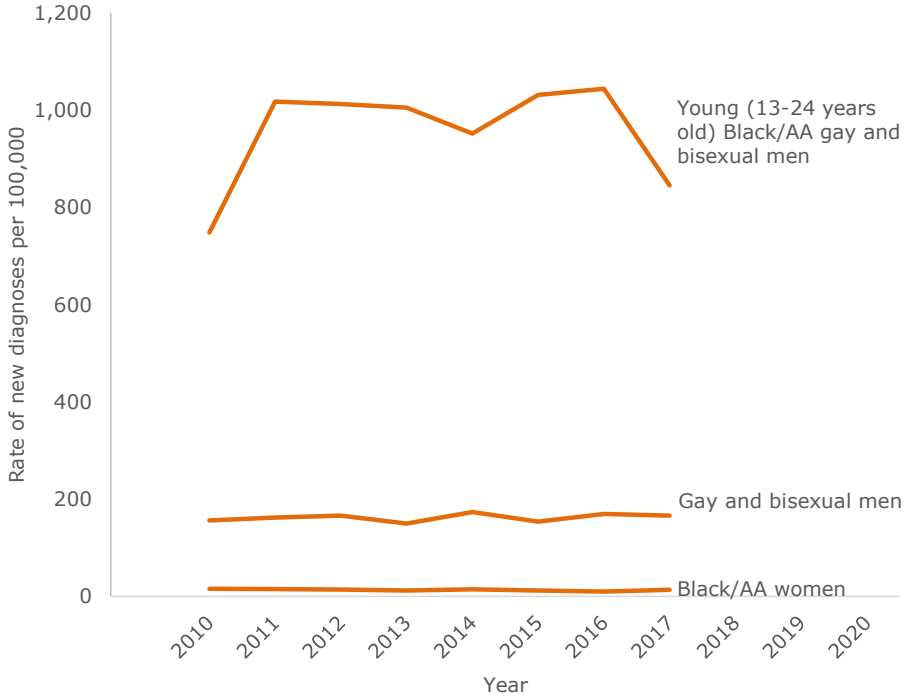
where the rate of new diagnoses = $\frac{Number\ of\ new\ diagnoses\ in\ given\ group}{Total\ population\ of\ given\ group}$

The total population of gay and bisexual men was estimated from Lieb *et al*, 2011[4].

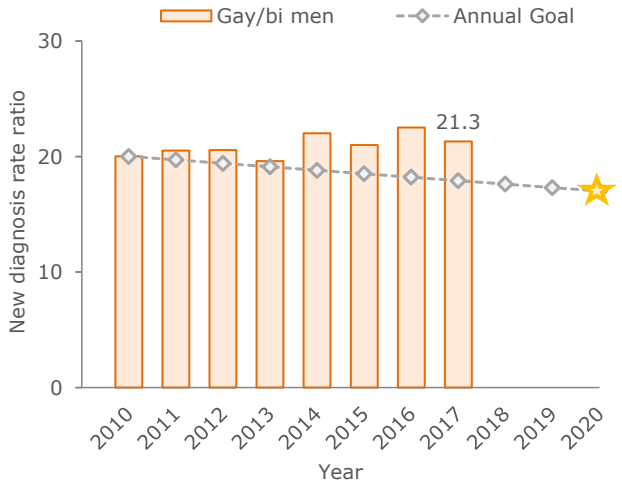
The graph to the right displays the rates of new diagnoses for each group of interest. Black/AA women had a new diagnosis rate of 15.6 per 100,000 black women in Michigan during 2010. That rate was 2 times higher than the overall new diagnosis rate the same year. The disparity ratio (2 to 1) is to be reduced by 15%. The indicator is *not* looking to reduce the rate (15.6 per 100,000) by 15%.

