HIV Care Continuum Report by Health District, Georgia, 2012

HIV/AIDS Epidemiology Section
Epidemiology Program
Division of Health Protection
Georgia Department of Public Health

September 2015

This *HIV Care Continuum Report by Health District, Georgia, 2012* is published by the Georgia Department of Public Health (DPH), HIV/AIDS Epidemiology Program (HAEP), 2 Peachtree Street, Atlanta Georgia 30303.

Data are presented from known diagnoses and laboratory reports entered into the Georgia Enhanced HIV/AIDS Report System (eHARS). All data are provisional.

Suggested citation:

Georgia Department of Public Health, HIV/AIDS Epidemiology Program *HIV Care Continuum Report by Health District, Georgia, 2012* https://dph.georgia.gov/data-fact-sheet-summaries , *Published September 2015 [Accessed: date]*

For more information on HIV surveillance in Georgia, visit

http://dph.georgia.gov/reporting-forms-data-requests

Acknowledgements

Publication of this report was made possible with the contributions of the Georgia DPH HAEP Core HIV surveillance staff, HIV Case Report Forms submitted by Georgia health care facility staff, HIV infection-related laboratory test results transmitted by laboratory facilities in Georgia, data matches with other public health programs, and the ongoing efforts of multiple individuals from public and private sector organizations dedicated to improving surveillance, prevention, testing, and care of persons living with HIV infection.

Georgia HIV Core Surveillance Team contributors: Lauren Barrineau, Marguerite Camp, Rachel Culbreth, Raimi Ewetola, Thelma Fannin, Jane Kelly, Rodriques Lambert, Julia Latash, Delmar Little, Mildred McGainey, Latoya Moss, Doris Pearson, A. Eugene Pennisi, Deepali Rane, Akilah Spratling, Lakecia Vanerson, Gary Weeks, and Andrenita West.

This report was prepared by the following staff of the Georgia Department of Public Health: Cherie Drenzek, Taylor Guffey, Denise Hughes, Jane Kelly, Rodriques Lambert, A. Eugene Pennisi, Deepali Rane and Pascale Wortley.

Table of Contents

Background

In January 2013, the Centers for Disease Control and Prevention released HIV Surveillance Supplemental Report Volume 18, Number 2 *Monitoring Selected National HIV Prevention and Care Objectives by Using HIV Surveillance Data – United States and 6 U.S. Dependent Areas - 2010*[1]. The report provides data by selected jurisdiction on stage of disease at diagnosis of HIV infection in 2010, and on the HIV Care Continuum (previously called the HIV Care Cascade), i.e., linkage to and retention in HIV care and viral suppression. These metrics can be used to monitor progress toward the achievement of objectives outlined in the National HIV/AIDS Strategy for the United States (NHAS), released by the White House in July 2010[2]. While there is no consensus or "gold standard" for measures of linkage and retention in care, several measures for retention have been reported to correlate[3]. Selection of appropriate measures must take into consideration availability and accuracy of data collection systems, as well as potential uses of the metrics.

Since January 1, 2004, Georgia has a dual reporting system that legally requires HIV/AIDS reporting by both health care providers and laboratories (*O.C.G.A. §31-12-2(b)*). All health care providers diagnosing and/or providing care to a patient with HIV have the obligation to report them using the HIV/AIDS Case Report Form. Case report forms are mandated to be completed within seven (7) days of diagnosing a patient with HIV and/or AIDS or within seven (7) days of assuming care of an HIV positive patient who is new to the provider, regardless of whether the patient has previously received care elsewhere. All laboratories certified and licensed by the State of Georgia are required to report laboratory test results indicative of HIV infection, such as positive Western Blot results, all detectable and undetectable viral loads, and all CD4 counts to the Georgia Department of Public Health (GDPH) HIV/AIDS Epidemiology Program (HAEP)[4]. Appendix A depicts the Georgia HIV/AIDS Reporting Flowchart. Appendix B contains the Georgia DPH Case Report Form.

Recent improvements in the Georgia electronic laboratory reporting (ELR) system have facilitated use of laboratory-based measures for linkage and retention in care. Although other measures such as missed appointments, health care visit consistency, and gaps in care may be assessed at individual health care facilities, it is difficult to accurately gather these measures on a statewide basis in Georgia. For these reasons, measures in this report and previous Georgia Care Continuum reports rely on laboratory data-driven definitions. In addition, multiple measures, such as linked to care within 3 months of diagnosis, any HIV care (at least one CD4 or viral load in 12 months) as well as the HRSA medical visit performance measure (at least two CD4 or viral load measures as least three months apart within a 12 month period)[5] can be useful to various stakeholders in monitoring impact of effort to improve outreach, testing, and care.

Efforts are underway to promote routine HIV testing in Georgia, identify those with acute infection, link and retain persons living with HIV in medical care, achieve higher rates of viral suppression overall, and eliminate disparities in HIV testing, treatment and care. Late diagnosis of HIV infection contributes to poorer outcomes for infected individuals and impedes HIV prevention efforts. Earlier diagnosis provides opportunity for interventions for viral suppression for the benefit of the individual and for reduced HIV transmission for the benefit of the community.

