A) Introduction and Background

Since the emergence of HIV/AIDS in the early 1980s, the global community has witnessed momentous innovations that have significantly changed the landscape of HIV care. In particular, advancements in antiretroviral therapy (ART) over the last twenty years have transformed HIV/AIDS from a rapidly progressing ailment to what most consider a chronic disease. ART causes a significant reduction in viral load in the body, with the ultimate goal of reaching undetectable levels, or “viral suppression.” ART and viral suppression also play critical roles in the prevention of HIV transmissions.

Based on three recent studies, the HIV/AIDS Director of Prevention at the Center for Disease Control (CDC) released a statement in September, 2017 declaring “people who take ART daily as prescribed and achieve and maintain an undetectable viral load have effectively no risk of sexually transmitting the virus to an HIV-negative partner.” Despite the clinical success of ART in causing viral suppression, reductions in HIV-related morbidity and mortality are uneven across subpopulations of people living with HIV (PLWH) due to unequal access to care and variations in the quality of care provided.

Approximately 70% of the estimated 1.2 million PLWH in the United States are not virally suppressed. A breakdown of the subpopulations contributing to the virally non-suppressed population paint a striking picture of disparities in HIV care since specific populations bear a disproportionate burden of HIV. At 16%, the rate of viral suppression among black men who have sex with men (MSM) is less than half the rate of viral suppression among white MSM (34%). In 2014, the rate of HIV diagnoses among black women was 18 times higher than that of white women. A study in 2013 showed that while the average suppression rate for all PLWH is

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approximately 25%, approximately 15% of youth are virally suppressed. Transgender women—those assigned male gender at birth, but identify as female—have a significantly lower ART dose adherence rate and durable viral suppression compared to cisgender men, despite having similar rates of receiving care, treatment, and supportive services.

The CDC defines disparities as “differences in health outcomes or health determinants observed between populations.” It is commonly understood within the public health field that a group is a health disparity population when “there is a significant disparity in the overall rate of disease incidence, prevalence, morbidity, mortality, or survival rates in the population as compared to the health status of the general population.” Addressing these disparities is important in aligning HIV care with national public health priorities. To reduce disparities requires focusing on disproportionately affected communities and populations. Preliminary interviews to prepare for the end+disparities Learning Exchange identified four subpopulations to focus public health improvement efforts on. Although the disparities faced by these four groups are certainly not the only disparities that exist within HIV care, the interviews highlighted the importance of focusing on MSM of Color, African American and Latina Women, Youth (age 13-24), and Transgender People.

In alignment with national public health priorities, HRSA’s Ryan White HIV/AIDS Program Center for Quality Improvement and Innovation (CQII) (Center) in close collaboration with the Health Resources and Services Administration (HRSA) HIV/AIDS Bureau (HAB) proposes to address HIV-related disparities as the key focus of its next national quality improvement initiative. Building upon the impact of its in+care Campaign, HIV Cross-Part Care Continuum Collaborative (H4C), and end+disparities Learning Exchange, the Center works toward reducing HIV-related disparities in key communities to ensure that all PLWH are virally suppressed and have optimal health outcomes.

This new 18-month national quality improvement initiative, called the end+disparities ECHO Collaborative, focuses on reducing disparities by increasing viral suppression rates in four subpopulations of people living with HIV: MSM of Color, African American and Latina Women, Youth (aged 13 to 24 years), and Transgender People. The Collaborative engages Ryan White HIV/AIDS Program (RWHAP)-funded recipients and sub-recipients nationwide across all Parts. Regionally-based improvement groups are engaged in this Collaborative to help HIV providers improve their underlying systems of HIV care, build quality improvement capacity, routinely

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monitor performance measures, and create a sustainable infrastructure that will last beyond the formal conclusion of the Collaborative. The innovative Project Extension for Community Health Outcomes (ECHO) framework, which uses video conferencing technologies to build specialized knowledge and capacity for primary care providers in rural regions of the country, is adapted for the needs of this Collaborative. The virtual communication platform of this model enables participants to attend a higher number of meetings and eliminates potential barriers that meeting physically may pose for some recipients and sub-recipients. Additionally, special interest groups (affinity groups) that focus on different subpopulations of interest across the nation hold routine virtual meetings (affinity sessions) to help participants gain subpopulation-specific knowledge, promote peer sharing and exchange, and provide feedback on quality improvement implementation processes from both a peer and expert perspective.

