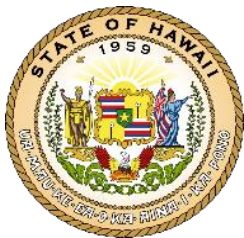


 **2019 Hawaii  
HIV/AIDS Integrated  
Epidemiologic Profile**



**Harm Reduction Services Branch  
Communicable Disease and  
Public Health Nursing Division  
Hawaii State Department of Health**



**December 8, 2021**

**Prepared for:**

Harm Reduction Services Branch  
Communicable Disease and Public Health Nursing Division  
Hawaii State Department of Health

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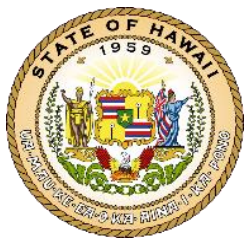
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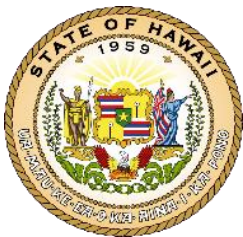


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## LIST OF ABBREVIATIONS

- AIDS: Acquired Immunodeficiency Syndrome
- AIAN: American Indian/Alaskan Native
- CD4: CD4+ T-lymphocyte
- CDC: Centers for Disease Control and Prevention
- DOB: date of birth
- DS: data suppressed
- eHARS: enhanced HIV/AIDS Reporting System
- FWID: females who inject drugs
- HIV: Human Immunodeficiency Virus
- HRSB: Harm Reduction Services Branch
- IDU: injection drug use
- MSM: men who have sex with men
- MWID: males who inject drugs
- NHPI: Native Hawaiian/other Pacific Islander
- PLWDH: persons living with diagnosed HIV infection
- PLWDA: persons living with diagnosed HIV Infection that was ever classified as stage 3 (AIDS)
- PWID: persons who inject drugs
- SVL: suppressed viral load
- VS: viral suppression / virally suppressed



## Executive Summary

The national 2020 HIV prevention and treatment goals include the following indicators on HIV medical care and care outcomes: 1) to increase the percentage of newly diagnosed persons linked to HIV medical care within one month of their HIV diagnosis to at least 85%; 2) to increase the percentage of persons with diagnosed HIV infection who are retained in HIV medical care to at least 90%; and 3) to increase the percentage of persons with diagnosed HIV infection who are virally suppressed to at least 80% (1). In 2019, *Ending the HIV Epidemic: A Plan for America* set an overarching national goal of 75% reduction in new HIV infections by 2025 and at least 90% reduction by 2030 (2). The 2025 and 2030 goals of *Ending the HIV Epidemic* include increasing both linkage to care and viral suppression to at least 95% (2).

Aligning with national goals, the Hawaii 2019 HIV/AIDS epidemiologic profile aims to 1) describe the epidemiology of HIV infections in Hawaii in 2019, including incidence and prevalence of HIV infection in 2019, statewide and among subgroups; 2) describe the 2019 HIV care continuum and disparities along the HIV care continuum by demographic, geographic, and risk factors; and 3) measure progress toward achieving national goals on selected indicators. In addition, special analyses were prepared for populations of interest to HIV programs, such as transgender persons, persons who inject drugs, and persons in the custody of state and federal correctional authorities.

### Summary of Progress

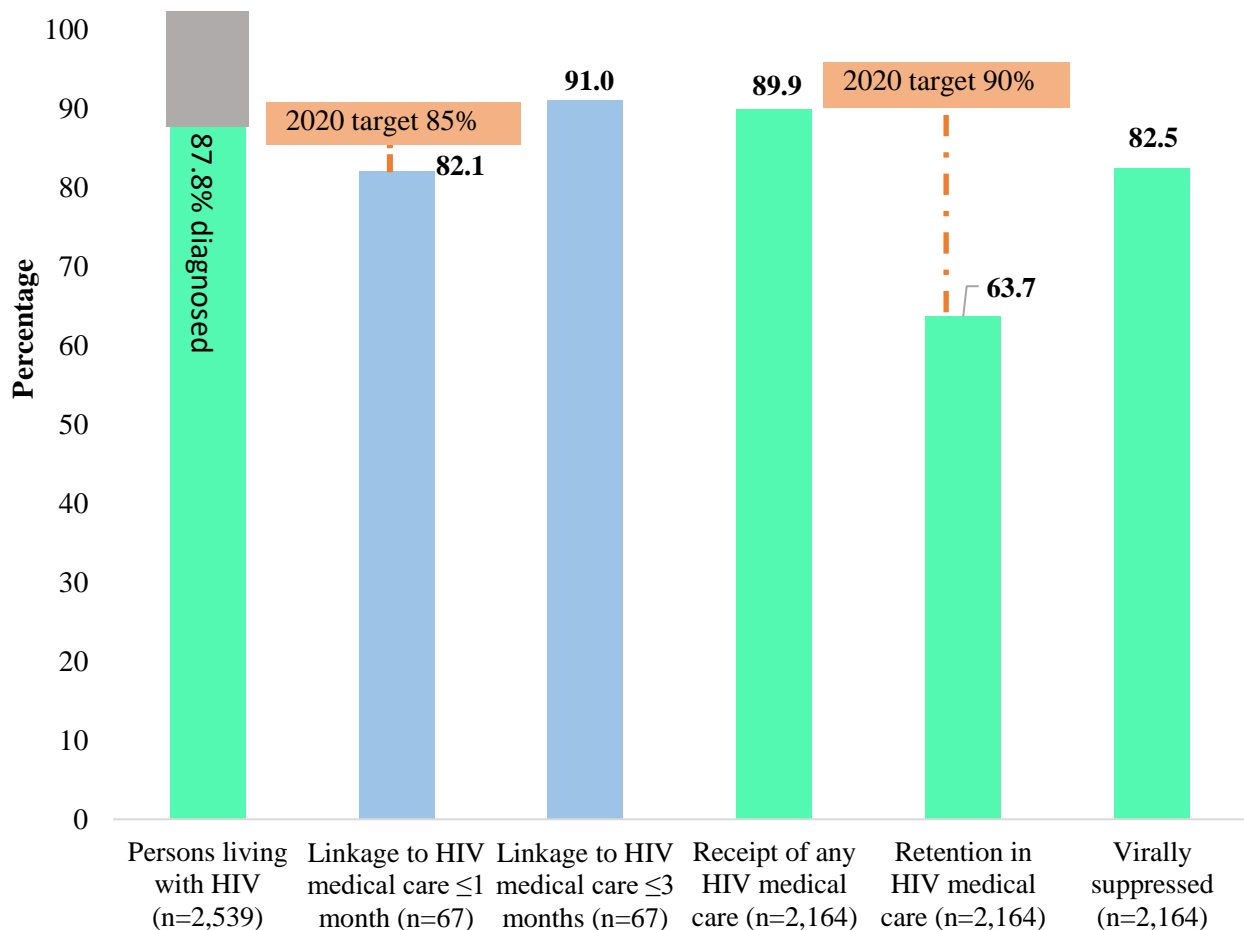
This profile highlights the Hawaii 2019 HIV care continuum and progress to date on national goals of reducing new HIV infections and improving selected indicators along the HIV care continuum from 2015 to 2019. Please refer to the full report for progress and disparities observed on selected indicators along the HIV care continuum across the 5-year period.

### Hawaii 2019 prevalence-based HIV Care Continuum

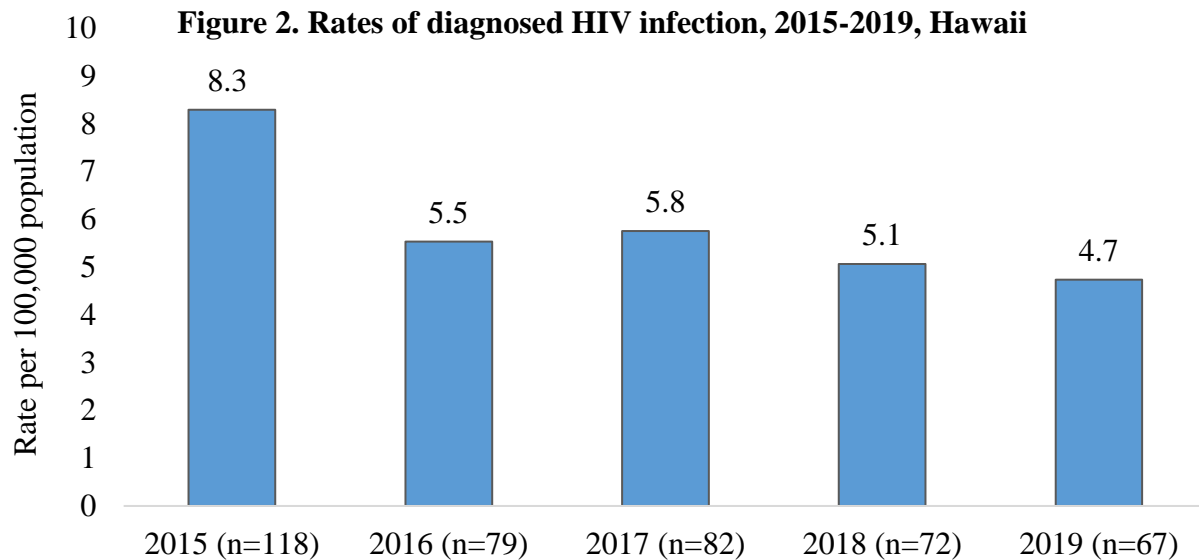
At the end of 2019, there were an estimated 2,229 persons living with diagnosed HIV infection in Hawaii. The percentage of diagnosed infections among persons living with HIV at year-end 2019 in Hawaii was estimated by CDC at 87.8% (3), close to the national 2020 target of 90% (1). As a result, the total number of persons living with diagnosed or undiagnosed HIV infection in Hawaii at year-end 2019 is estimated at 2,539 (**Figure 1**).

Linkage to HIV medical care is based on a total of 67 persons newly diagnosed with HIV infection in 2019, of whom 55 (82.1%) were linked to HIV medical care  $\leq 1$  month and 61 (91.0%) were linked  $\leq 3$  months after HIV diagnosis (**Figure 1**). Receipt of HIV medical care and viral suppression are based on 2,164 persons aged  $\geq 13$  years at year-end 2018 with HIV infection diagnosed through 2018 and who resided in Hawaii at year-end 2019. Among the 2,164 persons included, 1,946 (89.9%) received any HIV medical care, 1,378 (63.7%) were retained in HIV medical care, and 1,785 (82.5%) were virally suppressed in 2019. Of note is that although the percentage of persons retained in HIV medical care was far below the 2020 national target of 90%, the percentage of persons virally suppressed surpassed the 2020 national target of 80% (**Figure 1**) (1).

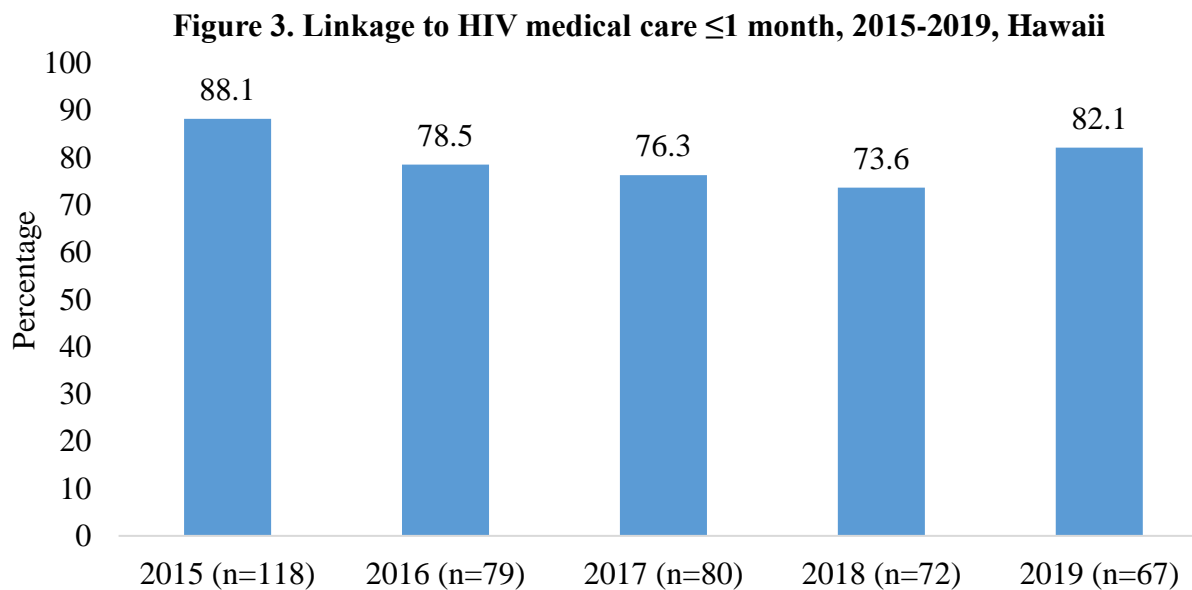
**Figure 1. Hawaii 2019 prevalence-based HIV Care Continuum**



**Numbers and rates of diagnosed HIV infections:** Both the number and rate of diagnosed HIV infections began to decrease in Hawaii in 2016. The total number of HIV diagnoses decreased by 43.2% from 118 in 2015 to 67 in 2019. As a result, a significant decrease was observed in HIV incidence rate, from 8.3 per 100,000 in 2015 to 4.7 per 100,000 in 2019 (**Figure 2**).



**Linkage to HIV medical care  $\leq 1$  month after HIV diagnosis:** From 2015 to 2019, linkage to HIV medical care  $\leq 1$  month among persons  $\geq 13$  years old at the time of HIV diagnosis decreased from 88.1% in 2015 to 73.6% in 2018 and then increased to 82.1% in 2019 (**Figure 3**). As noted above, the total number of new HIV diagnosis declined 43.2% from 2015 to 2019. When the total number of new HIV diagnosis becomes smaller each year, a few persons not linked to HIV medical care could easily skew the percentage downward.

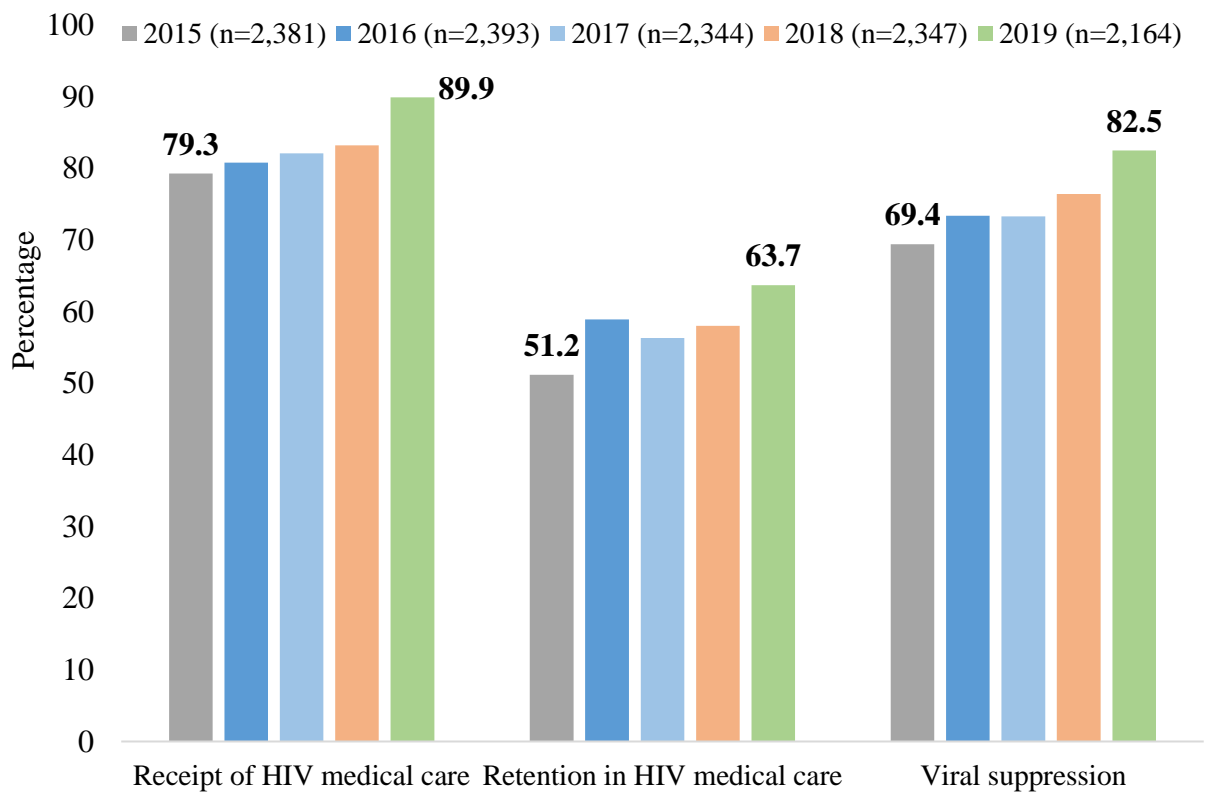


## Receipt of HIV medical care and viral suppression

From 2015 to 2019, a significant increase was observed for all three indicators: receipt of any HIV medical care, retention in HIV medical care, and viral suppression (**Figure 4**). “Receipt of any HIV medical care” is a term often interchangeable with “in HIV medical care”. Percentage of receipt of any HIV medical care increased from 79.3% in 2015 to 89.9% in 2019. In other words, in 2019, about 9 out of 10 persons living with HIV were in HIV medical care. Although a significant increase was also observed in the percentage of persons retained in HIV medical care, the percentage was still far below the 2020 national goal of 90% (1). It is vital to identify successful strategies to help persons in HIV medical care to remain engaged in care and to reengage persons who have fallen out of care.

It is exciting to see that the percentage of persons living with diagnosed HIV infection who are virally suppressed increased steadily from 69.4% in 2015 to 82.5% in 2019, exceeding the 2020 national goal of at least 80% (1). If such a rate of increase is sustained, we can achieve the Ending the HIV Epidemic goal of viral suppression among at least 95% of persons living with diagnosed HIV by 2030 (2).