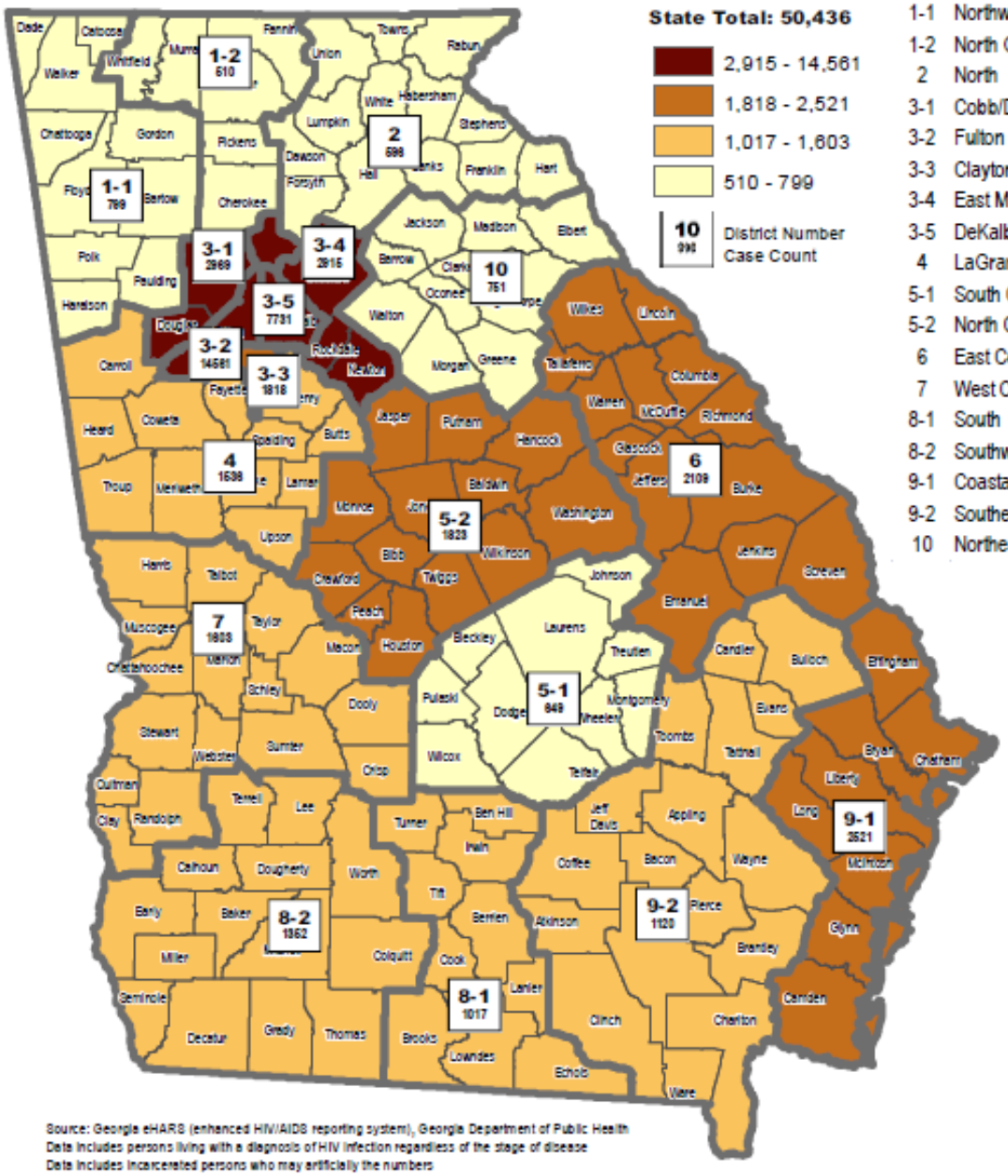
In addition to identifying sub-population disparities in linkage and retention in care, late diagnoses and viral suppression, this report expands upon the 2012 Care Continuum Report by providing Care Continuum information at the health district level defined by the current addresses of persons living with HIV in Georgia.