This Literature Review provides an overview and rationale for this important public health goal by describing the individual and population-based benefits congruent with reducing HIV-related disparities.

B) HIV Disparities

The national viral suppression rate of 30% indicates that significantly more needs to be done to improve health outcomes for all PLWH. The statistics of those who are virally non-suppressed highlight disparities in HIV care (see Figure 1). However, an understanding of the disproportionate burden of HIV felt by vulnerable subpopulations can provide the impetus for systemic and sustainable improvements. Smaller subpopulations with a disproportionately high prevalence of HIV are therefore the most actionable groups for targeted public health interventions that simultaneously reduce overall levels of morbidity, mortality, and onward HIV transmission.

Data from the 2016 CDC HIV Surveillance Report show discrepancies in the number of diagnoses of HIV infection based on age, race/ethnicity, region, and transmission category.17 The gap in care for specific subpopulations is well documented.

Figure 1: Diagnoses of HIV Infection by Selected Demographics18

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The end-disparities ECHO Collaborative aims to empower HIV providers across the United States to implement local improvement efforts, impacting the care provided to underserved subpopulations by reducing HIV-related disparities and providing equitable care for PLWH. The Center’s new initiative actively promotes the implementation of interventions to increase the viral suppression rates for the following four subpopulations:

- MSM of Color
- African American and Latina Women
- Youth (aged 13 to 24 years)
- Transgender People

1) MSM of Color

Gay, bisexual, and other men who have sex with men (MSM) of all races and ethnicities are disproportionately affected by HIV in the United States.\(^{19}\) MSM represent approximately 2% of the U.S. population, yet they accounted for 70% of all new HIV infections in 2014. In 2014, there were an estimated 511,290 MSM living with diagnosed HIV infection; of those, 156,389 were black, 210,659 were white, and 110,158 were Latino.\(^{20}\) In a previous publication, the estimated rate of HIV infection among MSM was approximately 46 times that of all other men.\(^{21}\)

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Even within the overburdened subpopulation of MSM, MSM of color are particularly underserved. CDC data indicate that although black people make up 12% of the U.S. population, they accounted for 45% of PLWH in 2015.22 A majority (78%) of black men with HIV contracted the disease by male to male contact.23 Among MSM, black MSM is the group most affected by HIV (see Figure 2).24 In 2015, black MSM accounted for more new HIV infections as white MSM, despite the overall black population being significantly smaller.25 There were an estimated 10,315 new HIV infections among black MSM, in comparison to an estimated 7,570 new HIV infections among white MSM, and 7,013 new HIV infections among Latino MSM.

**Figure 2: Estimated New Diagnoses of HIV among MSM, by Race/Ethnicity and Age at Infection, 2015 in the United States**26

![Figure 2: Estimated New Diagnoses of HIV among MSM, by Race/Ethnicity and Age at Infection, 2015 in the United States](image)

Some research has suggested that black MSM are more at risk for HIV even when they have the same or fewer risk behaviors as MSM of other races. The likelihood of having unprotected anal intercourse, engaging in commercial sex work, or having sex with a known HIV-infected partner was not higher among black MSM than white MSM.27

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Regardless of these considerations, the HIV-related outcomes for black MSM are worse than those for white MSM along every step of the HIV Care Continuum (see Figure 3). At 16%, the rate of viral suppression among black MSM is only about half of the overall national rate (30%). Among those with diagnosed HIV infection, an estimated 47% of white MSM are virally suppressed, as opposed to 28% of black MSM and 37% of Hispanic MSM. Black MSM have the highest percentage (11.8%), when compared to other populations of MSM, of PLWH who have never attained viral suppression—over 3 times the percentage of white MSM (3.7%).