**Figure 4. Receipt of HIV medical care and viral suppression, 2015-2019, Hawaii**



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## Technical notes

### A. Source of data

To be included in the analysis, data must meet the CDC case definition for HIV infection and eligibility criteria for HIV disease (4, 5). Data used in the development of this profile are from the State of Hawaii enhanced HIV/AIDS Reporting System (eHARS). eHARS is the nationwide, population-based data system developed by CDC for collecting, storing, and retrieving mandatory reporting of cases of HIV and/or AIDS. In the State of Hawaii, mandatory name-based reporting of AIDS started at the beginning of the epidemic in the early 1980s. Mandatory name-based reporting of HIV infection was not completed until March 2008. As of December 2020, Hawaii was one of the 45 jurisdictions that required reporting of all levels of CD4 and viral load test results to the state or local health department (6).

The eHARS dataset exported on June 30<sup>th</sup>, 2021 was used in the analysis. The dataset included information on persons' date of birth, birth sex, current gender, race, transmission category, current address, and laboratory data such as CD4 and viral load tests and results. Current address captured in this dataset reflects a person's most recent known residential address as of June 30<sup>th</sup>, 2021. To obtain the most recent known address at year-end 2019, address captured in the dataset exported at the end of 2019 was used as the starting point of the investigation. Several internal and external datasets and resources were used in the investigation for confirmation of a person's most recent known residential address at year-end 2019. Whether a person was in case management or not in 2019 was obtained from the state's case management data system, known as e2 Hawaii.

### B. Measures and definitions

#### Diagnosis of HIV infection

The term *Diagnosis of HIV infection* refers to a diagnosis of HIV infection regardless of the person's stage of disease (stage 0, 1, 2, 3[AIDS], or unknown) at the time of HIV diagnosis (3, 6). Only persons whose residence at the time of HIV diagnosis was in Hawaii were included in the count. The month and the year of the earliest HIV positive test result reported to the surveillance system was used to determine the diagnosis date of HIV infection. Persons who died during the same measurement year were included in the analysis. Cumulative incidence rates of diagnosed HIV infection were calculated per 100,000 populations (3). The population denominators used to compute the rates were based on the Vintage 2020 postcensal estimate file

(for years 2010-2020) from the US Census Bureaus (7). Each rate was calculated by dividing the total number of diagnoses for the calendar year by the population for that same calendar year and then multiplying the result by 100,000 (3, 6).

### **Linkage to HIV medical care**

Linkage to HIV medical care  $\leq 1$  month after HIV diagnosis was measured by documentation of  $\geq 1$  CD4 (count or percentage) or viral load tests performed  $\leq 1$  month after HIV diagnosis, including tests performed on the same date as the date of HIV diagnosis (7). Linkage to HIV medical care  $\leq 3$  months after HIV diagnosis was measured by documentation of  $\geq 1$  CD4 (count or percentage) or viral load tests performed  $\leq 3$  months after HIV diagnosis, including tests performed on the same date as the date of diagnosis (6). Only data from persons residing in Hawaii at the time of HIV diagnosis were included in the denominator for any chosen measurement year.

### **Viral suppression within 6 months of HIV diagnosis**

Achieving viral suppression within 6 months of HIV diagnosis is a new indicator added to this 2019 profile. The Ending the HIV Epidemic goals include increasing viral suppression within 6 months of HIV diagnosis to at least 95% by 2025 (2). Viral suppression within 6 months of HIV diagnosis was measured for persons whose infection was diagnosed during the year of measurement. It is defined as a viral load result of  $< 200$  copies/mL in any viral load test conducted within 6 months of an HIV diagnosis during the year of measurement (6).

### **Persons living with diagnosed HIV infection (PLWDH) at year-end 2019**

Prevalent cases of PLWDH in 2019 were defined as persons whose HIV/AIDS diagnosis date was on or before December 31, 2019 and who were alive and resided in the State of Hawaii at year-end 2019. Prevalent cases of persons living with diagnosed HIV infection that was ever classified as stage 3 (AIDS) (PLWDA) were defined as persons whose AIDS diagnosis date was on or before December 31, 2019 and who were alive and resided in the State of Hawaii at year-end 2019. Prevalent rates of PLWDH and of PLWDA were calculated per 100,000 population (3, 6). The population denominators used to compute the rates were based on the Vintage 2020 postcensal estimate file (for years 2010-2020) from the US Census Bureaus (7). Each rate was calculated by dividing the total number of PLWDH for the calendar year by the population for that same calendar year and then multiplying the result by 100,000. The denominators used for

calculating the rates specific to age, sex at birth, race/ethnicity, and county of residence were computed by applying the appropriate vintage estimates for age, sex at birth, race/ethnicity, and county of residence for 2019 for Hawaii (7).

### **Receipt of HIV medical care in 2019**

Receipt of HIV medical care during 2019 was based on data for persons whose HIV infection was diagnosed by year-end 2018 and who were alive and resided in the State of Hawaii at year-end 2019. Only persons aged  $\geq 13$  years at year-end 2018 were included in the analysis. Receipt of any HIV medical care was measured by documentation of  $\geq 1$  CD4 (count or percentage) or viral load tests performed in 2019 (6). Retention in HIV medical care was measured by documentation of  $\geq 2$  CD4 (count or percentage) or viral load tests performed  $\geq 3$  months apart during 2019 (6). In this report, the required time window used between the two sets of CD4 or viral load tests was  $\geq 91$  days.

### **In care in 2019**

The definition of in care in this document is the same as receipt of any HIV medical care. Whether an individual was in care in 2019 was based on data for persons whose HIV infection was diagnosed by year-end of 2018, were  $\geq 13$  years old at year-end 2018, and were alive and resided in the State of Hawaii at year-end 2019. It was measured by documentation of  $\geq 1$  CD4 (count or percentage) or viral load tests performed in 2019. The terms, “In care”, “In HIV medical care”, and “receipt of any HIV medical care” are interchangeable in this document.

### **Not in care in 2019**

Not in care in 2019 was defined as no documentation of any CD4 (count or percentage) or viral load tests performed in 2019. It was based on data for persons whose HIV infection was diagnosed by year-end of 2018, were  $\geq 13$  years old at year-end 2018, and were alive and resided in the State of Hawaii at year-end 2019.

### **Viral suppression in 2019**

Viral suppression in 2019 was defined as a viral load result  $< 200$  copies/mL at the last viral load test in 2019 (6). Viral suppression was calculated among the following two populations:

- (1) All persons aged  $\geq 13$  years at year-end 2018 with HIV infection diagnosed by year-end



2018 and who were alive and resided in Hawaii at year-end 2019; hereafter referred to as ‘All persons’.

- (2) Persons aged  $\geq 13$  years at year-end 2018 with HIV infection diagnosed by year-end 2018, who were alive and resided in Hawaii at year-end 2019, and who had documentation of  $\geq 1$  CD4 or viral load tests in 2019; hereafter referred to as ‘Persons in care in 2019’ or ‘Persons with  $\geq 1$  CD4/viral load tests in 2019’.

We no longer present viral suppression among persons who were retained in HIV medical care as previous years for several reasons. First, retention in HIV medical care as currently measured by documentation of  $\geq 2$  CD4 or viral load tests in the year of measurement may be too restrictive. It could exclude patients who have multiple visits ( $\geq 2$ ) to their medical providers but might not have  $\geq 2$  CD4 or viral load tests in the year of measurement. It could also exclude patients who are adherent to their antiretroviral regimens and who have maintained viral suppression for years and the patient and/or the patient’s medical provider has decided that monitoring CD4/viral load on an annual basis is adequate. Secondly, our data have found that a large proportion of persons who do not meet the criteria of retention in HIV medical care are virally suppressed. For example, in 2019, among persons who did not meet the criteria of retention in HIV medical care, 61.7% were virally suppressed.

### **C. Area of residence**

Residence at HIV diagnosis was used for diagnosis of HIV infection, linkage to HIV medical care, and viral suppression within 6 months of HIV diagnosis in each selected measurement year. A person’s most recent known address at year-end 2019 was used for prevalence data, receipt of HIV medical care, in care or not in care, retention of HIV medical care, and viral suppression in 2019. To determine whether a person resided in the State of Hawaii at year-end 2019, vigorous investigation was conducted using several available data sources, including laboratory data and results from the national deduplication project.

When a person was determined to reside in Hawaii at the end of the measurement year but lacked information on county of residence, missing data on county were then distributed back among counties based on the proportion, in each county, of prevalent cases of PLWDH and PLWDA for whom county data was available. For example, for 2018, among prevalent cases of PLWDH who had data on county, the proportion for each county was: Hawaii County, 16.9%, Honolulu County, 67.3%, Kauai County, 3.6%, and Maui County, 12.2%. Among the total 60

persons missing county data, 10 ( $=60 \times 16.9\%$ ) were redistributed back to Hawaii County, 41 ( $=60 \times 67.3\%$ ) to Honolulu County, 2 ( $=60 \times 3.6\%$ ) to Kauai County, and 7 ( $=60 \times 12.2\%$ ) to Maui County.

#### **D. Policy on reporting of small numbers**

In 2020, the Harm Reduction Services Branch (HRSB), Division of Communicable Disease and Public Health Nursing, Hawaii Department of Health updated its policy on data release of small numbers. This policy outlines the following:

- 1) Data may be reported at the state and county level only.
- 2) At the state level, data will be suppressed if the size of the population of interest (the denominator or stratum) is  $<100$ , unless they are in a category labeled “other” or “unknown”. No suppression rules are required for the numerator, or cell counts, if the size of the population of interest (the denominator or stratum) is  $\geq 100$ .
- 3) At the county level, data will be suppressed if the size of the population of interest (the denominator or stratum) is  $<100$  or the numerator (cell count) is  $<5$ , unless they are in a category labeled “other” or “unknown”.
- 4) At both the state and county levels, data will be suppressed or aggregated to preclude arithmetic calculation of a suppressed cell.
- 5) At both the state and county levels, a count of zero is allowed unless it may compromise confidentiality.

However, the total counts of HIV diagnosis and the total counts of persons living with diagnosed HIV infection/ever classified as stage 3 (AIDS), for single-year, multiple years, or cumulative years, and rates/proportions based on those counts for a single county or of multiple counties with no further stratification, are exempted from data suppression, even for total counts  $<5$ . Nevertheless, data will be suppressed at both the state and county level if the total counts are  $<5$  and are used as a denominator for additional HIV related outcomes (e.g., linkage to HIV medical care, receipt of and retention in HIV medical care, viral suppression, etc.). In addition, data will be suppressed at the county level if the total counts are  $<5$  and are further stratified (e.g., by sex, age, race/ethnicity, etc.).

Population of interest, sometimes referred to as the denominator, subgroup, or stratum, should be based on federal/state official publications, such as the U.S. census, vintage postcensal estimates from the U.S. Census Bureau, or from a state government official agency. For subgroups, or strata, where population data are not available, suppression rules will be based on the size of the underlying population that is most similar to the group. For example, for Black/African

American men who have sex with men, suppression rules would be applied based on the size of population of Black/African American men for the selected geographic areas.

### **E. Statistical analysis**

Chi-squared tests or z tests were used to compare 2019 to 2015 on rates of HIV diagnosis, linkage to HIV medical care, receipt of and retention in HIV medical care, and viral suppression (3). Differences were deemed statistically significant when  $P < .05$ . If estimates for 2015 and 2019 did not differ significantly, the estimates for these years were considered stable (3).

## Results

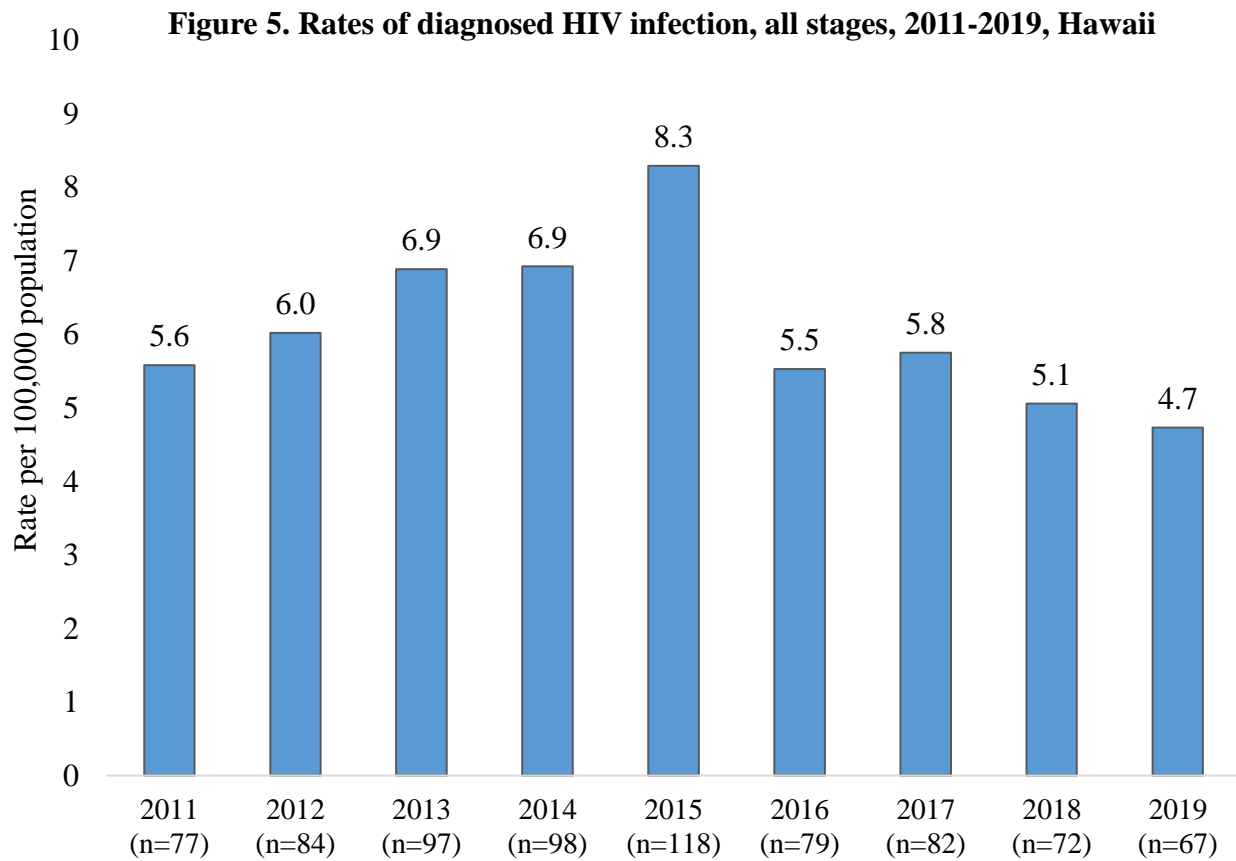
### A. Epidemiology of HIV/AIDS, 2019, Hawaii

#### I. Number and incidence rate of HIV infection

##### 1) Incidence of diagnosed HIV infection, all stages, 2011-2019

Only infections from persons who resided in Hawaii at the time of HIV diagnosis were counted.

Incidence rates by selected characteristics were not reported because of small counts of diagnosed HIV infection in most categories. From 2011 to 2015, incidence rates of diagnosed HIV infection increased significantly from 5.6 in 2011 to 8.3 per 100,000 population in 2015 ( $P=0.04$ ). It then decreased significantly from 8.3 in 2015 to 4.7 per 100,000 population in 2019 ( $P<.001$ , **Figure 5**). From 2015 to 2016, incidence rates of diagnosed HIV infection decreased by 33.7%. Since 2016, the observed trend of decrease continued but at a much small magnitude.



Note: Only data from persons residing in Hawaii at the time of HIV diagnosis were included. N refers to the total number of HIV diagnoses each year. The total number of new diagnoses each year, in particular, most recent years, are incomplete and subject to change due to delays in reporting, the ongoing national deduplication project, and ongoing data cleaning.

## 2) Diagnoses of HIV infection by selected characteristics

**Table 1** shows characteristics of persons whose HIV infections were diagnosed from the beginning of the epidemic in the early 1980s through 2019 (cumulative) as well as those whose HIV infections were diagnosed in more recent years, between 2015 and 2019. Only data from persons residing in Hawaii at the time of HIV diagnosis were included.

Among the total of 4,827 persons diagnosed with HIV infection, 44.4% were diagnosed as stage 3 (AIDS). Nearly 90% (88.9%) were males, 10.1% were females and 1% were transgender people. About a third each were among persons aged 25-34 years (34.2%) and 35-44 years (32.5%), and another sixth (16.7%) were among persons aged 45-54 years. Persons aged 13-24 years accounted for 9.3%. Whites constituted the highest proportion (52.3%), followed by Asians (15.8%), NHPIs (11.3%), and Hispanics (8.3%). MSM was the leading transmission category (71.2%), followed by heterosexual contact with a person known to have, or to be at high risk for, HIV infection (8.5%), injection drug use (IDU, 7.4%), and MSM & IDU (7.2%). Honolulu County accounted for almost three quarters (73.4%) of all diagnoses, followed by Hawaii County (13.2%), Maui County (9.8%), and Kauai County (4.5%).

When comparing the most recent 5-year period (2015-2019) to previous years (before 2015), an increase was observed in the proportions of infection among transgender persons (4.0% vs 0.7%), among persons in age groups 13-24 years (14.1 vs 8.8%, respectively), 25-34 years (39.0% vs 33.7%, respectively), and  $\geq 55$  years (11.0% vs 6.4%, respectively), among Asians (23.2% vs 15.1%, respectively), persons of multiple races (14.1% vs 6.2%, respectively), Hispanics (12.7% vs 7.9%, respectively), and Blacks/African Americans (8.6% vs 4.6%, respectively). A decrease was found in the proportions of infections among persons in age group 35-44 years (19.6% vs 33.8%, respectively) and among Whites (27.5% vs 54.7%, respectively). The proportions among persons in age groups <13 (0.5% vs 0.6%, respectively), 45-54 years (15.8% vs 16.7%, respectively) and among NHPIs (12.7% vs 11.1%, respectively) were similar between the two time periods.