Commentary

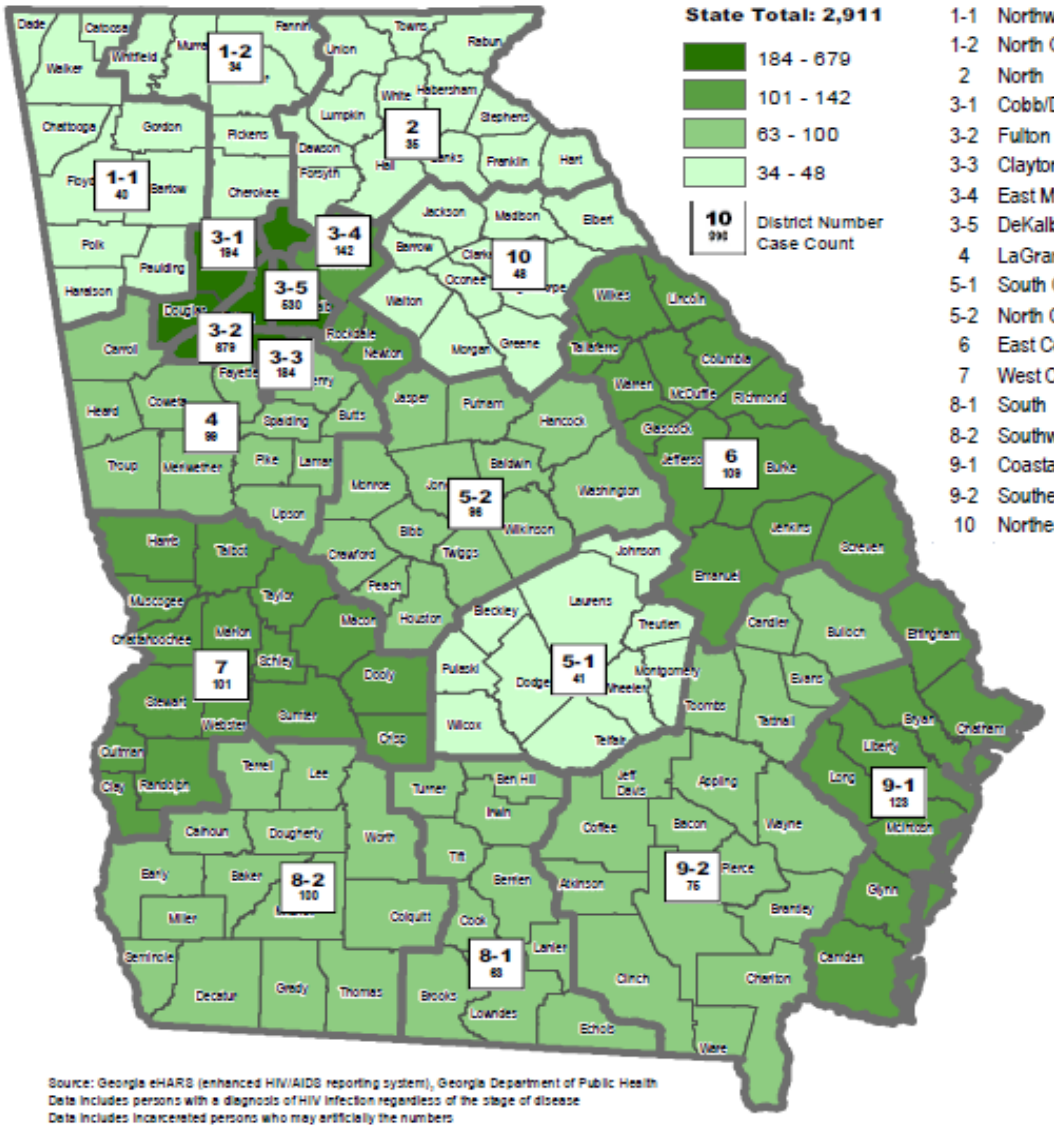
This report is supplemental to the 2012 Georgia Care Continuum report.. Data on HIV infection in Georgia are also included in the CDC HIV Surveillance Report Volume 23 Diagnoses of HIV Infection in the United States and Dependent Areas, 2011[6]. Data included in the national report may differ from the Georgia report. CDC does not include cases reported in Georgia which are missing data on race or sex, whereas these cases are included in the Georgia surveillance reports.

The Georgia Department of Public Health (DPH) funds, and collaborates with, 18 separate public health districts throughout the state. Each is comprised of one or more of Georgia's 159 counties and county health departments. Figure 1 shows the number of persons living with HIV (prevalence) and Figure 2 the number of new diagnoses by health district for Georgia. Additional information on each of the health districts can be found by visiting http://dph.georgia.gov/public-health-districts

Persons living with HIV infection by current district of residence, Georgia, 1981 to December 31, 2012



New diagnoses of HIV infection by district of residence at diagnosis, Georgia, January 01 to December 31, 2012



Report Organization

The Georgia HIV Care Continuum Surveillance Report, 2012 is organized into six sections:

- Section One - Care Continuum for persons living with HIV, by health district, Georgia, 2012
- Section Two - Viral suppression among persons retained in HIV care, by health district, Georgia, 2012
- Section Three - HIV Care Continuum by four regions, Southern, Central, Metro and Northern, Georgia, 2012

Supplementary slide sets with speaker's notes are available on the Georgia DPH website for each health district for the care continuum stratified by sex, race, age and transmission category for persons living with HIV in that district https://dph.georgia.gov/hiv-care-continuum. Please note that a person may report a current address in one district yet receive care in another, or a change of address may not have been reported to Georgia DPH HAEP.

Readers are encouraged to note all titles and footnotes carefully to ensure a complete understanding of displayed data.