Figure 3: Estimated HIV Care Continuum for Black MSM vs. White MSM, 2009-2010

Even though deaths among PLWH have been declining since the availability of ART medications, the death rate per 1,000 PLWH in 2012 for black people (20.5) was higher than the rates for white people (18.1) and Hispanics/Latinos (13.9).

Although Hispanics/Latinos make up only 18% of the U.S. population, they accounted for nearly one quarter of all new HIV diagnoses in 2015. Hispanics/Latinos are more likely than black people or white people to be diagnosed with AIDS within three years of their HIV diagnosis. Moreover, Hispanics who only speak Spanish are less likely to be adequately informed about the disease and

less likely to know who needs to be tested for HIV.\textsuperscript{36} In the Hispanic/Latino population affected by HIV, Hispanic/Latino MSM are disproportionately burdened and account for 85% of new HIV diagnoses among Hispanics/Latinos.\textsuperscript{37}

Data from the 2016 Conference on Retroviruses and Opportunistic Infections (CROI), highlight the disparity of lifetime risk of HIV transmission between different transmission groups (see Figure 4).\textsuperscript{38} The overall lifetime risk of HIV infection among all MSM is 1 in 6. Among white MSM, the lifetime risk is 1 in 11, while the lifetime risk among Latino MSM is 1 in 4. Among black MSM, the risk reaches 1 in 2, meaning half of all black gay men are projected to be diagnosed with HIV in their lifetime. When compared to the overall lifetime risk for HIV diagnosis in the U.S (1 in 99), it is evident that significant disparities still affect vulnerable subpopulations.

![Figure 4: Lifetime Risk of HIV Diagnosis among MSM by Race/Ethnicity](image)

### Figure 4: Lifetime Risk of HIV Diagnosis among MSM by Race/Ethnicity\textsuperscript{39}

2) **African American and Latina Women**

At the end of 2012, approximately one in four PLWH in the United States (23%) were women.\textsuperscript{40} In 2015, 86% of new infections amongst women (6,391) resulted from heterosexual contact. Women represent 20% (248,270) of the 1,216,917 cumulative AIDS diagnoses in the United States from the beginning of the epidemic through the end of 2015. The CDC reports that of all women living with HIV, only 55% were retained in care and only 30% had achieved viral suppression.

When comparing groups by race/ethnicity, gender, and transmission category, the fourth largest number of all new HIV infections in the United States in 2015 (4,142) occurred among African American women with heterosexual contact (see Figure 5).\textsuperscript{41} African American and Latina women

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continue to be disproportionately affected by HIV, when compared with women of other races/ethnicities. Of the total number of estimated new HIV infections among women in 2014, 61% (4,524) were in African Americans, 19% (1,431) were in white people, and 15% (1,131) were in Latinas.

**Figure 5: Estimates of New HIV Infections in the United States for the Most-Affected Subpopulations, 2014**

![HIV Diagnoses in the United States for the Most-Affected Subpopulations, 2015](image)

*Subpopulations that represent 2% or less of HIV diagnoses are not represented in this graphic.

Recent data about lifetime risk also show a significantly higher likelihood of HIV diagnosis for African American or Hispanic women than for a white woman. 1 in 880 white women will be diagnosed with HIV in her lifetime, compared to 1 in 227 Latina women, and 1 in 48 African American women. This means that Latina women are 4 times more likely to be diagnosed with HIV than white women, and African American women are 18 times more likely to be diagnosed with HIV than white women.

A recent study found that for women, being African-American is strong predictor of sustained high levels of viral load. In females who fall into the transmission category of heterosexual contact and have been diagnosed with HIV, African-American women have the highest rates of PLWH not having reached viral suppression (12.3%), while white women have the lowest rates (6.8%). Latina women fall in between the two groups on this spectrum, with a rate of 8.2%.