By transmission category, an increase was observed in the proportion of infections attributed to male heterosexual contact with a person known to have, or at increased risk for, HIV infection (8.4% vs 2.6%, respectively) while a slight decrease was observed in the proportions among MSM & IDU (3.8% vs 7.2%, respectively). Distribution by county of residence remained stable between the two time periods.

**Table 1. Diagnoses of HIV infection by selected patient characteristics and time, Hawaii**

Characteristics	2015-2019 (N=418)		Before 2015 (N=4,409)		Cumulative (N=4,827)	
	No.	Percent	No.	Percent	No.	Percent
Stage 3 (AIDS) at HIV diagnosis	77	18.4	1,860	47.2	1,937	44.4
Gender						
Male	365	87.3	3,925	89	4,290	88.9
Female	36	8.6	453	10.3	489	10.1
Transgender male-to-female	16	3.8	31	0.7	47	1
Transgender female-to-male	1	0.2	0	0	1	0.02
Age at diagnosis in years						
<13	2	0.5	25	0.6	27	0.6
13-24	59	14.1	390	8.8	449	9.3
25-34	163	39.0	1,486	33.7	1,649	34.2
35-44	82	19.6	1,488	33.8	1,570	32.5
45-54	66	15.8	738	16.7	804	16.7
≥55	46	11.0	282	6.4	328	6.8
Race/ethnicity						
Hispanic, all races	53	12.7	347	7.9	400	8.3
American Indian/Alaska Native	3	0.7	13	0.3	16	0.3
Asian	97	23.2	665	15.1	762	15.8
Black/African American	36	8.6	205	4.6	241	5.0
Native Hawaiian/other Pacific Islander	53	12.7	491	11.1	544	11.3
White	115	27.5	2,410	54.7	2,525	52.3
Multiple races	59	14.1	274	6.2	333	6.9
Other/Unknown <sup>a</sup>	2	0.5	4	0.1	6	0.1
Transmission category						
Male-to-male sexual contact (MSM)	290	69.4	3,148	71.4	3,438	71.2
Injection drug use (IDU), male	15	3.6	210	4.8	225	4.7
IDU, female	9	2.1	123	2.8	132	2.7
MSM & IDU	16	3.8	330	7.5	346	7.2
Heterosexual contact <sup>b</sup> , male	35	8.4	113	2.6	148	3.1
Heterosexual contact, female	19	4.6	242	5.5	261	5.4
Perinatal	3	0.7	15	0.3	18	0.4
Other <sup>c</sup>	31	7.4	228	5.2	259	5.4
County of residence at HIV diagnosis <sup>d</sup>						
Hawaii County	44	10.5	548	12.5	592	13.2
Honolulu County	326	78.0	3,202	73.0	3,528	73.4
Kauai County	17	4.1	199	4.5	216	4.5
Maui County	31	7.4	438	10.0	469	9.8

*Note.* Only data from persons who resided in Hawaii at the time of HIV diagnosis were included. Percentage may not add up to 100% due to rounding. Cumulative: from the beginning of the epidemic through 2019.

<sup>a</sup> Includes cases not able to be differentiated between Asian and Native Hawaiian/other Pacific Islander and those with unknown race/ethnicity.

<sup>b</sup> Includes heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

<sup>c</sup> Includes hemophilia, blood transfusion, and risk factors not reported or not identified.

<sup>d</sup> Excludes 12 cases missing data on county of residence at the time of HIV diagnosis.

## II. Prevalent cases and prevalence rate

### 1) Prevalence of persons living with diagnosed HIV infection (PLWDH) or with infection ever classified as stage 3 (AIDS) (PLWDA) at year-end 2019, Hawaii

After extensive data cleaning, we found a total of 2,367 persons living with HIV infection diagnosed through 2019 and who had a last known Hawaii address based on available data sources, e.g., laboratory data and data from the national deduplication project. Among those 2,367 persons, 138 persons had not been in care since 2011 or earlier. In addition, 52.2% of those 138 persons were living with stage 3 (AIDS) since 2008 or earlier. Based on the natural progression of HIV infection, if a person was not in care for  $\geq 10$  years since HIV diagnosis, the odds of survival were likely low (8). It is therefore reasonable to assume that those persons were no longer living in Hawaii. Those 138 persons were excluded from further analysis. As a result, a total of 2,229 persons were identified as persons living with diagnosed HIV infections (PLWDH) in Hawaii at year-end 2019, of whom a total of 1,275 (57.2%) were identified as persons living with diagnosed HIV infection that was ever classified as stage 3 (AIDS) (PLWDA).

According to CDC's most recent estimate, persons living with diagnosed HIV infection accounted for 87.8% of persons living with diagnosed or undiagnosed HIV infection in Hawaii at year-end 2019 (3). As a result, there was an estimated 2,539 persons living with diagnosed or undiagnosed HIV infection in Hawaii at year-end 2019 (**Figure 1**).

Prevalence of PLWDH and of PLWDA at the state level, county level, and by selected patient characteristics are shown in **Table 2**. The prevalence rate (calculated per 100,000 population) of PLWDH in Hawaii (157.5) was much lower than the 2019 national rate (318.4) (9). The rate for males was 280.6, over eight times that of females (33.8). Among persons of different age groups, the highest rate (320.3) was among persons aged 45-54 years and the lowest rate (0.9) was among those younger than 13 years. Among different race/ethnicity groups, the highest rate (440.9) was among Black/African American, followed by White (330.2). The lowest rates were found among Asian (73.4) and those of multiple races (88.0). By county of residence, the highest rate was in Hawaii County (192.4) and the lowest rate was in Kauai County (109.4). Similar patterns were observed in the prevalence rate of PLWDA.

**Table 2. Prevalence of persons living with diagnosed HIV infection (PLWDH) or with HIV infection ever classified as stage 3 (AIDS) (PLWDA) at year-end 2019, by selected characteristics, Hawaii**

Characteristics	PLWDH		PLWDA		
	2019 general population	No.	Prevalence	No.	Prevalence
<b>National 2019</b>	<b>328,196,294</b>	<b>1,044,977</b>	<b>318.4</b>	<b>N/A</b>	<b>N/A</b>
<b>State total</b>	<b>1,415,615</b>	<b>2,229</b>	<b>157.5</b>	<b>1,275</b>	<b>90.1</b>
County of residence at year-end 2019					
Hawaii County	202,165	389	192.4	226	111.8
Honolulu County	973,491	1,473	151.3	833	85.6
Kauai County	72,190	79	109.4	50	69.3
Maui County	167,682	288	171.8	166	57.6
Birth sex <sup>a</sup>					
Female	706,419	239	33.8	150	21.2
Male	709,196	1,990	280.6	1,125	158.6
Age in years at year-end 2019					
<13	222,405	2	0.9	1	0.4
13-24	195,623	40	20.4	6	3.1
25-34	200,260	245	122.3	51	25.5
35-44	181,392	327	180.3	138	76.1
45-54	167,649	537	320.3	344	205.2
≥55	448,286	1078	240.5	735	164.0
Race/ethnicity <sup>b</sup>					
Hispanic, all races	154,045	245	159.0	133	86.3
American Indian/Alaska Native	2,910	5	171.8	1	34.4
Asian	509,446	374	73.4	226	44.4
Black/African American	27,670	122	440.9	65	234.9
Native Hawaiian/other Pacific Islander	137,409	225	163.7	139	101.2
White	304,634	1,006	330.2	573	188.1
Multiple races	279,501	246	88.0	137	49.0

Note. Only data from persons who resided in Hawaii at year-end 2019 were included. Rates were per 100,000 population. National data on the prevalence of persons living with diagnosed HIV infection ever classified as stage 3 (AIDS) were not available (3, 9).

<sup>a</sup> Includes a total of 38 transgender persons living with diagnosed HIV at year-end 2019 in Hawaii.

<sup>b</sup> Excludes one person unable to be differentiated between Asian and Native Hawaiian/other Pacific Islander and 5 persons of unknown race/ethnicity.



## 2) Characteristics of PLWDH and of PLWDA

**Table 3** compares the distribution of birth sex, age, race/ethnicity, transmission category, and county of residence among PLWDH and PLWDA at year-end 2019 with the 2019 general population in the state of Hawaii. Males were dominant and overrepresented in both populations (89.3% of PLWDH and 88.2% of PLWDA vs 50.1% of the general population). In general, older persons made up a larger proportion of both PLWDH and of PLWDA and were overrepresented in both populations compared to younger ones (e.g., persons aged  $\geq 45$  years constituted 43.5% of the general population but accounted for 72.5% of PLWDH and 84.6% of PLWDA). Among persons of different racial/ethnic groups, Whites (45.1% of PLWDH, 44.9% of PLWDA and 21.5% of the general population) and Blacks/African Americans (5.5% and 5.1%, respectively vs 2.0% of the general population) were overrepresented while Asians (16.8% and 17.7%, respectively vs 36.0% of the general population) and persons of multiple races (11.0% and 10.7%, respectively vs 19.7% of the general population) were underrepresented.

Differences by county were subtle. The proportions of PLDWH and PLWDA in both Honolulu County (66.1% and 65.3%, respectively) and Kauai County (3.5% and 3.9%, respectively) were slightly lower than that of the general population (68.8% in Honolulu County and 5.1% in Kauai County). In Hawaii County, however, proportions of PLDWH (17.5%) and PLWDA (17.7%) were slightly higher than that of the general population (14.3%).

MSM was the leading risk factor for both populations (72.9% of PLWDH and 71.6% of PLWDA), followed by female heterosexual contact with a person known to have, or to be at high risk for, HIV infection (6.9% and 7.2%, respectively), then by MSM&IDU (6.9% and 6.9%, respectively). Proportions of persons living with HIV infections attributed to perinatal transmission were low (0.5% and 0.6%, respectively).

**Table 3. Characteristics of persons living with diagnosed HIV infection (PLWDH) or with HIV infection ever classified as stage 3 (AIDS) (PLWDA) at year-end 2019, Hawaii**

Characteristics	Percent of 2019 population	PLWDH		PLWDA	
		No.	Percent	No.	Percent
<b>State total</b>	<b>100</b>	<b>2,229</b>	<b>100</b>	<b>1,275</b>	<b>100</b>
Birth sex <sup>a</sup>					
Female	49.9	239	10.7	150	11.8
Male	50.1	1,990	89.3	1,125	88.2
Age at year-end 2018					
<13	15.7	2	0.1	1	0.1
13-24	13.8	40	1.8	6	0.5
25-34	14.1	245	11.0	51	4.0
35-44	12.8	327	14.7	138	10.8
45-54	11.8	537	24.1	344	27.0
≥55	31.7	1,078	48.4	735	57.6
Race/ethnicity <sup>b</sup>					
Hispanic, all races	10.9	245	11.0	133	10.4
American Indian/Alaska Native	0.2	5	0.2	1	0.1
Asian	36.0	374	16.8	226	17.7
Black/African American	2.0	122	5.5	65	5.1
Native Hawaiian/other Pacific Islander	9.7	225	10.1	139	10.9
White	21.5	1,006	45.1	573	44.9
Multiple races	19.7	246	11.0	137	10.7
Transmission category					
Male-to-male sexual contact (MSM)	N/A	1,624	72.9	902	71.6
Injection drug use (IDU), female	N/A	55	2.5	39	2.8
IDU, male	N/A	78	3.5	54	4.3
MSM & IDU	N/A	153	6.9	92	6.9
Heterosexual contact <sup>c</sup> , female	N/A	154	6.9	96	7.2
Heterosexual contact <sup>c</sup> , male	N/A	80	3.6	49	3.6
Perinatal	N/A	12	0.5	8	0.6
Risk factor not reported/identified	N/A	73	3.3	35	3.0
County of residence at year-end 2019					
Hawaii County	14.3	389	17.5	226	17.7
Honolulu County	68.8	1,473	66.1	833	65.3
Kauai County	5.1	79	3.5	50	3.9
Maui County	11.8	288	12.9	166	13.0

*Note.* Only data from persons who resided in Hawaii at year-end 2019 were included. Percentages may not add up to 100% due to rounding.

<sup>a</sup> Includes a total of 38 transgender persons.

<sup>b</sup> Excludes one person unable to be differentiated between Asian and Native Hawaiian/other Pacific Islander and 5 persons of unknown race/ethnicity.

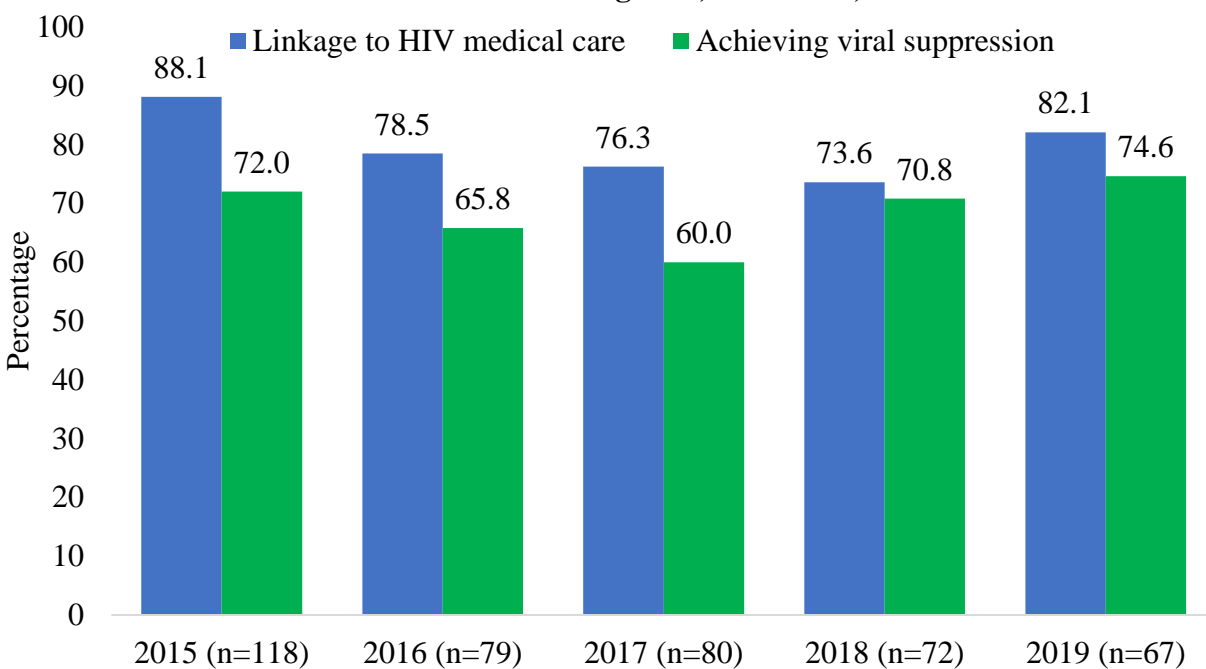
<sup>c</sup> Includes heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

## B. HIV care continuum, 2019, Hawaii

### I. Linkage to HIV medical care and viral suppression $\leq 6$ months of HIV diagnosis

From 2015 to 2019, the percentage of persons linked to HIV medical care  $\leq 1$  month of HIV diagnosis decreased from 88.1% in 2015 to 73.6% in 2018 and then increased to 82.1% in 2019. The percentage of persons achieving viral suppression  $\leq 6$  month of HIV diagnosis decreased from 72.0% in 2015 to 60.0% in 2017 but it then increased to 74.6% in 2019. Nevertheless, no statistically significant changes were observed when comparing 2019 with 2015 in either the percentages of persons linked to HIV medical care  $\leq 1$  month of HIV diagnosis or percentages of persons achieving viral suppression  $\leq 6$  months of HIV diagnosis (**Figure 6**).

**Figure 6. Linkage to HIV medical care  $\leq 1$  month and viral suppression  $\leq 6$  months of HIV diagnosis, 2015-2019, Hawaii**



Note: data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Only data from persons residing in Hawaii and  $\geq 13$  years old at the time of HIV diagnosis were included. N refers to the total number of diagnoses each year.

Since no significant changes was observed during the 5-year study period and the total number of new diagnoses each year was too small to produce reliable results for subgroups, we therefore examined linkage to care  $\leq 1$  month and viral suppression  $\leq 6$  months of HIV diagnosis by selected patient characteristics by combing data from the 5-year study period. No significant difference was observed by any selected patient characteristics, except for linkage to HIV medical care by patient's age, where persons 13-24 years old had the lowest percentage (71.2%) while persons 35-44 years old had the highest percentages (92.4%) (Table 4).

**Table 4. Linkage to HIV medical care  $\leq 1$  month and achieving suppressed viral load (SVL)  $\leq 6$  months of HIV diagnosis, among persons aged  $\geq 13$  years with HIV infections diagnosed from 2015 to 2019, by selected characteristics, Hawaii**

Characteristics	No. total	Linkage to			
		care $\leq 1$ month		SVL $\leq 6$ months	
		No.	Percent	No.	Percent
<b>Total</b>	<b>416</b>	<b>335</b>	<b>80.5</b>	<b>286</b>	<b>68.8</b>
Current gender					
Female	35	27	77.1	26	74.3
Male	364	296	81.3	250	68.7
Transgender	17	12	70.6	10	58.8
Age at HIV diagnosis in years					
13-24	59	42	71.2	43	72.9
25-34	163	124	76.1	108	66.3
35-44	82	73	89.0	58	70.7
45-54	66	61	92.4	49	74.2
$\geq 55$	46	35	76.1	28	60.9
Race/ethnicity					
Hispanic, all races	53	45	84.9	42	79.3
American Indian/Alaska Native	3	DS	DS	DS	DS
Asian	97	78	80.4	70	72.2
Black/African American	36	29	80.6	19	52.8
Native Hawaiian/other Pacific Islander	52	42	80.8	35	67.3
White	115	92	80	78	67.8
Multiple races	58	44	75.9	39	67.2
Unknown	2	DS	DS	DS	DS
Transmission category					
Male-to-male sexual contact (MSM)	290	238	82.1	208	71.7
Injection drug use (IDU)	24	19	79.2	15	62.5
MSM & IDU	16	11	68.8	10	62.5
Heterosexual contact <sup>a</sup>	54	45	83.3	37	68.5
Perinatal	1	DS	DS	DS	DS
Other <sup>b</sup>	31	21	67.7	15	48.4
County of residence at HIV diagnosis					
Hawaii County	44	31	70.5	30	68.2
Honolulu County	325	265	63.7	220	67.7
Kauai County	16	14	87.5	12	75
Maui County	31	25	80.7	24	77.4

*Note.* Only data from persons who resided in Hawaii at the time of HIV diagnosis were included. Linkage to HIV medical care  $\leq 1$  month was measured by documentation of  $\geq 1$  CD4 or viral load tests  $\leq 1$  month of HIV diagnosis. SVL  $\leq 6$  months was measured by a viral load result of  $< 200$  copies/mL in any viral load test conducted  $\leq 6$  months of HIV diagnosis. DS: data suppressed.