Methodology

Georgia Care Continuum Methodology, Persons Living With HIV (PLWH), by Health District, 2012

- Persons included are adults and adolescents age 13 and older, diagnosed by 12/31/11, living as of 12/31/12 with current address in one of 18 health districts in Georgia
- Linked to care within 3 months is measured only for the new diagnoses made in 2011. This is shown in a different color from the rest of the continuum to emphasize the different denominator
- Any HIV care is defined as having had at least 1 CD4 or viral load (VL) measurement in 2012
- Retained in care is defined as having had at least 2 CD4 or VL at least 3 months apart in 2012
- Viral suppression (VS) is defined as a VL<200 copies/ml or undetectable in the most recent VL in 2012
- Each bar in the continuum is independent of those preceding it; all percentages are of the total number of persons diagnosed with HIV in category

Transmission Category Definitions

Transmission category is determined from risk behavior noted on case report forms or obtained through match with other databases (such as CAREWare from the Ryan White program, or non-HIV sources such as the Georgia DPH tuberculosis and STD databases). The transmission category assignments are hierarchical as per CDC methodology and defined as follows:

- MSM is defined as male to male sexual contact
- IDU is defined as injection drug use
- The MSM/IDU transmission category includes those persons who reported both male sexual contact and injection drug use
- HET is defined as heterosexual contact with a person known to have, or to be at high risk for, HIV infection

- Other includes the transmission categories of hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified. The vast majority of cases in the "Other" category are no risk reported (NRR) or no risk identified (NIR).

Summary of Methodology Changes

This report of the HIV care continuum by health district (referred to here as the Health District Report) represents a refinement of the Georgia 2012 Care Continuum Report. The changes include:

- For the Health District Report, linkage to care is measured by CD4 or VL within 3 months of diagnosis including the day of diagnosis for persons diagnosed in 2011 only. The Georgia 2012 report excluded laboratory values drawn on the day of diagnosis.
- The term "any HIV care" is used for those having had at least one CD4 or VL in 2012. In previous reports this measure was referred to as "engaged in care".

Multiple Imputation

Missing data is an ongoing problem in routinely collected data or large-scale epidemiologic studies. Because a substantial proportion of persons with diagnosed HIV infection are reported to the Georgia Department of Public Health without an identified risk factor, multiple imputation methods are used to assign transmission categories to those persons whose diagnoses are reported without a risk factor.

Multiple imputations (MI) is a statistical approach in which missing transmission categories for each person are replaced with plausible values that represent the uncertainty regarding the actual, but missing, values. This is the same statistical strategy that the CDC uses to assign transmission categories to those reported without a risk factor in the national dataset.[8]

Whether these transmission category adjustments using MI introduce any systematic bias in overestimation or underestimation of percentages of HIV infection attributed to specific categories is unknown. Instead of estimating the risk factor distribution probabilities for cases with missing risk factors by a simple redistribution approach, MI draws a random sample of the missing values from its distribution.

Then, instead of filling in a single value for each missing value, MI replaces each missing value with a set of plausible values that reserve the statistical distribution of the imputed variable and the relationship with other variables in the imputation model. The multiply-imputed datasets are then analyzed by using standard procedures for complete data. Results from these analyses are then combined to get the final estimates.

MI is considered a sound approach for large datasets.[9]

In an analysis comparing the Care Continuum for the Georgia HIV prevalent population in 2012 stratified by transmission category estimated with and without use of MI, little difference was found, similar to the experience with the national dataset.[8] Specific examples can be found in the slide set "Multiple Imputation, Georgia 2012" found on the Georgia DPH website.

Highlights

HIV Care Continuum among persons living with HIV, by health district, Georgia, 2012

- Linkage to care ranged from 76-92% overall by health district for persons diagnosed with HIV in 2011.
- Among those diagnosed by 12/31/2011 and alive 12/31/2012, any HIV care ranged from 57-67% and retention in care from 40-54% by health district.
- Note: because of a temporary change in CD4 reporting in 2012 from one laboratory facility, missing values have resulted in an underestimate of retention in care for Health District 8-2 (Albany). This measurement is therefore excluded in this report. Linkage, any HIV care and viral suppression are thought to be accurate for this region, however.
- There was little difference in HIV care continuum by sex, with some exceptions: e.g., in Health District 1-1 and 1-2, VS was 9 percentage points higher for males than females (48% vs 39% and 50% vs 41%), while in Health District 10, VS was 8 percentage points higher for females (53% vs 45%).
- In most health districts, a lower percentage of blacks were virally suppressed compared to Hispanic/Latinos and whites, sometimes differing by as much as 15 percentage points. Exceptions include Health District 10 in which VS was 47% among both blacks and whites (60% among Hispanic/Latinos), and Health District 6 in which VS was higher for blacks than whites (43% vs.35%).
- VS by age ranged from 25%-74% by health district, with lowest VS among those aged 13-24 years and generally increasing VS with increasing age.
- By transmission category, VS was generally lower among IDU than among HET for females and lower among IDU than MSM, MSM/IDU and HET for males. Caution should be used in interpretation, especially when stratification results in small numbers.
- Slide sets with aggregate care continuum measures and stratification by sex, race, age and transmission category for each district can be found on the Georgia HIV Care Continuum website https://dph.georgia.gov/hiv-care-continuum