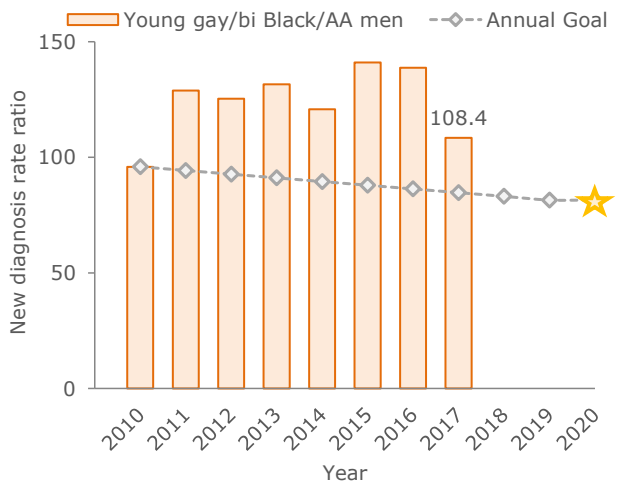
Overall, diagnosis rate disparities among **gay/bisexual men** (MSM) increased in 2014 and have remained higher than baseline. During 2015, there was a large increase in the diagnosis rate disparity among **young (13-24 years old) gay/bisexual Black/AA men** followed by a dramatic drop in 2017. It is too early to tell if this trend will continue. Michigan is on track to meet the 2020 disparity reduction goal for **Black/AA women**.

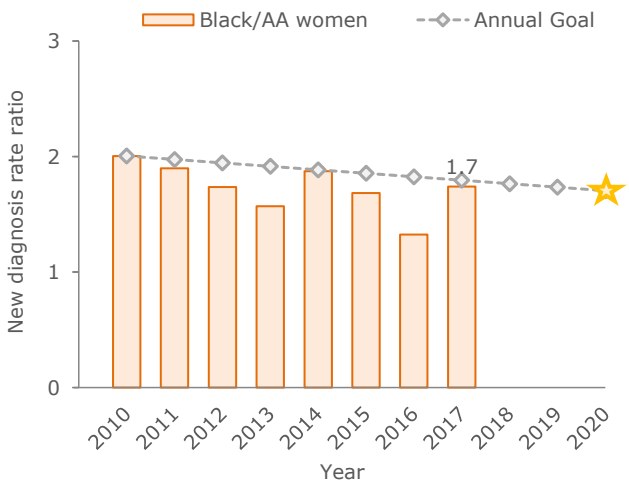
Young Black/AA gay and bisexual men have an extremely high rate of new diagnoses



Diagnosis rate disparities: Comparing diagnosis rates between the three groups to the overall population (note scale difference among groups).







Goal 3: Reducing HIV-Related Health Disparities (continued)

Indicator 10: By 2020, increase the percentage of youth and persons who inject drugs (PWID) with diagnosed HIV infection who are virally suppressed to at least 80%

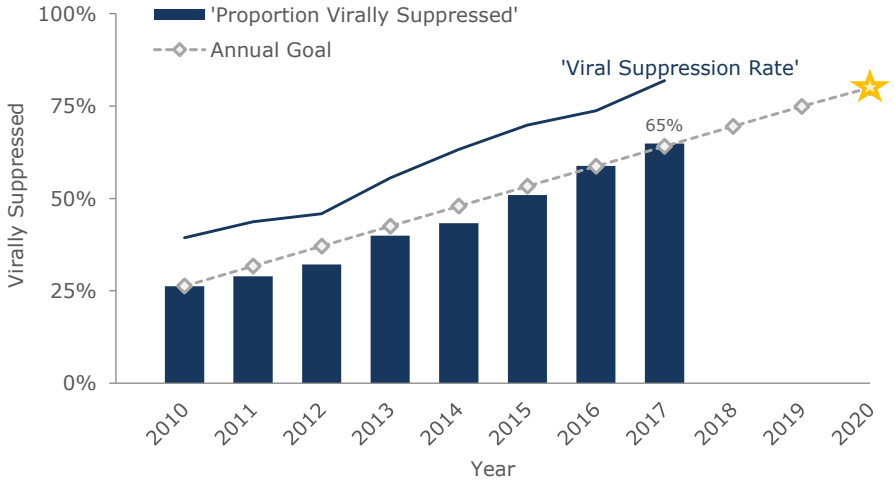
See Goal 2, Indicator 6 for an overview of viral suppression.