<sup>a</sup> Includes heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

<sup>b</sup> Includes risk factors not reported or not identified.

## II. Receipt of HIV medical care

**Table 5** describes receipt of any HIV medical care and retention in HIV medical care in 2019 by selected characteristics. Both were based on data among persons aged  $\geq 13$  years at year-end 2018 with HIV infection diagnosed through 2018 and who were alive and residing in the state of Hawaii at year-end 2019. Among the 2,164 persons included in the analysis, 1,946 (89.9%) received any HIV medical care in 2019 and 1,378 (63.7%) were retained in HIV medical care.

Percentage of persons who received any HIV medical care did not differ significantly by current gender or county of residence but did differ significantly by case management status ( $P < .001$ ), person's age ( $P < .001$ ), race/ethnicity ( $P < .001$ ), and transmission category ( $P < .001$ ). The percentage was much higher among persons in case management (95.4%) than those not in case management (83.0%). The percentage increased as age increased, with the highest percentage among persons  $\geq 55$  years old (92.8%) and the lowest among persons aged 13-24 years (82.9%). Asians (93.0%), NHPs (92.0%), Whites (91.0%), and Hispanics (91.0%) had the highest percentages while Blacks/African Americans (73.6%) had the lowest percentage. By transmission category, the highest percentage was among persons whose infection was attributed to perinatal transmission (100%) and the lowest one was among persons whose infection was attributed to the other category of risk factors, including hemophilia, blood transfusion, and risk factors not reported or not identified (81.3%).

Percentage of persons who were retained in HIV medical care did not differ significantly by current gender or transmission category but did differ significantly by case management status ( $P < .001$ ), person's age ( $P < .001$ ), race/ethnicity ( $P < .001$ ), and county of residence ( $P = 0.05$ ). The percentage increased as age increased (e.g., 48.6% among persons aged 13-24 years vs 70.1% among persons  $\geq 55$  years old). Asians had the highest percentage (67.7%) while Blacks/African Americans (47.1%) had the lowest percentages. Data for AIAN were suppressed because the total number was  $< 5$ .

Percentages of persons who were retained in HIV medical care was in general lower in neighbor island counties than in Honolulu County (65.7%), with Hawaii County (60.3%) and Maui County (58.6%) significantly lower than Honolulu County.

**Table 5. Receipt of HIV medical care during 2019 among persons aged  $\geq 13$  years at year-end 2018 with HIV infection diagnosed through 2018 and residing in Hawaii at year-end 2019, by selected characteristics, Hawaii**

Characteristics	All persons	$\geq 1$ CD4 /VL tests		$\geq 2$ CD4/VL tests <sup>a</sup>	
		No.	Percent	No.	Percent
<b>Total</b>	<b>2,164</b>	<b>1,946</b>	<b>89.9</b>	<b>1,378</b>	<b>63.7</b>
In case management in 2019					
Yes	1,207	1,152	95.4	834	69.1
No	957	794	83.0	544	56.8
Current gender					
Female	229	206	90.0	138	60.3
Male	1,901	1,708	89.9	1,218	64.1
Transgender persons	34	32	94.1	22	64.7
Age at year-end 2018 in years					
13-24	35	29	82.9	17	48.6
25-34	244	206	84.4	137	56.2
35-44	326	286	87.7	190	58.3
45-54	563	501	89.0	336	59.7
$\geq 55$	996	924	92.8	698	70.1
Race/ethnicity					
Hispanic, all races	233	212	91	146	62.7
American Indian/Alaska Native	4	DS	DS	DS	DS
Asian	356	331	93.0	241	67.7
Black/African American	121	89	73.6	57	47.1
Native Hawaiian/other Pacific Islander	212	195	92.0	137	64.6
White	994	904	91.0	643	64.7
Multiple races	239	208	87.0	149	62.3
Unknown	5	3	60.0	3	60.0
Transmission category					
Male-to-male sexual contact (MSM)	1,577	1,429	90.6	1,024	64.9
Injection drug use (IDU), female	54	49	90.7	30	55.6
IDU male	78	64	82.1	42	53.9
MSM & IDU	153	142	92.8	99	64.7
Heterosexual contact <sup>b</sup> , female	151	135	89.4	91	60.3
Heterosexual contact, male	79	67	84.8	47	59.5
Perinatal	8	8	100	5	62.5
Other <sup>c</sup>	64	52	81.3	40	62.5
County of residence at year-end 2019					
Hawaii County	380	345	90.8	229	60.3
Honolulu County	1,423	1,281	90.0	935	65.7
Kauai County	76	67	88.2	47	61.8
Maui County	285	253	88.8	167	58.6

<sup>a</sup> CD4, CD4+ T-lymphocyte count or percentage; VL, viral load (copies/mL). The two tests must be performed  $\geq 3$  months apart during 2019. DS: data suppressed.

<sup>b</sup> Includes heterosexual contact with a person known to have, or to be at high risk for HIV infection.

<sup>c</sup> Includes hemophilia, blood transfusion and risk factors not identified or reported.

### III. Viral suppression

Viral suppression was based on data among persons aged  $\geq 13$  years at year-end 2018 with HIV infection diagnosed through 2018 and who were alive and residing in the state of Hawaii at year-end 2019 (hereafter referred as “all persons”). A total of 2,164 persons were included in the analysis, of whom 1,785 (82.5%) were virally suppressed in 2019. Among persons who received any HIV medical care in 2019 (n=1,946), percentage of viral suppression was 91.7%.

**Table 6** describes viral suppression by selected characteristics. Percentage of viral suppression was significantly higher among persons in case management than those not in case management in both populations: among all persons (86.4% vs 77.5%,  $P < .001$ ) and among persons who received any HIV medical care (93.4% vs 90.5%,  $P < .001$ ). Significant differences were also observed by age and race/ethnicity among all three populations. In general, the percentage of viral suppression increased significantly as age increased. Asians and Whites had the highest percentages while Blacks/African Americans had the lowest percentages. Percentage of viral suppression was significantly lower among transgender persons than males among persons receiving any HIV medical care (78.1% vs 92.5,  $P = 0.002$ ) but not among all persons (73.5% vs 83.1%,  $P = 0.12$ ).

By transmission category, percentages among persons with HIV infection attributed to perinatal transmission had the lowest percentages of viral suppression in both populations. Nevertheless, data on persons due to perinatal transmission should be interpreted with caution due to the small number of individuals in this category. After excluding persons due to perinatal transmission, no statistically significant difference was observed among different transmission categories. No statistically significant difference was observed in viral suppression by county of residence.

Although disparities were found by patient’s age, gender, race/ethnicity, and case management status, percentage of viral suppression was higher than the 2020 national objective of 80% (1) in almost all categories in both study populations. The few exceptions were seen among transgender persons, persons younger than 45 years of age, persons who injected drugs, and males with heterosexual contact with a person known to have, or at increased risk for, HIV infection.

**Table 6. HIV viral suppression during 2019 among persons aged  $\geq 13$  years at year-end 2018 with HIV infection diagnosed through 2018 and residing in Hawaii at year-end 2019, by selected characteristics, Hawaii**

Characteristics	All persons		Persons with $\geq 1$ CD4 <sup>a</sup> or viral load tests	
	Total No.	No. (%) virally suppressed	Total No.	No. (%) virally suppressed
<b>Total</b>	<b>2,164</b>	<b>1785 (82.5)</b>	<b>1,946</b>	<b>1785 (91.7)</b>
In case management in 2019				
Yes	1,207	1043 (86.4)	1,152	1043 (90.5)
No	957	742 (77.5)	794	742 (93.4)
Current gender				
Female	229	181 (79.0)	206	181 (87.9)
Male	1,901	1579 (83.1)	1,708	1,579 (92.5)
Transgender persons	34	25 (73.5)	32	25 (78.1)
Age at year-end 2018 in years				
13-24	35	24 (68.6)	29	24 (82.8)
25-34	244	182 (74.6)	206	182 (88.4)
35-44	326	249 (76.4)	286	249 (87.1)
45-54	563	459 (81.5)	501	459 (91.6)
$\geq 55$	996	871 (87.5)	924	871 (94.3)
Race/ethnicity (excluding five persons of unknown race)				
Hispanic, all races	233	198 (85.0)	212	198 (93.4)
American Indian/Alaska Native	4	DS	DS	DS
Asian	356	304 (85.4)	331	304 (91.8)
Black/African American	121	76 (62.8)	89	76 (85.4)
Native Hawaiian/other Pacific Islander	212	173 (81.6)	195	173 (88.7)
White	994	848 (85.3)	904	848 (93.8)
Multiple races	239	179 (74.9)	208	179 (86.1)
Transmission category				
Male-to-male sexual contact (MSM)	1,577	1323 (83.9)	1,429	1323 (92.6)
Injection drug use (IDU), female	54	42 (77.8)	49	42 (85.7)
IDU, male	78	60 (76.9)	64	60 (93.8)
MSM & IDU	153	125 (81.7)	142	125 (88.0)
Heterosexual contact <sup>b</sup> , female	151	121 (80.1)	135	121 (89.6)
Heterosexual contact, male	79	61 (77.2)	67	61 (91.0)
Perinatal	8	5 (62.5)	8	5 (62.5)
Other <sup>c</sup>	64	48 (75.0)	52	48 (92.3)
County of residence at year-end 2019				
Hawaii County	380	315 (82.9)	345	315 (91.3)
Honolulu County	1,423	1171 (82.3)	1,281	1171 (91.4)
Kauai County	76	62 (81.6)	67	62 (92.5)
Maui County	285	237 (83.2)	253	237 (93.7)

<sup>a</sup> CD4, CD4+ T-lymphocyte; Viral suppression is defined as the last viral load test in 2019 with a result of  $< 200$  copies/mL); DS: data suppressed.

<sup>b</sup> Includes heterosexual contact with a person known to have, or to be at high risk for HIV infection.

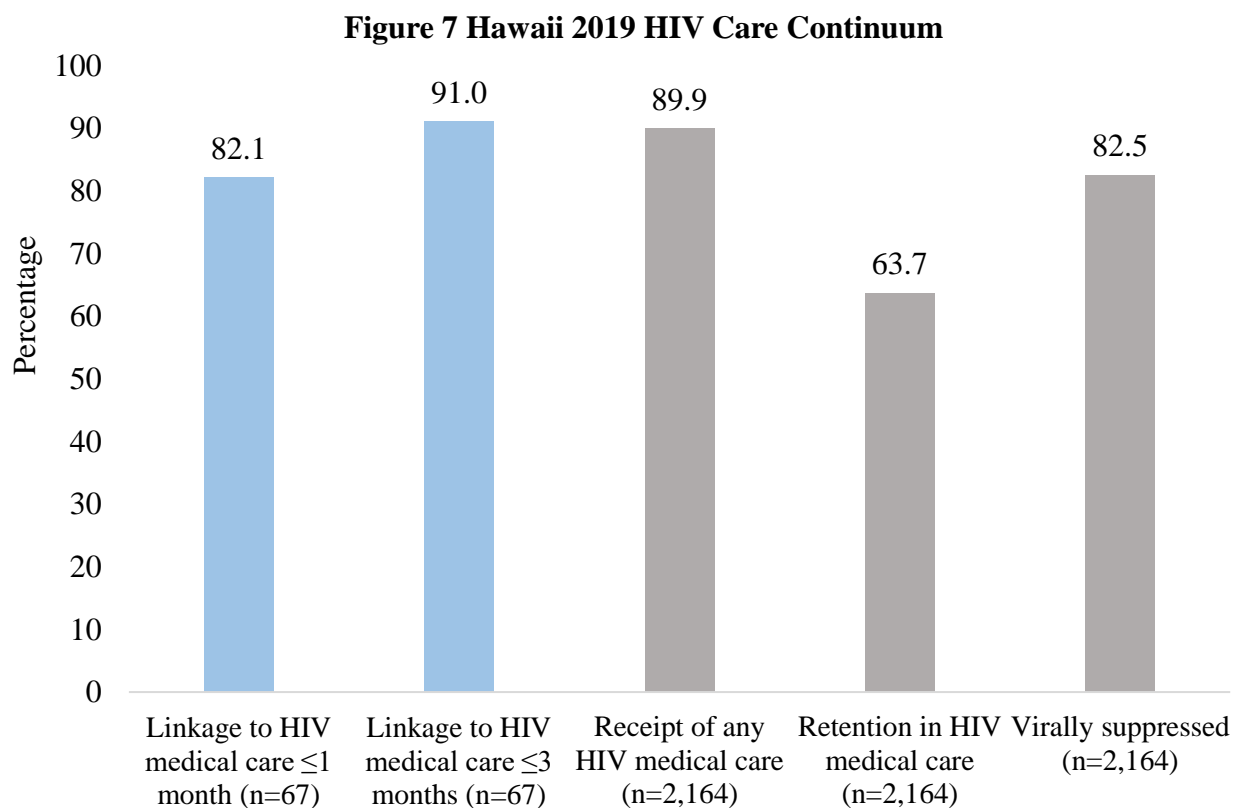
<sup>c</sup> Includes hemophilia, blood transfusion and risk factors not reported or not identified.



#### IV. Diagnosis-based HIV care continuum, 2019, Hawaii

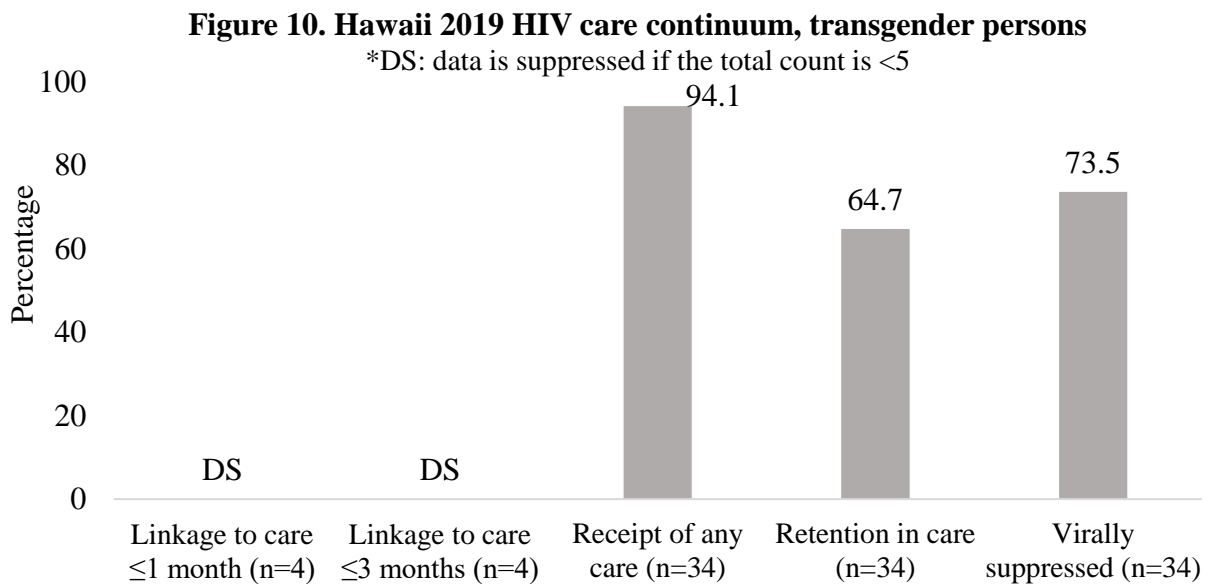
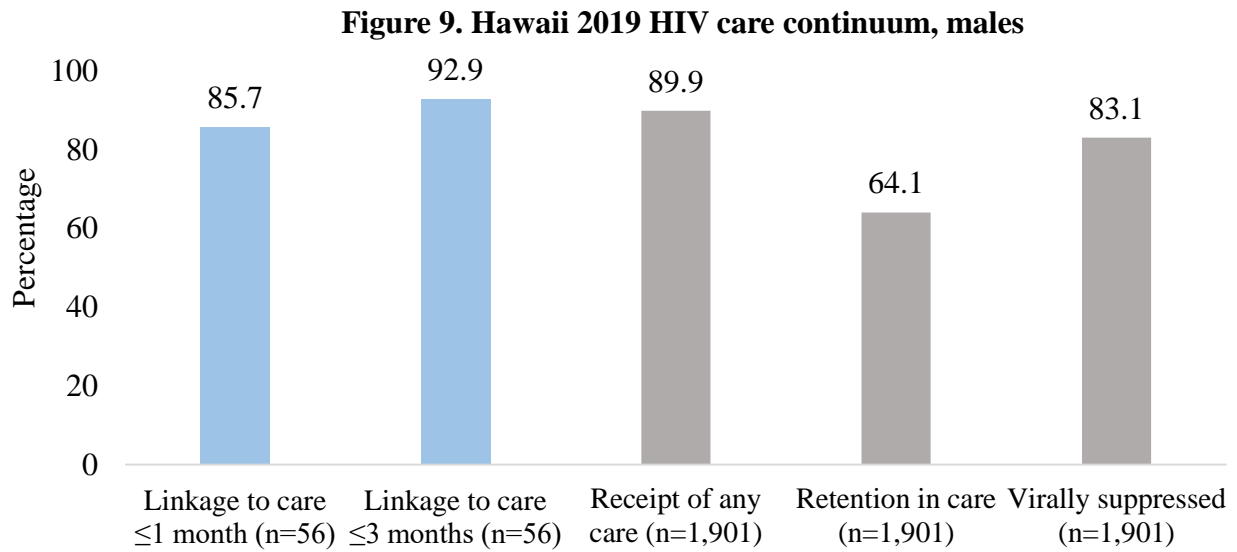
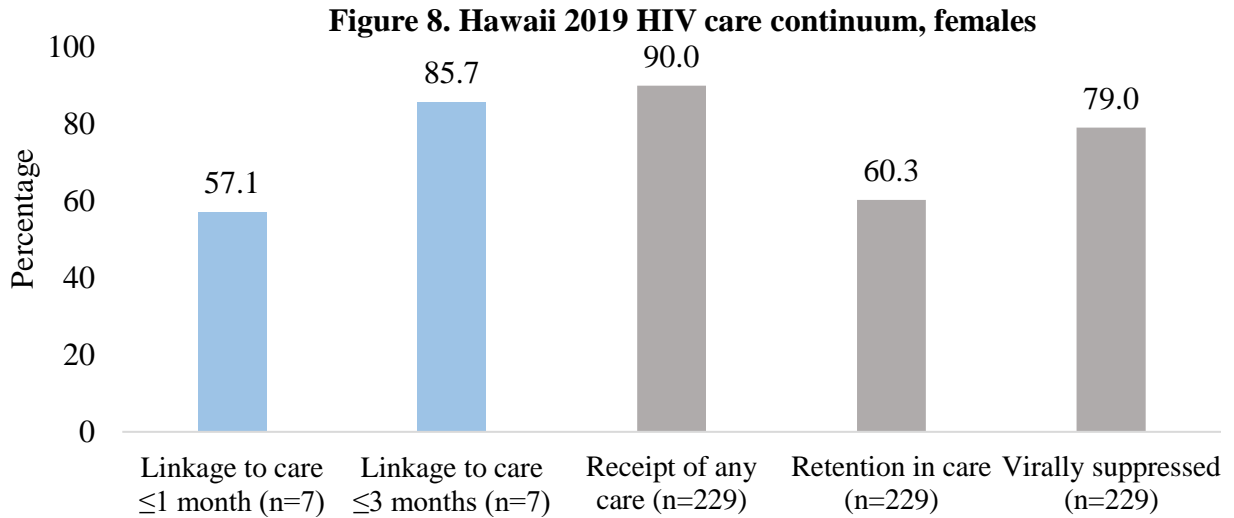
Figures 7 to 33 portray the diagnosis-based 2019 HIV care continuum of Hawaii, overall, and by selected characteristics. The diagnosis-based care continuum shows each step in the continuum as a percentage of persons achieving each indicator of care along the continuum for all persons diagnosed with HIV as well as for persons of selected characteristics (1, 7). Data on each indicator is suppressed if the total count in a subgroup is <5.