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3) **Youth**

In 2010, Youth (aged 13 to 24) made up 17% of the U.S. population, but accounted for an estimated 26% (12,200) of all new HIV infections. More recently, Youth accounted for an estimated 22% (8,804) of all new HIV infections in 2015. In other words, more than one in five new HIV diagnoses were among persons aged 13 to 24 years. An estimated 1,489 Youth received AIDS diagnoses in 2015, accounting for 8% of all AIDS diagnoses that year.

At the end of 2013, there were an estimated 54,200 youth living with HIV in the United States; of these, 24,100 were living with undiagnosed HIV infection. This means that 44.4% of Youth living with HIV in the United States do not know they are infected, compared to the overall average of 15.0% of people of all ages living with undiagnosed HIV.

Black and Hispanic/Latino Youth are disproportionately affected by HIV (see Figure 6). Even more strikingly, young black people (aged 13 to 19) were 64% of young people diagnosed with HIV in 2015, yet only represented 14% of the total youth population in the United States. CDC data indicate that among PLWH alive at the end of 2014, 48.1% of Youth had viral loads of <200 copies/mL, as compared to 61.1% of individuals over 55 and the overall average of 57.9% of individuals across all ages. Among PLWH with one or more viral load tests, 74.1% of Youth were virally suppressed, as compared to 85.4% of individuals over 55 and the overall average of 80% of individuals across all ages. These numbers indicate a clear disparity in viral suppression that Youth face.

Young MSM are also disproportionately affected by HIV, particularly young MSM of color. Young MSM accounted for 80% of new HIV infections among Youth in 2014 and 27% of new infections among all MSM in 2010. Moreover, from 2005 to 2014, HIV diagnoses among young MSM increased to approximately 87% among black people and Hispanics/Latinos, and 56% among white people. Data (2010-2014) from young MSM show that this increase in HIV diagnoses has stabilized among black people and white people and slowed to 16% among Hispanics/Latinos.

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53 Ibid.
In 2014, Zanoni and Mayer found that the HIV Care Continuum for Youth was significantly different from the overall national Continuum (see Figure 7). For example, only about 41% of youth aged between 13 to 29 who are living with HIV are diagnosed, which is less than half the overall rate of HIV diagnosis (87%).

Figure 6: Estimated New HIV Diagnoses Among Youth Aged 13-24 by Race/Ethnicity and Sex, United States 2015

Figure 7: HIV Care Continuum for Youth, Ages 13 to 29

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Addressing the low percentage of those who are aware of their diagnosis is important because more than 50% of new HIV infections occur as a result of the 21% of people who do not know they are infected.\textsuperscript{59} Perhaps the most striking are the data that suggest that less than 6% of Youth living with HIV are virally suppressed,\textsuperscript{60} compared to the overall viral suppression rate of 30%.\textsuperscript{61} Drop-offs at all points in the Care Continuum contribute to this low rate of viral suppression.\textsuperscript{62} Hall and colleagues corroborated these results by finding that the rates for each element on the Care Continuum increase with each older age group (outcomes are worst for those ages 13-24 and best for those ages 55-64) (see Figure 8).\textsuperscript{63} Recent data from the RWHAP also indicate a discrepancy in the viral suppression rates in those who had at least one outpatient ambulatory medical care visit during the calendar year and at least one viral load reported between youth aged 13-24, at 65%, and the all RWHAP clients, at 81%.\textsuperscript{64}

\textit{Figure 8: HIV Care Continuum per Age Group}\textsuperscript{65}

\textsuperscript{59} Zanoni BC and Mayer KH. The adolescent and young adult HIV cascade of care in the United States: exaggerated health dispariti\textsuperscript{es}. AIDS Patient Care STDs. 2014;28(3):128-35.