The percent of virally suppressed PLWH in an HIV positive population is the 'virally suppressed proportion'. The percent of virally suppressed PLWH in an HIV positive population who received a viral load (aka 'in care') is the 'viral suppression rate'.

Youth (persons 13 - 24 years old) have achieved viral suppression significantly less often than their older peers regardless of other demographic factors[5]. They are one of the only groups with low 'viral suppression proportions' (65%) despite a relatively average proportion of the group receiving care (80%). The viral suppression proportion (65%) is the indicator of interest.

Michigan met the annual goal as the proportion of virally suppressed youth steadily improves. Additionally, the 'viral suppression rate' is improving rapidly. Efforts aimed to improve viral suppression among youth need to focus on: 1) keeping more youth in care - the rapidly improving 'viral suppression rate' indicates more youth in care should lead to more virally suppressed youth, and 2) reducing the viral load among youth already receiving care by ensuring treatment adherence.

The proportion of virally suppressed youth as well as their 'viral suppression rate' continue to increase

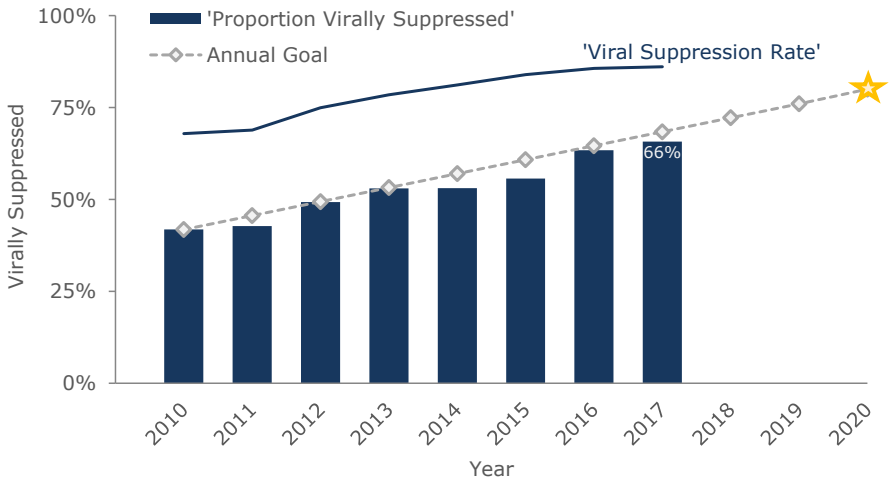


Virally Suppressed: ≤200 copies/mL at last lab during given year (of all PLWH)
Viral Suppression Rate: ≤200 copies/mL at last lab during given year of PLWH who received a viral load

Persons who inject drugs (PWID) are less likely to be in care and, therefore, less likely to be virally suppressed compared to non-PWIDs.

Michigan was on track to meet the 2020 goal among PWID until 2014. The high viral suppression rate (normal in Michigan) among PWID indicates that efforts meant to increase the proportion of PWID in care should increase the proportion virally suppressed as well.

Improvements in the viral suppression proportion among persons who inject drugs continues to increase



Virally Suppressed: ≤200 copies/mL at last lab during given year (of all PLWH)
Viral Suppression Rate: ≤200 copies/mL at last lab during given year of PLWH who received a viral load

References

1 Skarbinski J, Rosenberg E, Paz-Bailey G, Hall I, Rose C, Viall A, et al. (2015) Human Immunodeficiency Virus Transmission at Each Step of the Care Continuum in the United States. JAMA Intern Med.doi:10.1001/jamainternmed.2014.8180

2 MDHHS HIV/STD/TB/VH Epidemiology Section (2015). Annual Review of HIV Trends in Michigan (2010-2014). www.michigan.gov/hivstd

3 www.PreventionAccess.org

4 Lieb S, Fallon S, Friedman S, Thompson D, Gates G, Liberti T, et al. (2011) Statewide Estimation of Racial/Ethnic Populations of Men Who Have Sex with Men in the U.S. ASPH Public Health Reports vol 126 pg 60-

5 MDHHS HIV/STD/TB/VH Epidemiology Section (2014). HIV Infected Youth More Likely to be in Care but Less Likely to Achieve Viral Suppression. www.michigan.gov/hivstd