Figure 7 presents Hawaii 2019 diagnosis-based HIV care continuum statewide. The denominator for linkage to HIV medical care was the total number of new HIV diagnoses among persons aged  $\geq 13$  years and residing in Hawaii at the time of HIV diagnosis in 2019. Among the 67 new diagnoses in 2019, 55 (82.1%) were linked to HIV medical care  $\leq 1$  month and 61 (91.0%) were linked to HIV medical care  $\leq 3$  months of HIV diagnosis (Figure 7). The denominator for receipt of HIV medical care and viral suppression was based on persons aged  $\geq 13$  years at year-end 2018 with HIV infection diagnosed by year-end 2018 and who were alive and residing in Hawaii at year-end 2019. Among the 2,164 persons included in the analysis, 1,946 (89.9%) received any HIV medical care, 1,378 (63.7%) were retained in HIV medical care, and 1,785 (82.5%) were virally suppressed in 2019.



**Figures 8-10 present Hawaii's 2019 HIV care continuum by current gender.**

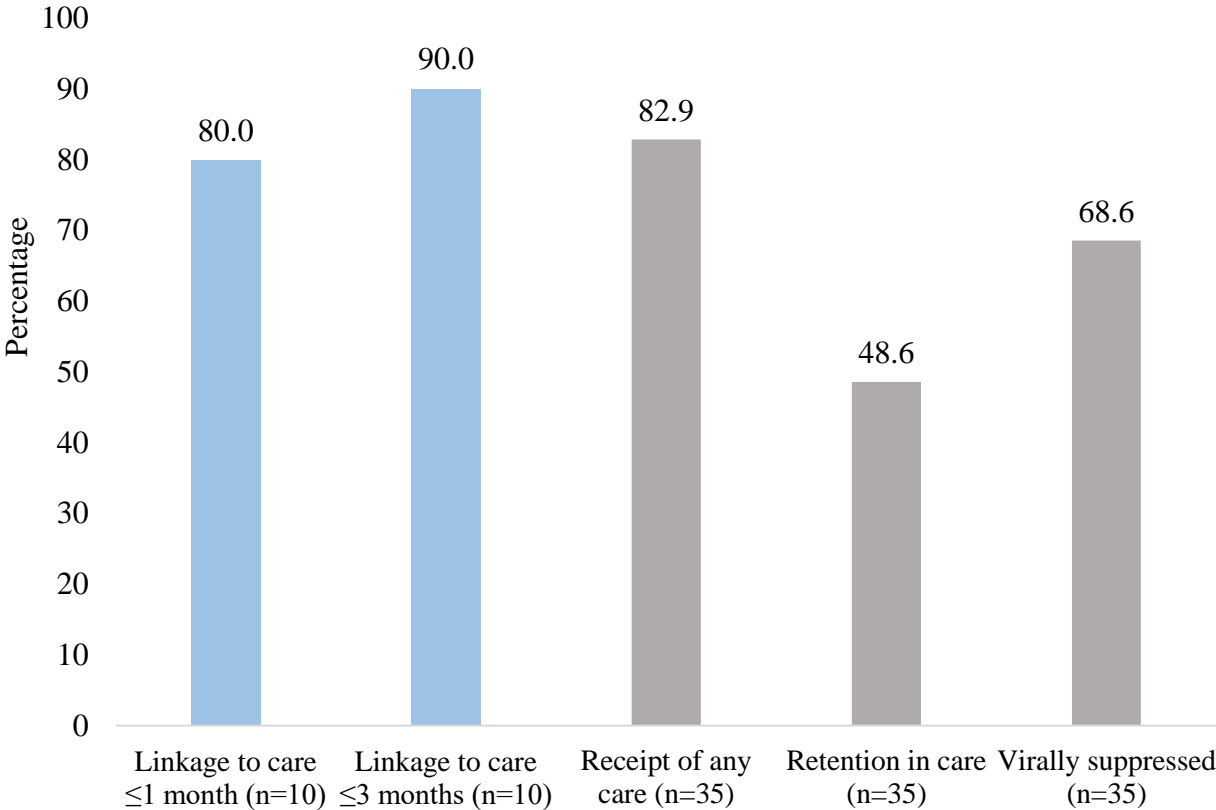
No significant difference was observed in any of the selected indicators among males, females, or transgender persons.



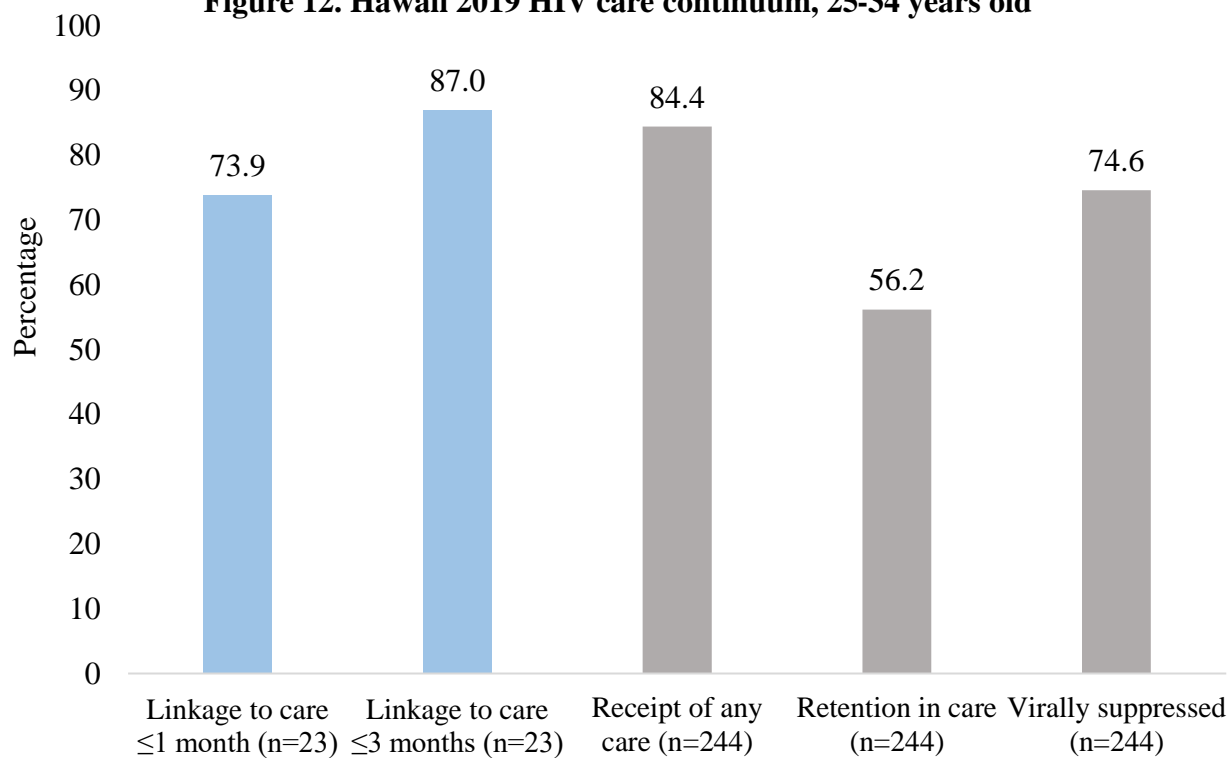
**Figures 11 to 15 describe Hawaii’s 2019 HIV care continuum by age groups.**

In general, percentages of receipt of any HIV medical care, retention in HIV medical care, and viral suppression increased as age increased. The highest percentage was among persons aged  $\geq 55$  years (92.8%, 70.1%, and 87.5%, respectively) and the lowest percentage was among persons aged 13-24 years (82.9%, 48.6%, and 68.6%, respectively). Linkage to HIV medical care also improved as age increased except for the oldest age group ( $\geq 55$  years old) which has the lowest percentage for linkage to HIV medical care within one month (74.4%); however, data on linkage to HIV medical care should be interpreted with caution due to the small number of individuals in each age group.

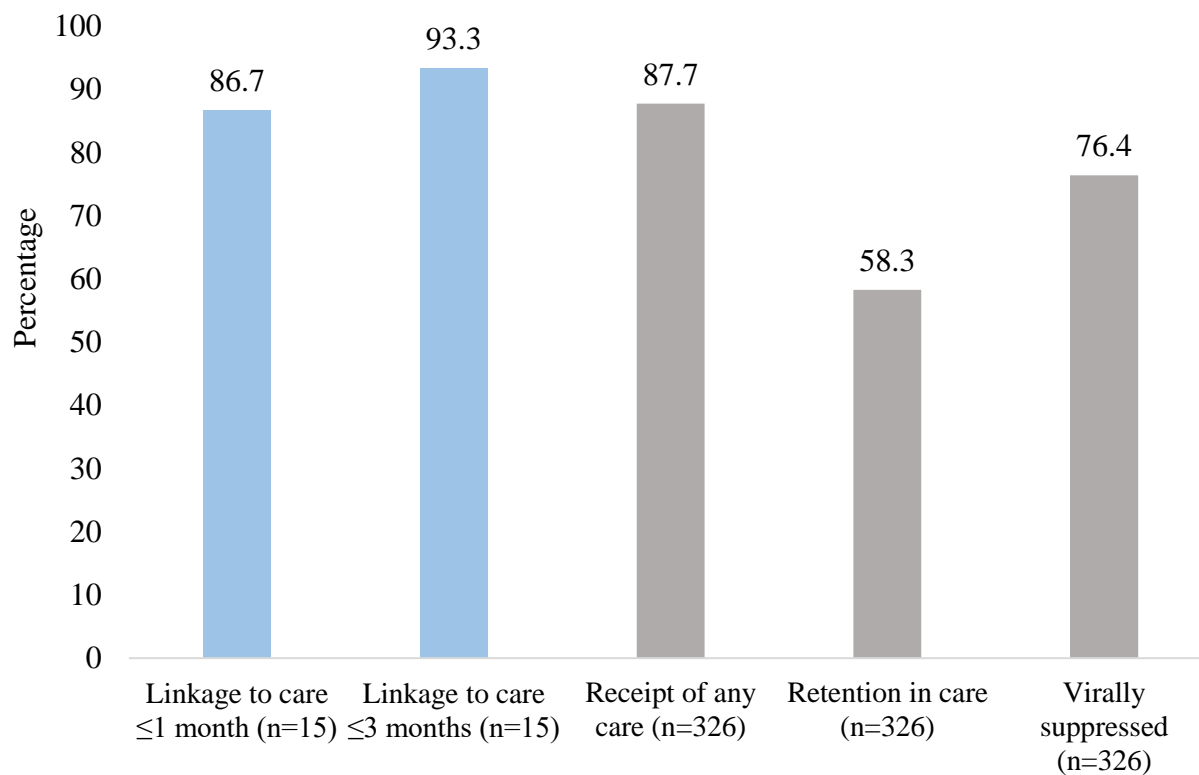
**Figure 11. Hawaii 2019 HIV care continuum, 13-24 years old**



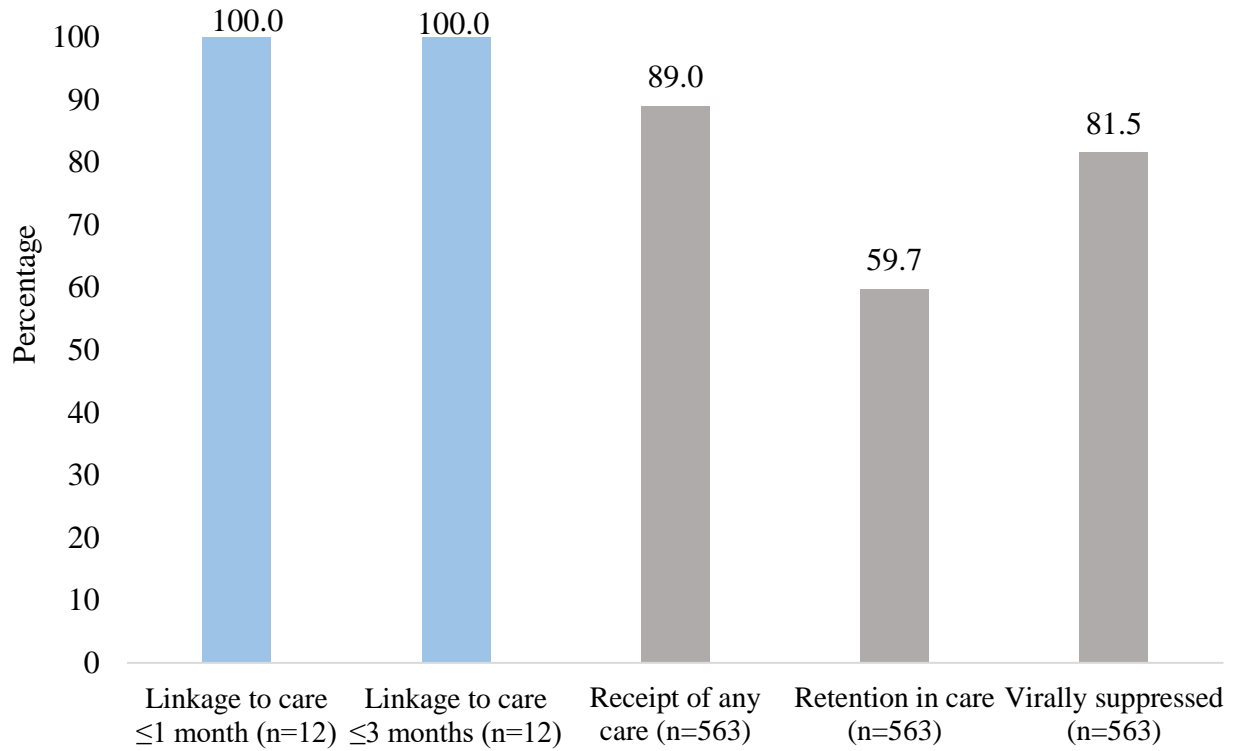
**Figure 12. Hawaii 2019 HIV care continuum, 25-34 years old**



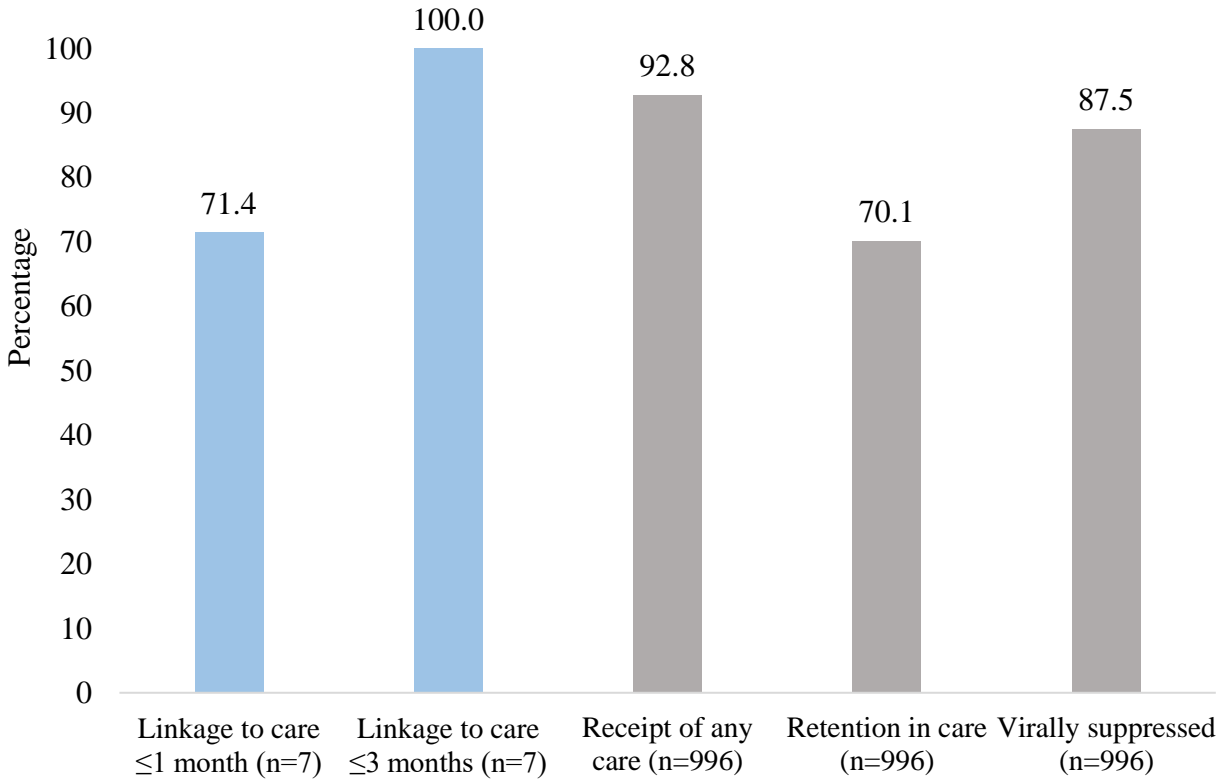
**Figure 13. Hawaii 2019 HIV care continuum, 35-44 years old**