Viral suppression analysis among persons retained in HIV care, by health district, Georgia, 2012

- Viral suppression among those retained in care averaged 84%, but varied by health district and demographic category with a low of 31% among women with Unknown/Other transmission category in District 5-1 to 100% among persons aged 55 and older in Districts 1-1 and 1-2.
- In all but four health districts (Districts 6, 3-3, 9-1 and 9-2), males retained in care had higher proportion of viral suppression than females, differing as much as 13 percentage points (District 1.1).
- Among those retained in care disparity in viral suppression by race persists. The percent with VS is lower for Blacks than Whites in all Health Districts (differing by as much as 19 percentage points for District 8-2), and lower than Hispanic/Latinos for all but two (Health Districts 6 and 7). Viral suppression is generally lower for younger age groups even when retained in care and increases with increasing age. There are exceptions however. For example, VS is highest among those aged 13-34 years at 65% in District 9-2, and nearly uniform at 80-84% among persons aged 13-54 years in District 3-4.
- The Care Continuum can be used to examine disparities among groups stratified by multiple variables. Caution must be used in interpretation when multiple stratifications result in small numbers of persons represented.
- Approximately half of persons living with HIV in Georgia in most demographic categories examined had no viral load reported in 2012, and are considered not suppressed in this analysis.

Technical Notes

This report includes data reported to Georgia DPH HAEP from January 1, 2004 (when name-based HIV reporting began in Georgia) through April 9, 2014.

All data reported here are provisional and should be interpreted with caution. Not all HIV infected persons in Georgia have been tested or some may have been tested at a point too early in infection to be detected by the test used. Although HIV reporting is mandated for health care providers and laboratory facilities, not all providers and laboratories may comply, resulting in missing data. Laboratory tests performed in other jurisdictions, or at Veterans Administration laboratories may not be reported to GDPH and therefore would not be included in these analyses.

In this report, missing data for sex, race/ethnicity and transmission category are indicated as unknown. Missing data may result from incomplete or absent Adult Care Report Forms, inadequacy of records for patients lost to follow-up, or patients accessing HIV treatment from health care systems outside Georgia. Follow-up of missing data cases is ongoing. Persons with insufficient address information to identify current health district are excluded even if the residence at diagnosis or current residence is Georgia.

Definitions and hierarchy for assignment of transmission category follows the definitions used by CDC.[7] Data by transmission category were statistically adjusted using multiple imputation method to account for missing risk factor information. Estimates are rounded to the nearest whole number. Data referring to diagnoses of HIV infection and persons living with HIV infection include all persons with HIV infection regardless of stage of disease (Stage 1, 2, 3 [AIDS] or unknown) at the time of diagnosis.

Very few individuals are reported in the transgender category in Georgia. Efforts are underway to improve data collection on gender. This report uses reported birth gender, not current gender identity.

Less than 0.5% of the prevalent population with HIV in Georgia are American Indian/Alaska Native, Asian or Native Hawaiian/Other Pacific Islander. In this report, these groups are included in the category "Other". Efforts are underway to create a separate report on these populations in Georgia.

Limitations

Limitations to this report include:

- Incomplete reporting on case report forms on race, sex, complete address at diagnosis and risk behavior (which is used in defining transmission category) limit stratification and comparison among groups.
- Because CDC does not accept reporting of cases missing race/ethnicity or sex to the national database, such cases are not included in the Cases Routine Interstate Duplication Report (RIDR) process. Thus current address information may not be updated upon re-location to another state. Retention in care and VS may be underestimated for cases missing race/ethnicity or sex.
- The high proportion of missing risk behavior information on case report forms limits comparisons among groups. Rather than presenting the data as No Reported Risk for these cases, Georgia utilizes multiple imputations, a statistical technique, to re-distribute missing information and estimate transmission category.
- The CDC definition of heterosexual transmission limits this category to those with sexual contact with a known HIV-infected partner or those with known increased risk (e.g.,

MSM or IDU). For example, women who have had heterosexual contact with a man not known to be HIV-infected, bisexual or IDU will be classified as having no identified risk.

- Populations for which data are missing may be fundamentally different from other groups for which race, sex and transmission category are known
- CD4 or viral load is used as a proxy measure for linkage, engagement and retention in care. If laboratory tests are obtained prior to an HIV care appointment which is not kept, retention in care may be overestimated; conversely, a person may be seen for HIV care without laboratory data marking the visit, resulting in an underestimation of retention in care.
- Missing laboratory report data result in an underestimation of care and viral suppression.
- The number of individuals in some groups is small and caution should be used in interpretation.
- There were 5,407 persons missing county of residence and/or current address.

Despite these limitations, by maintaining methodological consistency across reporting time periods, Georgia DPH uses the HIV Care Continuum to identify disparities and monitor improvements in HIV linkage, retention in care and ultimately viral suppression.

Section 1: Care Continuum among persons living with HIV, by health district, Georgia, 2012

Figure 3 (below) shows the HIV Care Continuum for persons living with HIV (PLWH) statewide in Georgia as of 12/31/2012.