\textsuperscript{60} Zanoni BC and Mayer KH. The adolescent and young adult HIV cascade of care in the United States: exaggerated health disparities. AIDS Patient Care STDs. 2014;28(3):128-35.


4) Transgender People

Transgender communities in the United States are among the groups at highest risk for HIV infection. The term gender identity refers to a person’s internal identification with a gender, and transgender refers to a person whose gender identity does not conform to a binary classification of gender based on biological sex, external genitalia, or their sex assigned at birth.\textsuperscript{66} Most studies define transgender individuals into a binary of either transgender woman/trans feminine or transgender man/trans masculine. Transgender woman refers to an individual who was assigned a male sex at birth, but chooses to express their gender as female or along the feminine spectrum. Conversely, transgender man refers to an individual who was assigned a female sex at birth, but chooses to express their gender as male or along the masculine spectrum.\textsuperscript{67} Reliable data on transgender individuals can be hard to attain because many providers do not have clear methods by which to categorize them. There is a dearth of information about the HIV epidemic within the transgender man population.\textsuperscript{68}

In an analysis of HIV testing events at CDC sites between 2009 and 2011, transgender people were found to have much higher percentages of HIV-positive test results (2.4%), compared to both cisgender males (0.9%) and females (0.2%).\textsuperscript{69} Globally, it is estimated that around 19\% of transgender women are living with HIV; they are also 49 times more likely to acquire HIV than all adults.\textsuperscript{70}

Although transgender people do not make up a large proportion of PLWH, the prevalence of HIV within the transgender community is disproportionately high.\textsuperscript{71} In 2016, the Williams Institute estimated that roughly 0.6\% of the total U.S. adult population identifies as transgender (men or


\textsuperscript{68} Ibid.


women). However, Mizuno and colleagues found that 1.3% of PLWH receiving care in the United States self-identified as transgender women, indicating a disproportionate HIV prevalence within this population.

Some studies indicate that the rate of HIV prevalence among transgender women could be as high as 28%, compared to an overall HIV prevalence rate in the United States of approximately 0.4 to 0.9%. Higher percentages of newly identified HIV-positive test results were found among black transgender women (51%) than among white (11%) or Latina (29%) transgender women.

Furthermore, compared to cisgender women, transgender women were disproportionately likely to be diagnosed with AIDS within three months of HIV diagnosis. Although MSM and transgender women have similar CD4 counts at diagnosis, transgender women were found to have delayed linkage to care and lower viral suppression rates than MSM. Data from 2014 indicate that viral suppression in transgender people who have had at least one outpatient ambulatory medical care visit during the calendar year and at least one viral load reported, the rate of viral suppression is 74%, compared to that of cisgender men (82%) and women (80%).

Williamson found that healthcare providers and systems are often underequipped in their ability to provide effective care to those who identify as transgender. A provider who is not attuned to the particular needs of this subpopulation is highly prone to inadvertently creating an unreceptive environment for a patient seeking care. This environment may lower the likelihood of a patient staying in care, which ultimately results in poorer health outcomes. Mizuno and colleagues found that transgender women have significantly lower ART dose adherence and durable viral suppression compared to non-transgender men, even though they have similar rates in terms of receipt of care, treatment, and supportive services. Transgender women have higher unmet needs for basic services, like food and housing, which may exacerbate already poor outcomes.

An important consideration is that there have been very few efforts to address HIV-related disparities among transgender men (female-to-male transgender persons). In a systematic literature

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A literature review conducted by Herbst and colleagues, it was found that, of 29 identified HIV-related studies of transgender peoples, only 5 included data specifically about transgender men.\textsuperscript{82} Due to the low percentage of those who self-identify as transgender in the United States, interventions focused on this population have historically been quite limited.\textsuperscript{83} However, the high HIV prevalence within this population indicates that reducing this disparity would have a far-reaching impact on HIV-related mortality and morbidity among this underserved community.