**Figure 14. Hawaii 2019 HIV care continuum, 45-54 years old**



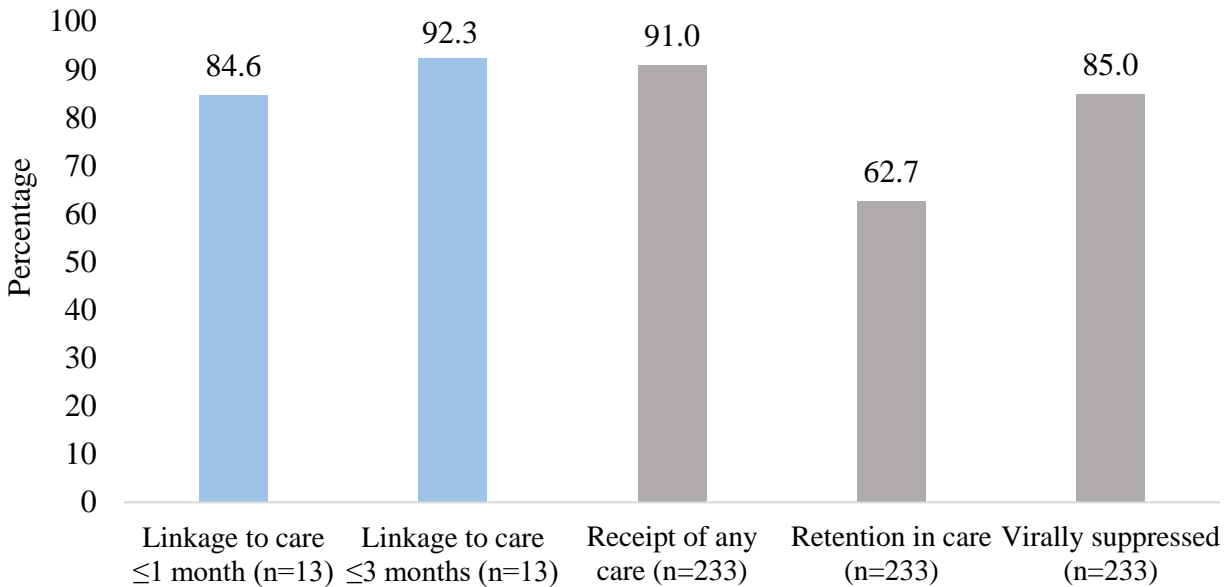
**Figure 15. Hawaii 2019 HIV care continuum, ≥55 years old**



**Figures 16 to 21 describe Hawaii’s 2019 HIV care continuum by race/ethnicity.**

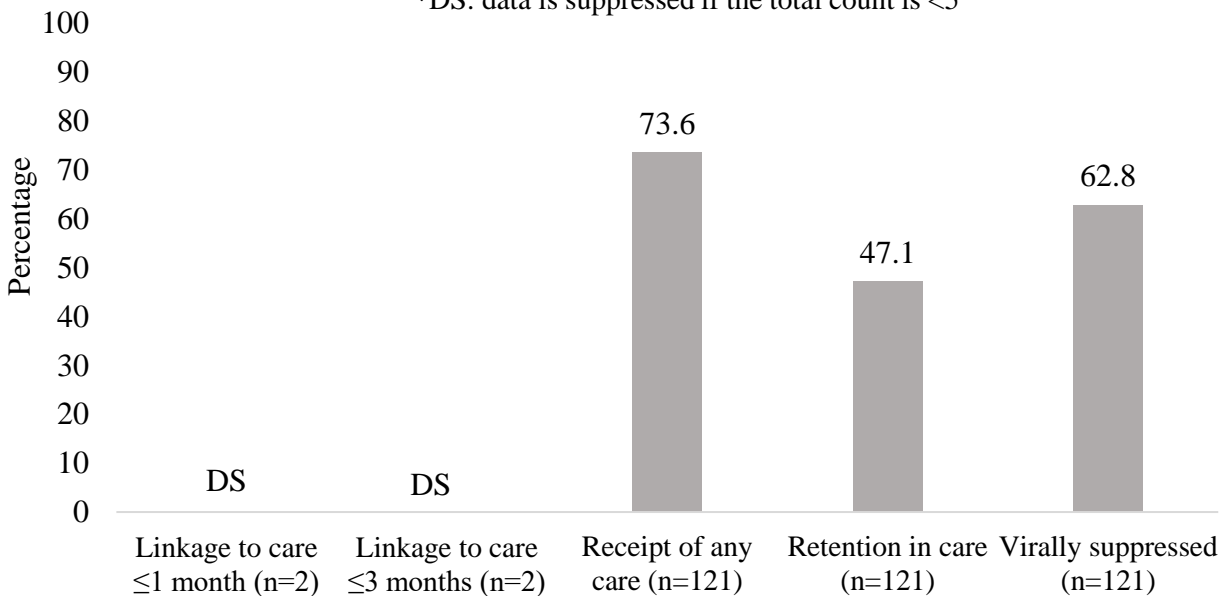
HIV care continuum was not done for American Indian/Alaska Native due to the small number of persons in this group. Among other race/ethnicity groups, Asians had the highest percentage of receipt of any HIV medical care (93.0%), retention in HIV medical care (67.7%) and viral suppression (85.4%), followed by Native Hawaiian / other Pacific Islander (92.0%, 64.6%, and 81.6%, respectively). Blacks/African Americans had the lowest percentages on all three indicators (73.6%, 47.1%, and 62.8%, respectively). Data on linkage to HIV medical care should be interpreted with caution due to the small number of individuals in each race/ethnicity group.

**Figure 16. Hawaii 2019 HIV care continuum, Hispanic, all races**

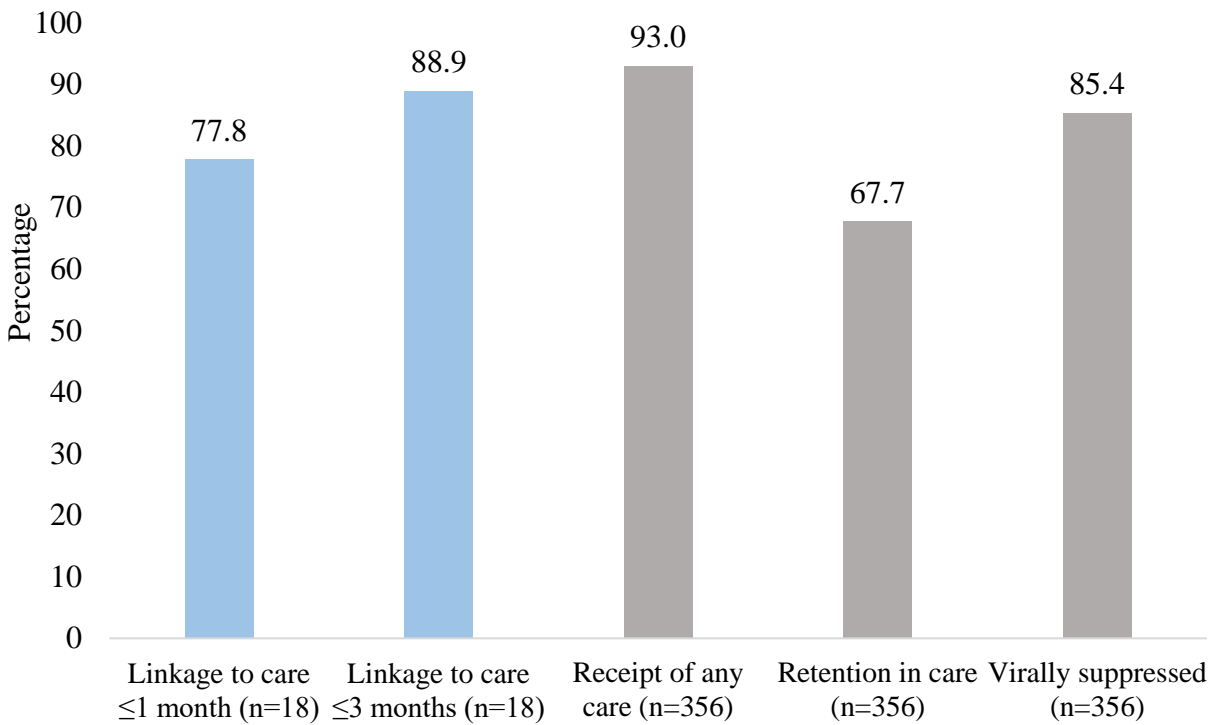


**Figure 17. Hawaii 2019 HIV care continuum, Black/African American only**

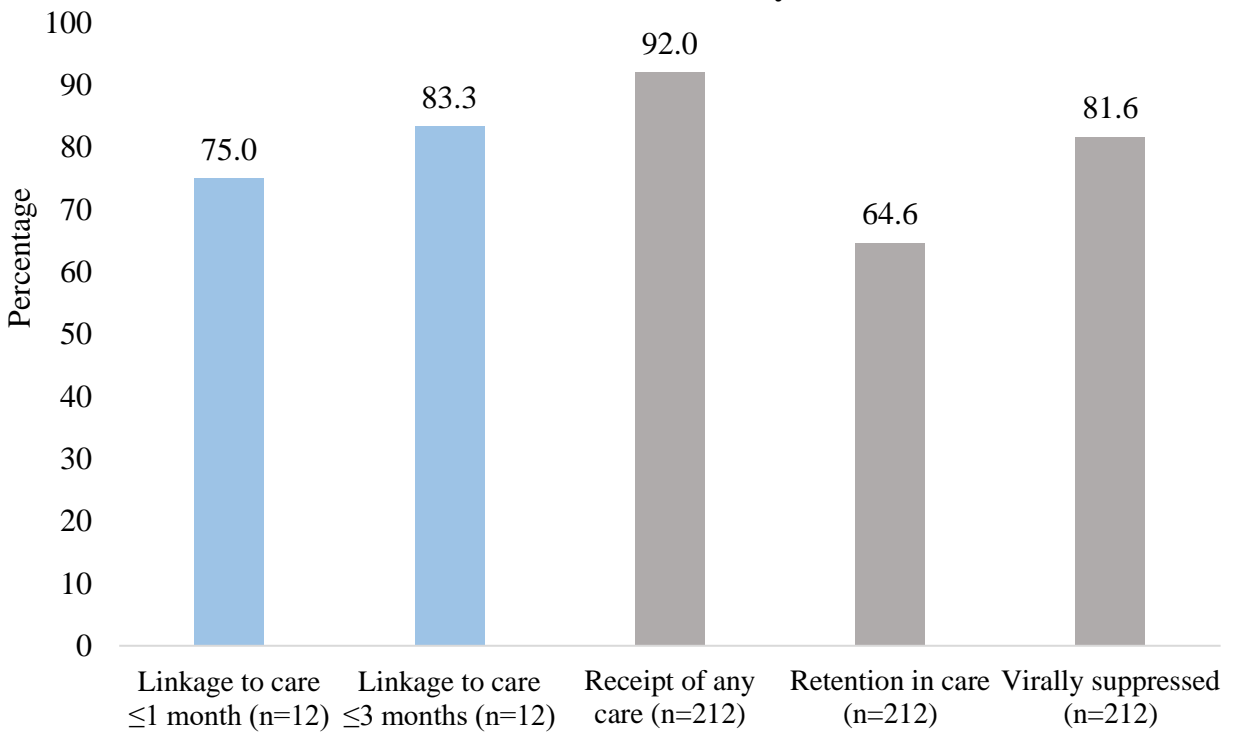
\*DS: data is suppressed if the total count is <5



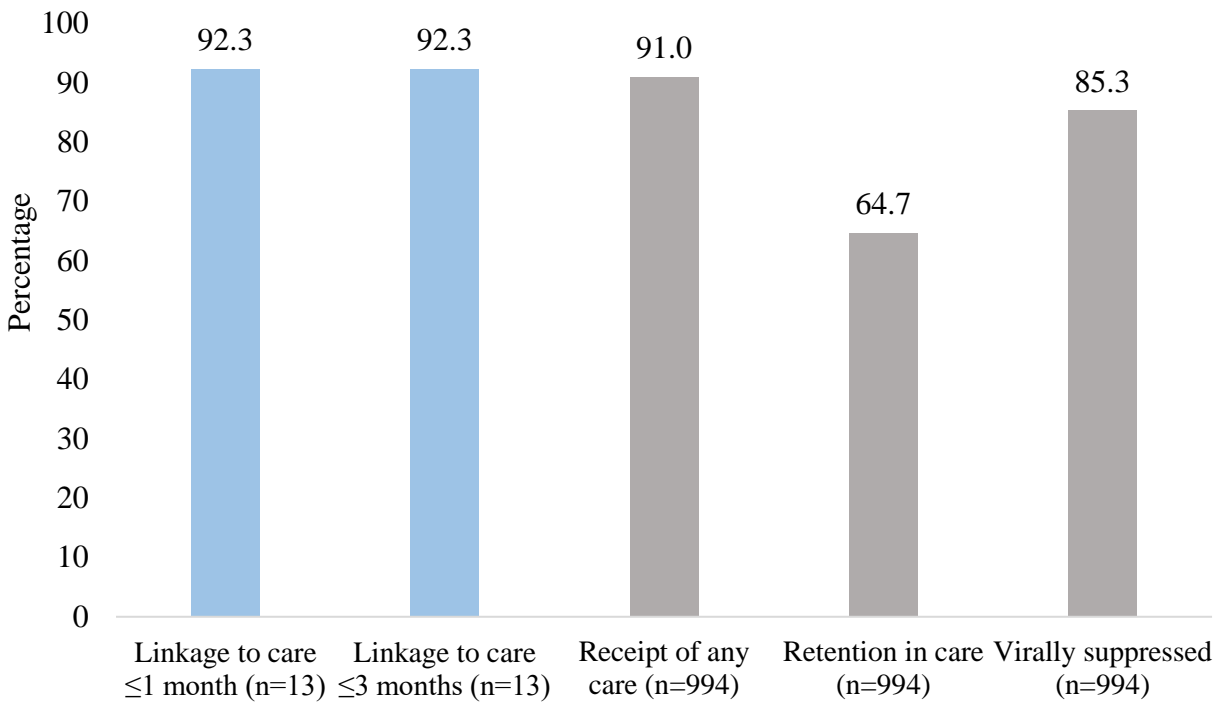
**Figure 18. Hawaii 2019 HIV care continuum, Asian only**



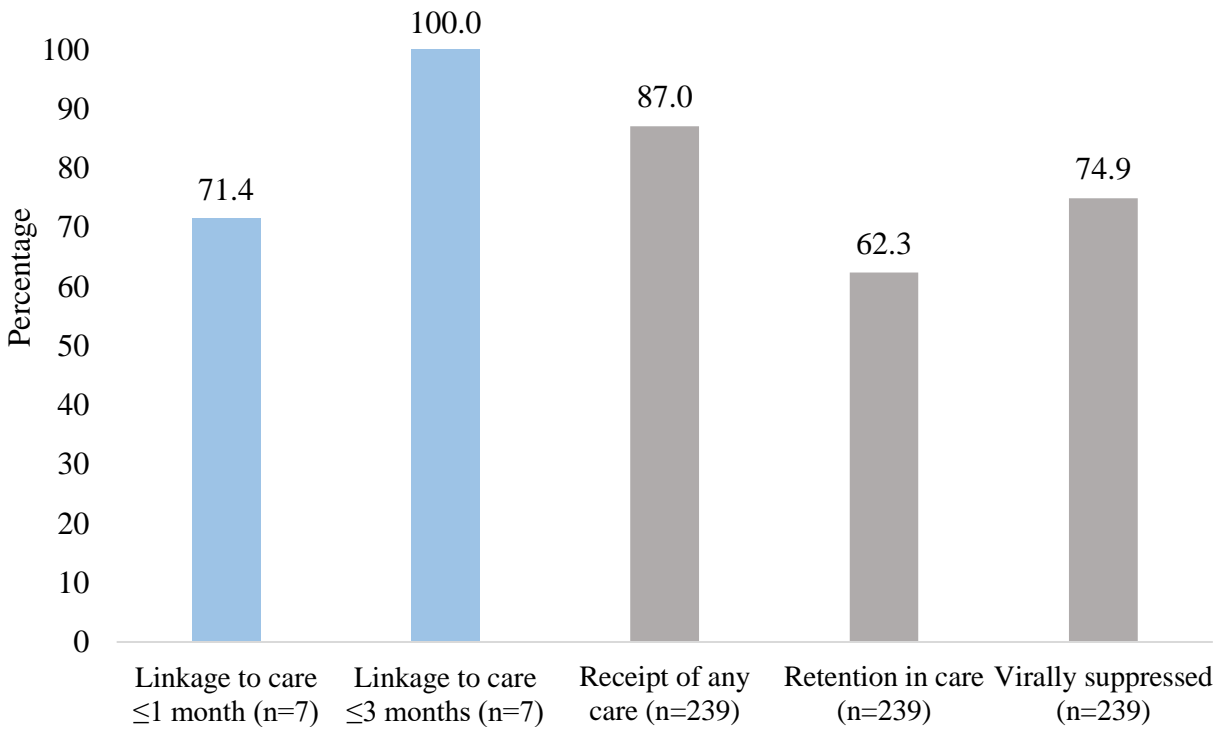
**Figure 19. Hawaii 2019 HIV care continuum, Native Hawaiian / other Pacific Islander only**