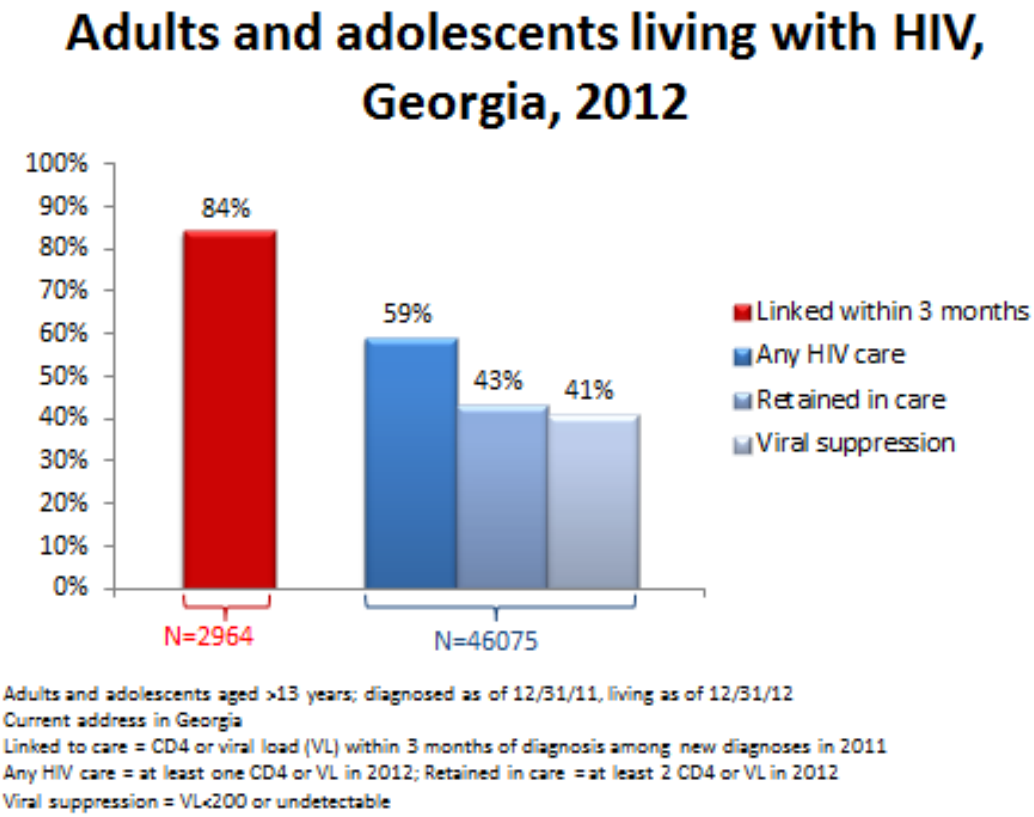


FIGURE 3 ADULTS AND ADOLESCENTS LIVING WITH HIV, GEORGIA, 2012

While linkage to care within 3 months of diagnosis for persons diagnosed in 2011 is high at 84%, receipt of any HIV care and retention in care for all persons living with HIV in Georgia is substantially lower at 59% and 43% respectively. Forty-one percent of Georgians living with HIV are virally suppressed (VL<200 or undetectable).

The overall pattern of high linkage to care within 3 months with a decreasing percentage of persons with any HIV care, retention in care, and VS is seen in all health districts, but the proportions and disparities vary by health district.

Tables 1-4 display, by health district, the total population, number and percent of PLWH, percent linked to care within 3 months among those diagnosed in 2011, receipt of any HIV care in 2012, retained in care in 2012, and virally suppressed (VL<200) on last VL drawn in 2012, stratified by sex, race, age and transmission category. Those individuals with no VL measurement in 2012 are assumed to be not virally suppressed. Multiple imputation was used to assign probable transmission category to those missing risk information on the case report form.

The following tables displaying the HIV Care Continuum by Health District can be found at http://dph.georgia.gov/data-fact-sheet-summaries

Table 1. HIV Care Continuum by health district, Georgia, 2012, by sex

Table 2. HIV Care Continuum by health district, Georgia, 2012, by race/ethnicity

Table 3. HIV Care Continuum by health district, Georgia, 2012, by age (in years)