**Figure 20. Hawaii 2019 HIV care continuum, White only**



**Figure 21. Hawaii 2019 HIV care continuum, multiple races**

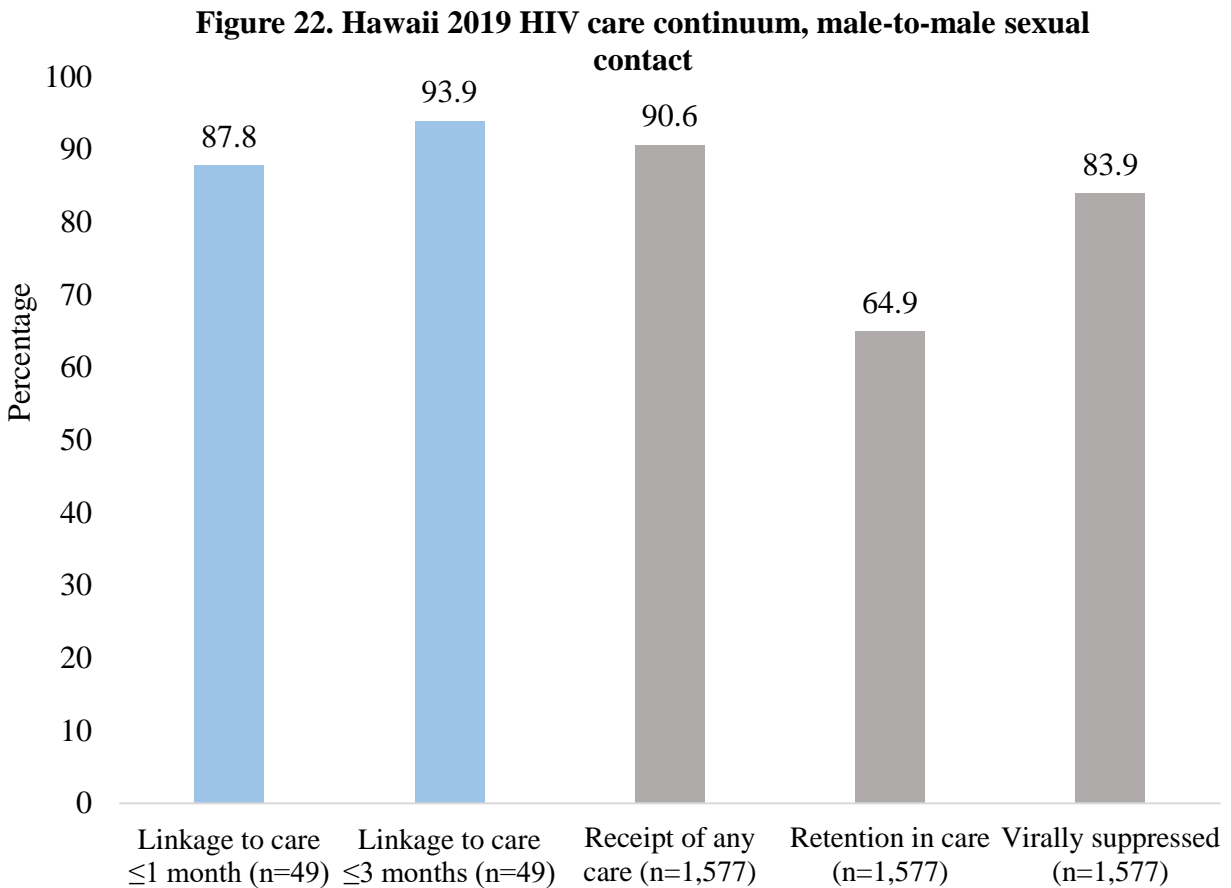




**Figures 22 to 28 describe Hawaii’s 2019 HIV care continuum by transmission categories.**

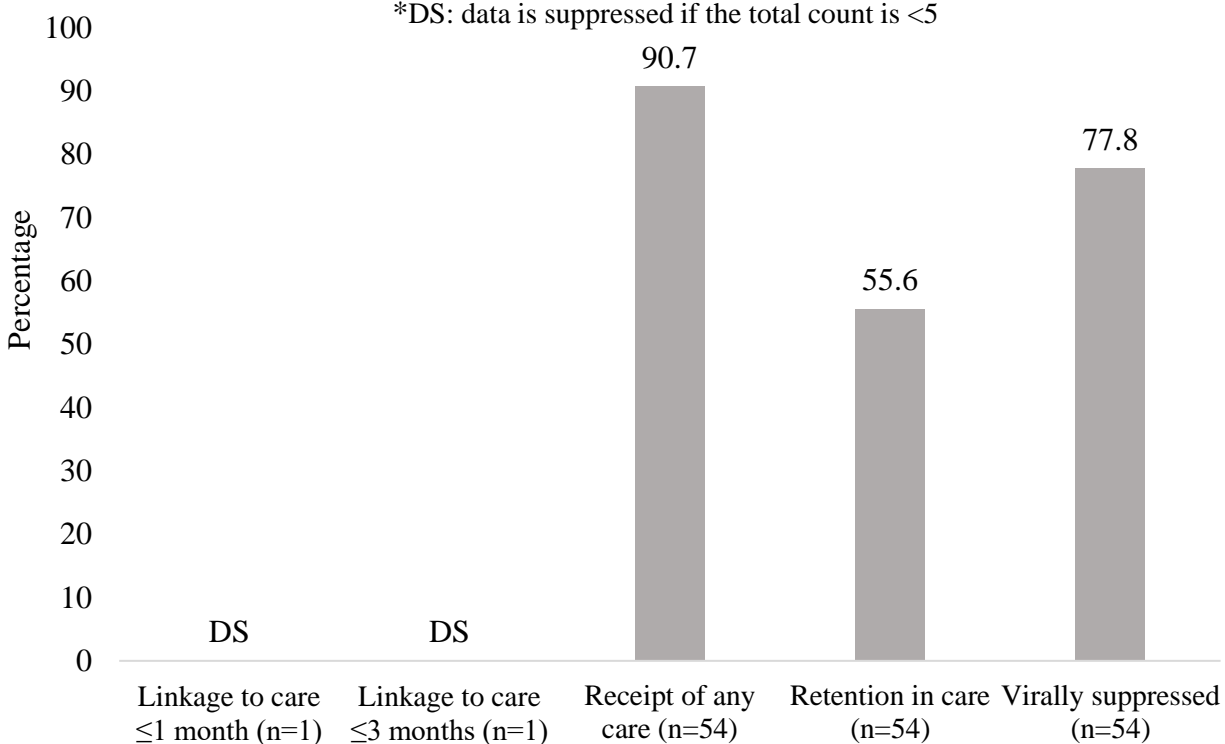
HIV care continuum was not done for persons with HIV infections attributed to perinatal transmission due to the small number of persons in this group. Data for linkage to HIV medical care was suppressed for several transmission categories due to the small count of new HIV diagnoses in that category.

Males with HIV infection attributed to male-to-male sexual contact (MSM) and to dual factors of MSM/IDU had the highest percentages for receipt of any HIV medical care (90.6% and 92.8%, respectively), retention in HIV medical care (64.9% and 64.7%, respectively) and viral suppression (83.9% and 81.7%, respectively). Persons with HIV infection due to the ‘other’ category of risk factors, including hemophilia, blood transfusion, and risk factors not reported or identified, had the lowest percentages for receipt of HIV medical care (81.3%) and viral suppression (75.0%) while males who inject drugs had the lowest percentage of retention in HIV medical care (53.9%).

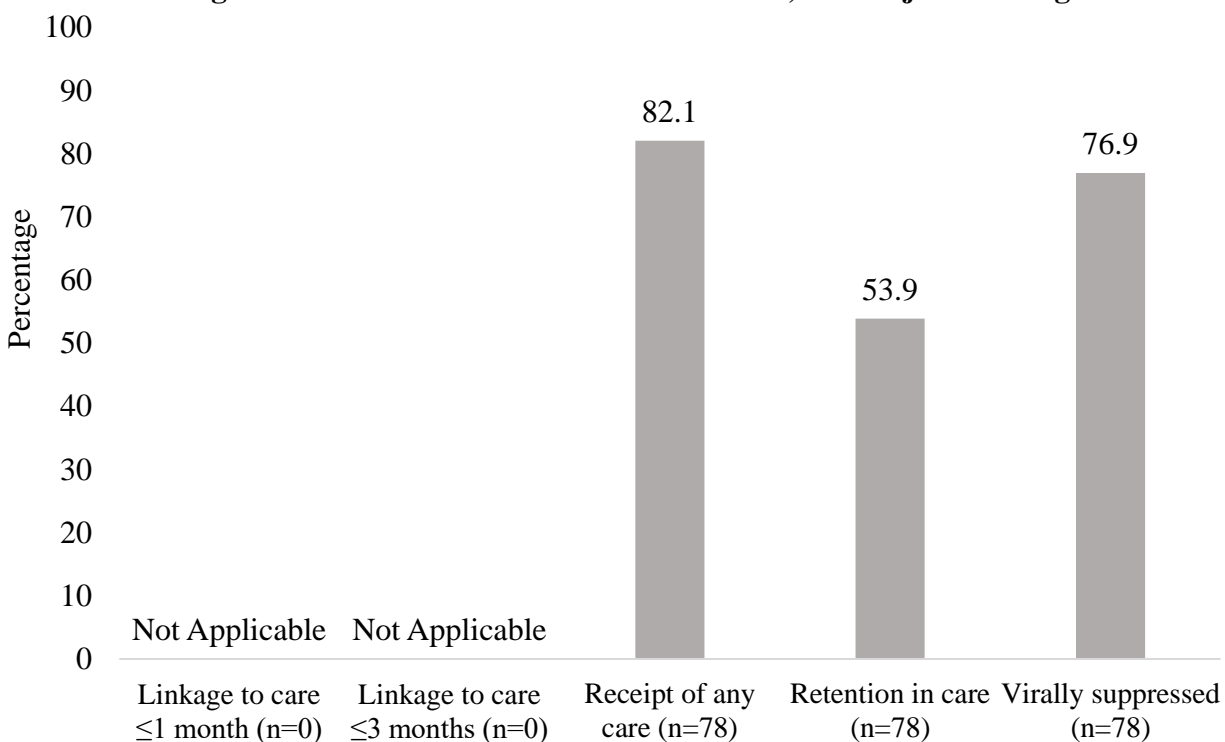


**Figure 23. Hawaii 2019 HIV care continuum, female injection drug use**

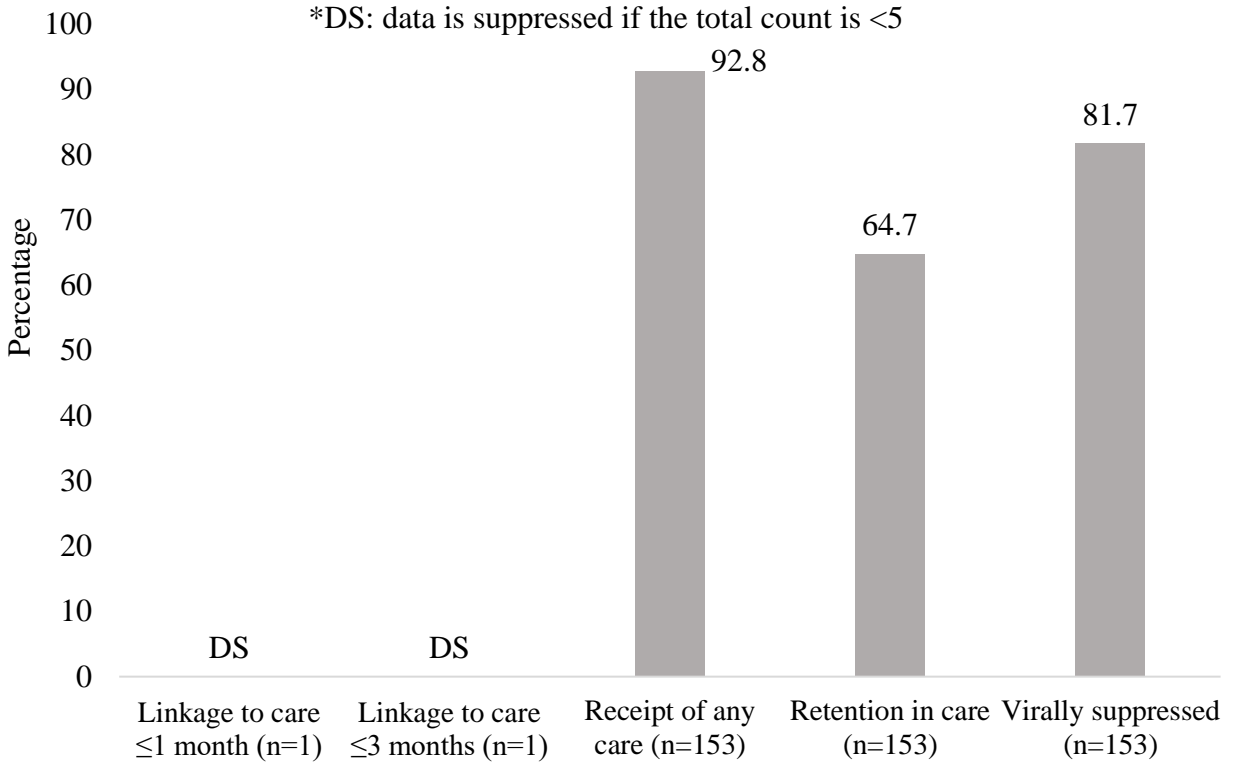
\*DS: data is suppressed if the total count is <5



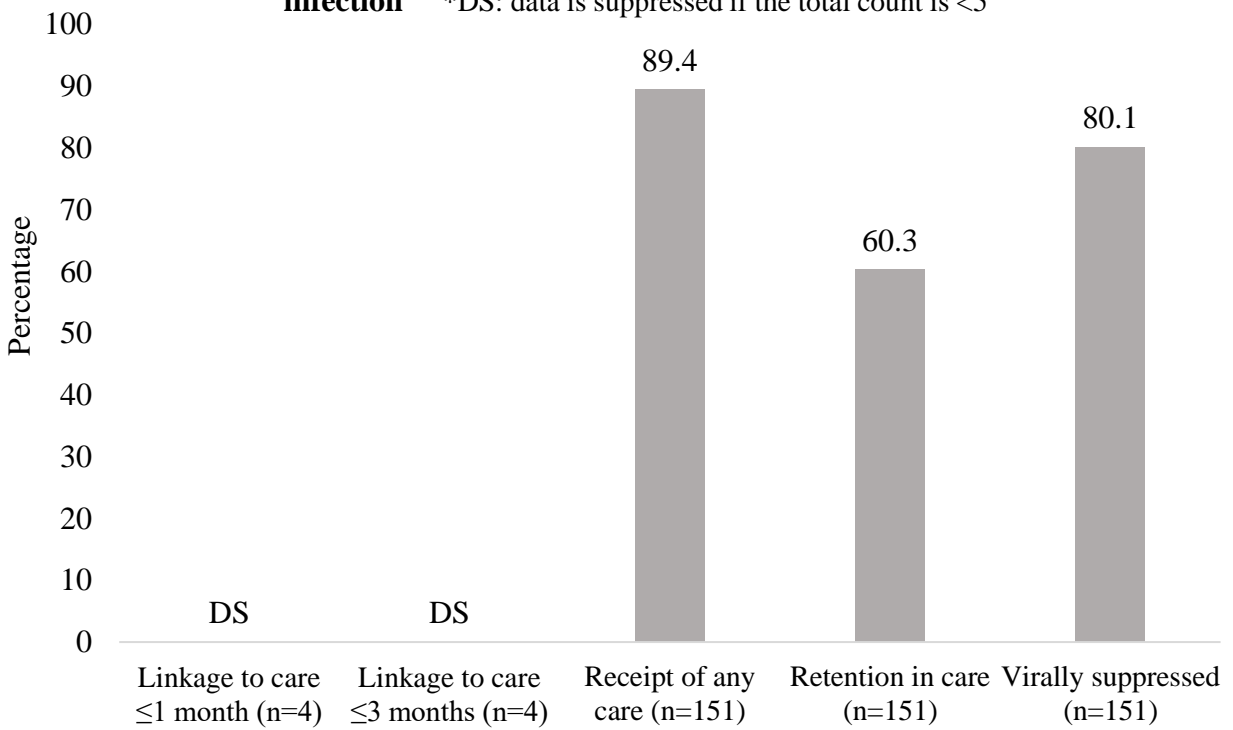
**Figure 24. Hawaii 2019 HIV care continuum, male injection drug use**