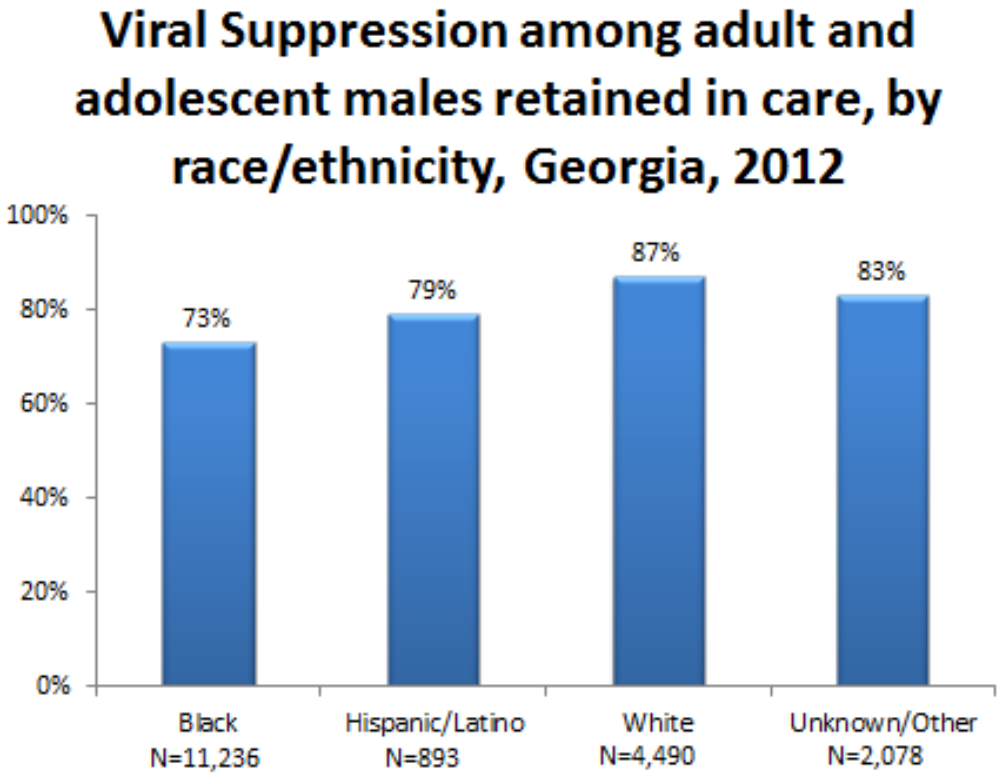
Table 4. HIV Care Continuum by health district, Georgia, 2012, by transmission category

Table 5. Viral suppression among those retained in care, Georgia, 2012

Section 2: Viral suppression among persons living with HIV, by health district, Georgia, 2012

A low percent virally suppressed may reflect differences in receipt of any HIV care, retention in care, treatment with and adherence to ART, or missing data. In the preceding analysis, if no viral load for 2012 is reported to the Georgia Department of Public Health, the individual is assumed to be not virally suppressed. It is also helpful to examine the proportion virally suppressed among persons retained in care. For the state overall, there was little difference in viral suppression among those retained in care by sex (males 78%, females 75%). There were, however, greater differences by race, especially for males (Figure 4).

Figure 4. Viral Suppression among adults and adolescent males retained in care, by race/ethnicity, Georgia, 2012.



This analysis of persons retained in care demonstrates that disparities in viral suppression are not only a function of access to and retention in care. Table 5 displays analysis of viral suppression among those retained in care by health district stratified by sex, race/ethnicity, age and transmission category http://dph.georgia.gov/data-fact-sheet-summaries

Lack of viral suppression may reflect ART not being prescribed, lack of ART adherence, or inappropriate medication choice. An additional consideration is that although individuals are included in this analysis because of documented CD4 and VL values, these laboratory tests may have been drawn during a non-HIV-related hospitalization, or drawn prior to an HIV clinic appointment that was never kept. Conversely, laboratory reports may contribute to an underestimation of retention in care. Laboratory testing has limitations as a proxy for measuring HIV care.

References

1. Centers for Disease Control and Prevention. Monitoring selected national HIV prevention and care objectives by using HIV surveillance data – United States and 6 U.S. dependent areas – 2010. *HIV Surveillance Supplemental Report* 2013; 18(No. 2, part B). http//www.cdc.gov/hiv/topics/surveillance/resources/reports/#supplemental. Published January 2013. Accessed March 31, 2013

2. National HIV/AIDS Strategy for the United States. http://www.whitehouse.gov/administration/eop/onap/nhas/. Published July 2010. Accessed March 31, 2013.

3. Yehia, Baligh R., Fleishman, John A., Metlay, Joshua P., et al. Comparing different measures of retention in outpatient HIV care. *AIDS* 2012, 26:1131-1139.

4. O.C.G.A. §31-12-2. http://www.ecphd.com/Resources/353.pdf, Accessed March 31, 2013

5. Health Resources and Service Administration, HIV/AIDS Bureau, HAB HIV core clinical performance measures for adult/adolescent clients: group 1. http://hab.hrsa.gov/deliverhivaidscare/files/habgrp1pms08.pdf Accessed March 31, 2013.

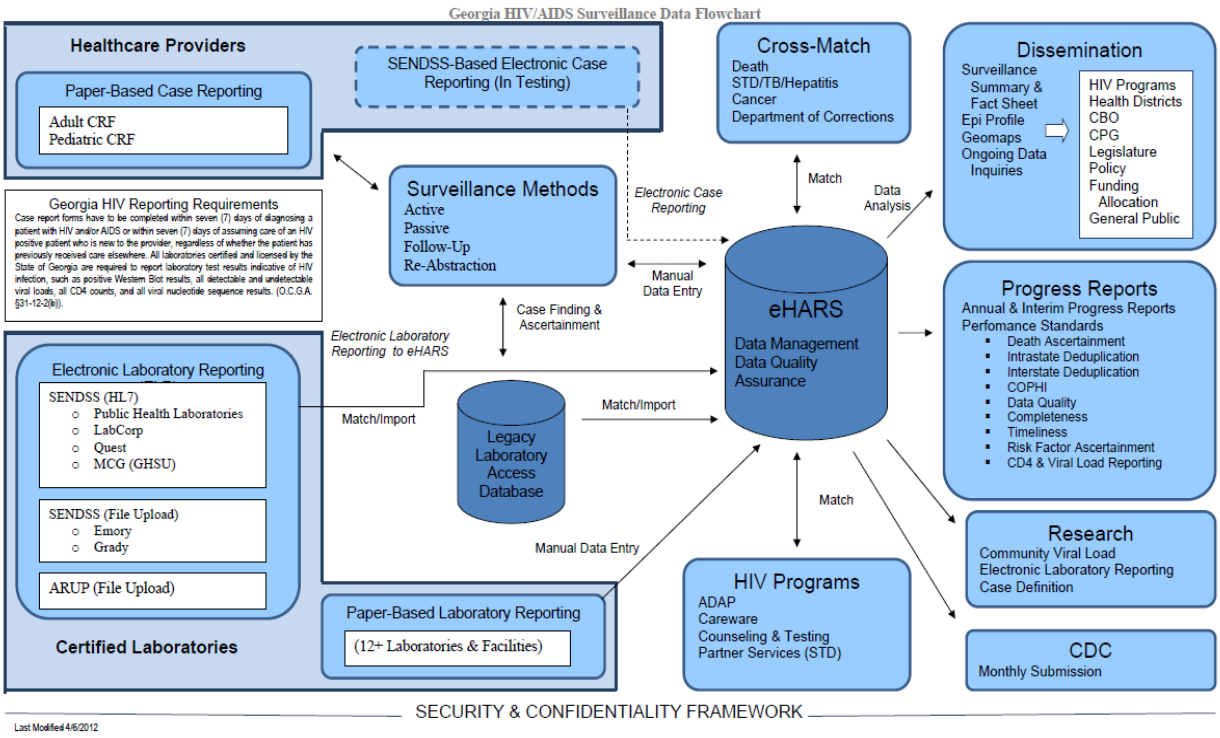
6. Centers for Disease Control and Prevention. *HIV Surveillance Report, 2011*; vol. 23. http://www.cdc.gov/hiv/topics/surveillance/resources/reports/. Accessed May 4, 2013.

7. CDC. Terms, definitions and calculations used in CDC HIV surveillance publications. Atlanta, GA: US Department of Health and Human Services, CDC; 2012. Available at http://www.cdc.gov/hiv/topics/surveillance/resources/factsheets/pdf/surveillance_terms_definitions.pdf Accessed March 31, 2013.

8. Harrison KM, Kajese T, Hall HI, Song R. Risk factor redistribution of the national HIV/AIDS surveillance data: an alternative approach. Public Health Rep 2008;123:618–27.

9. Rubin DB. Multiple imputation for nonresponse in surveys. New York: John Wiley & Sons; 1987.

Appendix A - Georgia HIV/AIDS Surveillance Data Flowchart



Appendix B - HIV Surveillance and Reporting Law in Georgia

Complete and timely reporting of HIV infection cases by is critical for monitoring the epidemic in Georgia and ensuring federal funding for public sector HIV prevention, care and treatment services since funding allocation is directly linked to the number of cases.

- Georgia Department of Public Health (DPH), HIV/AIDS Epidemiology Program (HAEP) is responsible for monitoring the HIV epidemic in the state by using the enhanced HIV/AIDS Reporting system to collect, manage, analyze and report surveillance data to Centers for Disease Control and Prevention
- Georgia began collecting AIDS case reports in the early 1980s. HIV (not AIDS) reporting was mandated in Georgia on December 31, 2003
- Georgia law (OCGA § 31-22-9.2) requires health care providers to submit a confidential case report for patients diagnosed with HIV infection within seven days of diagnosis to the Georgia DPH HAEP.
- Case report forms are mandated to be completed within seven (7) days of diagnosing a patient with HIV and/or AIDS or within seven (7) days of assuming care of an HIV positive patient who is new to the provider, regardless of whether the patient has previously received care elsewhere.

- All laboratories certified and licensed by the State of Georgia are required to report laboratory test results indicative of HIV infection, such as positive Western Blot results, all detectable and undetectable viral loads, all CD4 counts, and all viral nucleotide sequence results to the Georgia DPH HAEP.

To access the Adult and Pediatric Case Report Forms visit

http://dph.georgia.gov/reporting-forms-data-requests

FOR MORE INFORMATION CONTACT

Georgia Department of Public Health

HIV/AIDS Epidemiology Program

http://health/state.ga.us/epi/hivaids

Other resources:

www.AIDSVu.org

www.cdc.gov/hiv