**Figure 25. Hawaii 2019 HIV care continuum, MSM&IDU**  
 \*MSM&IDU: male-to-male sexual contact & injection drug use

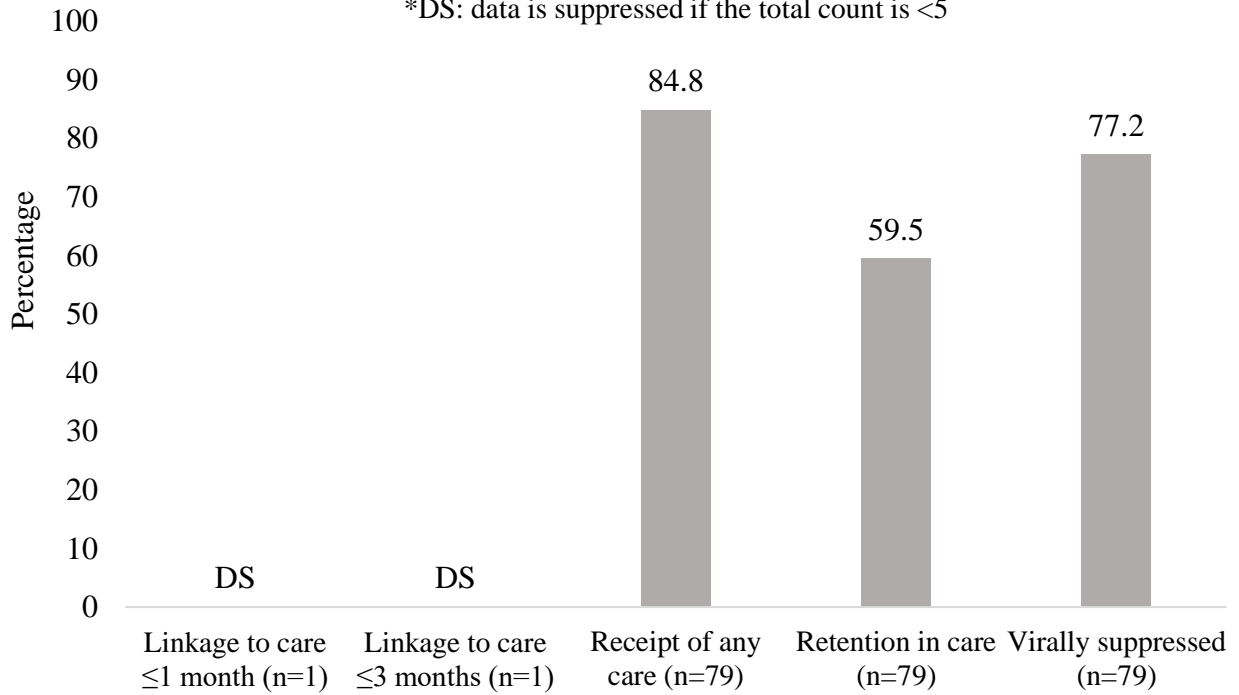


**Figure 26. Hawaii 2019 HIV care continuum, female heterosexual contact with a person known to have, or to be at high risk for, HIV infection**  
 \*DS: data is suppressed if the total count is <5



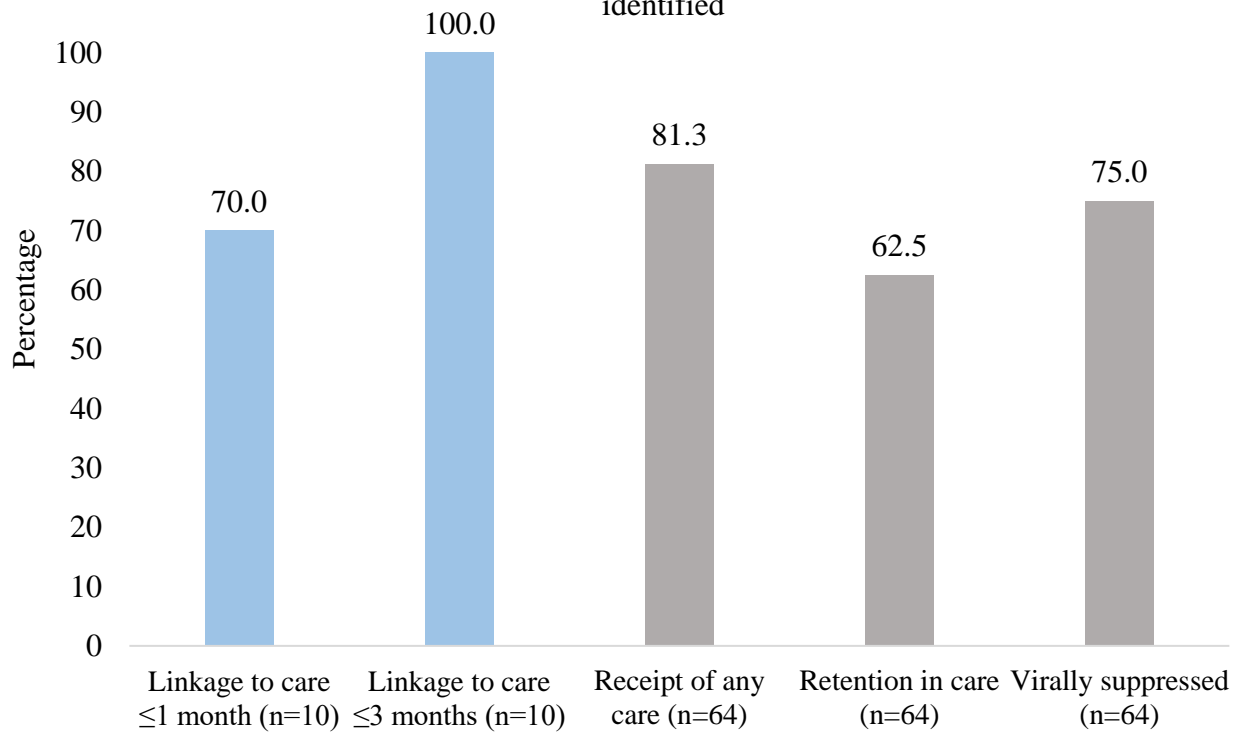
**Figure 27. Hawaii 2019 HIV care continuum, male heterosexual contact with a person known to have, or to be at high risk for, HIV infection**

\*DS: data is suppressed if the total count is <5



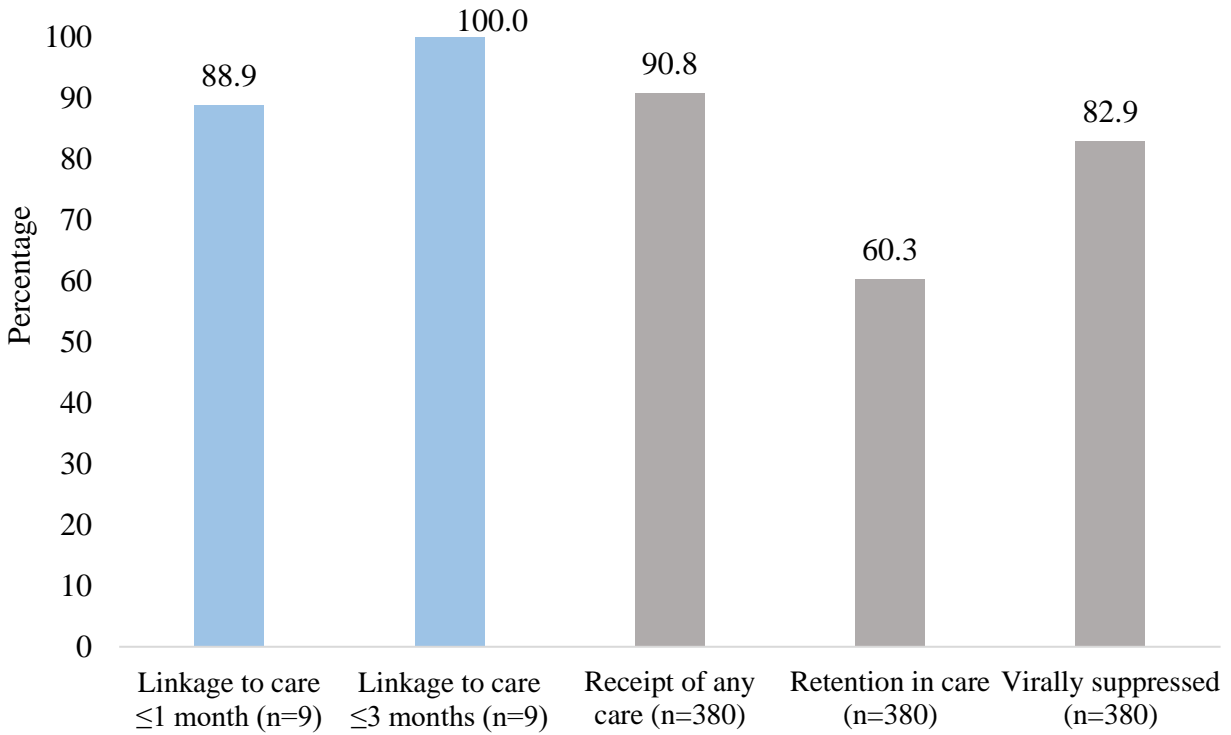
**Figure 28. Hawaii 2019 HIV care continuum, other category\***

\*Including hemophilia, blood transfusion, and risk factors not reported or identified

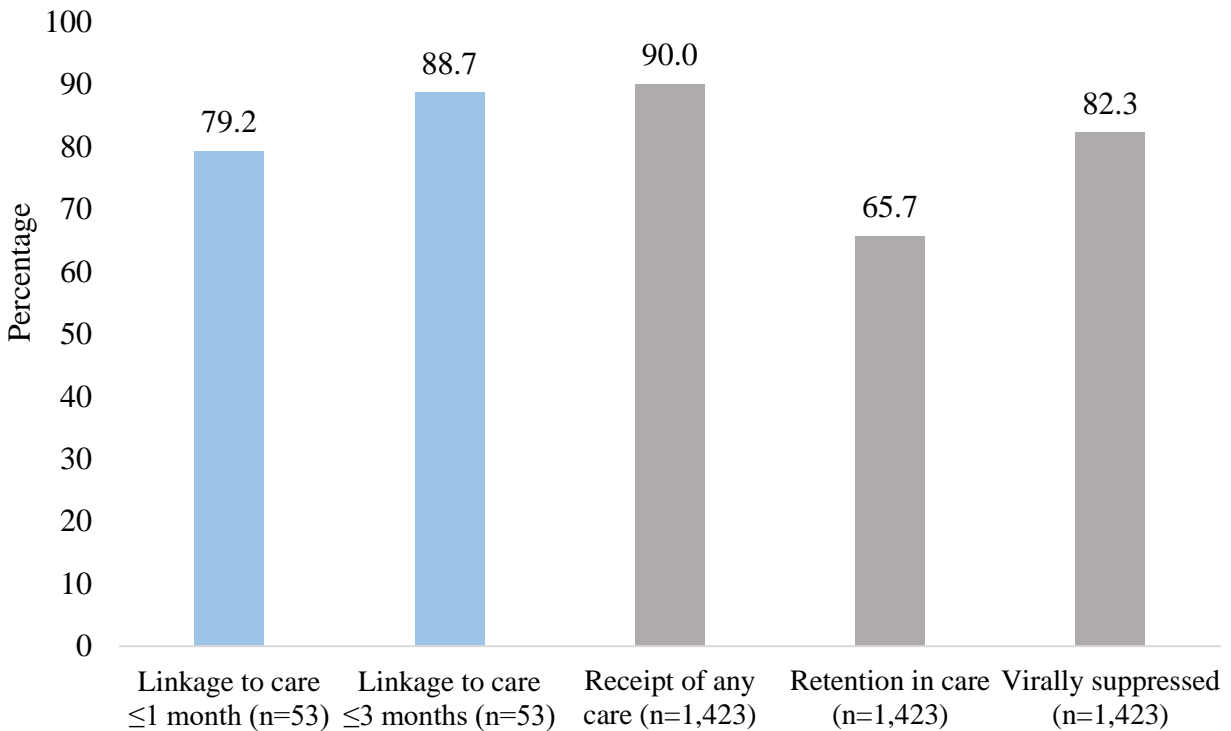


Figures 29 to 32 describe Hawaii’s 2019 HIV care continuum by county of residence. Percentages of retention in care was significantly higher in Honolulu County (65.7%) than Hawaii County (60.3%) and Maui County (58.6%). No significant difference was found in the percentages of receipt of any HIV medical care or viral suppression by county of residence.

**Figure 29. Hawaii 2019 HIV care continuum, Hawaii County**

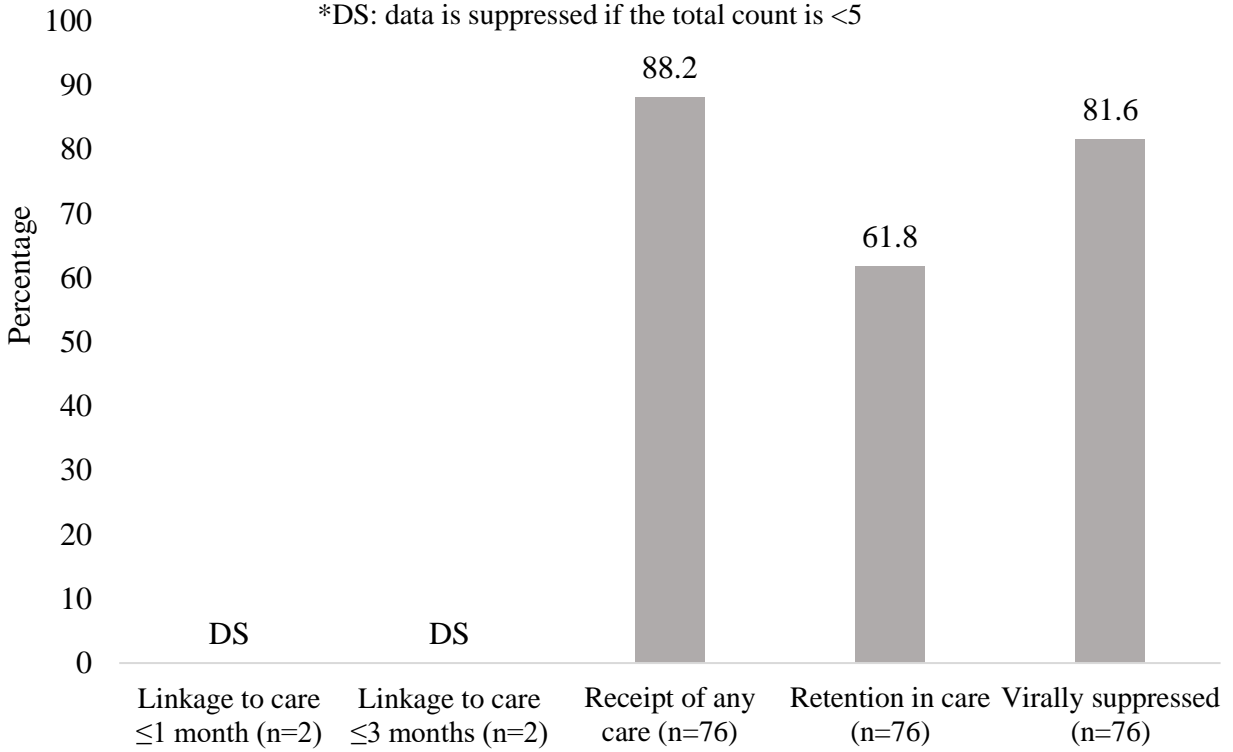


**Figure 30. Hawaii 2019 HIV care continuum, Honolulu County**



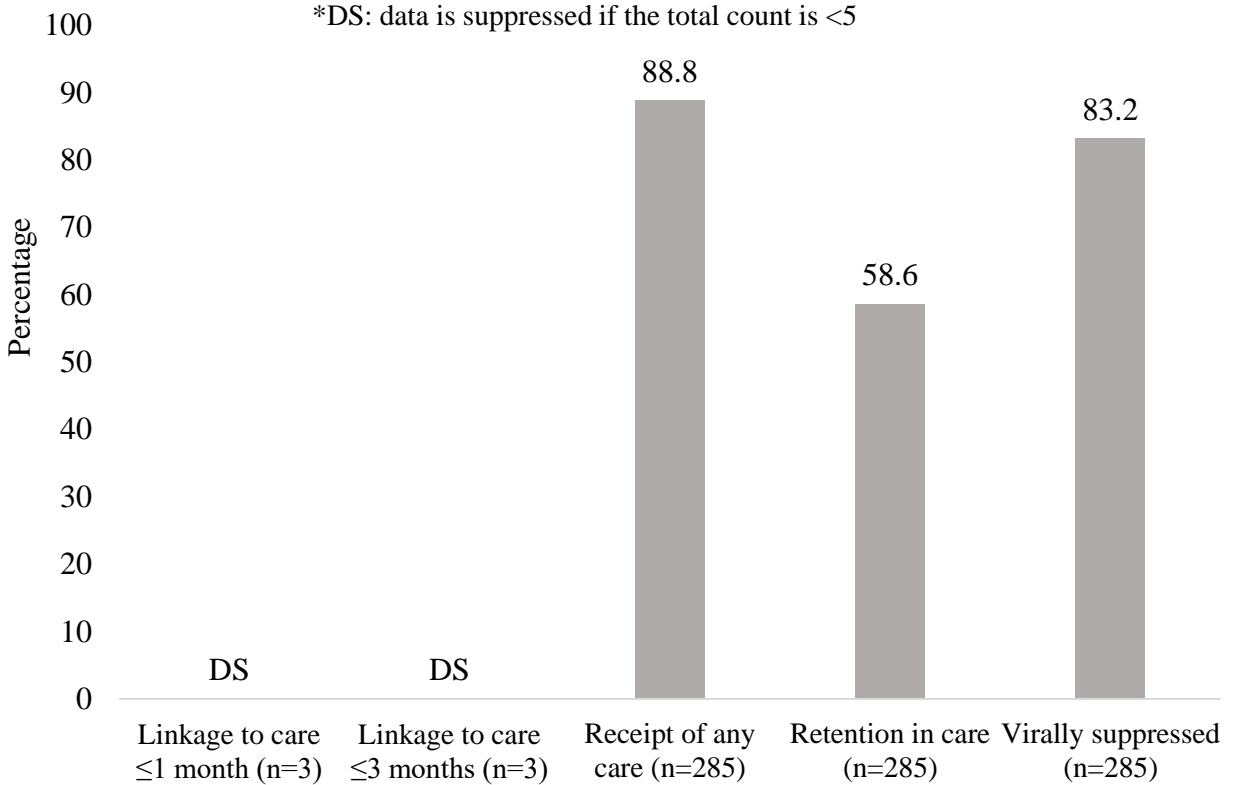
**Figure 31. Hawaii 2019 HIV care continuum, Kauai County**

\*DS: data is suppressed if the total count is <5



**Figure 32. Hawaii 2019 HIV care continuum, Maui County**

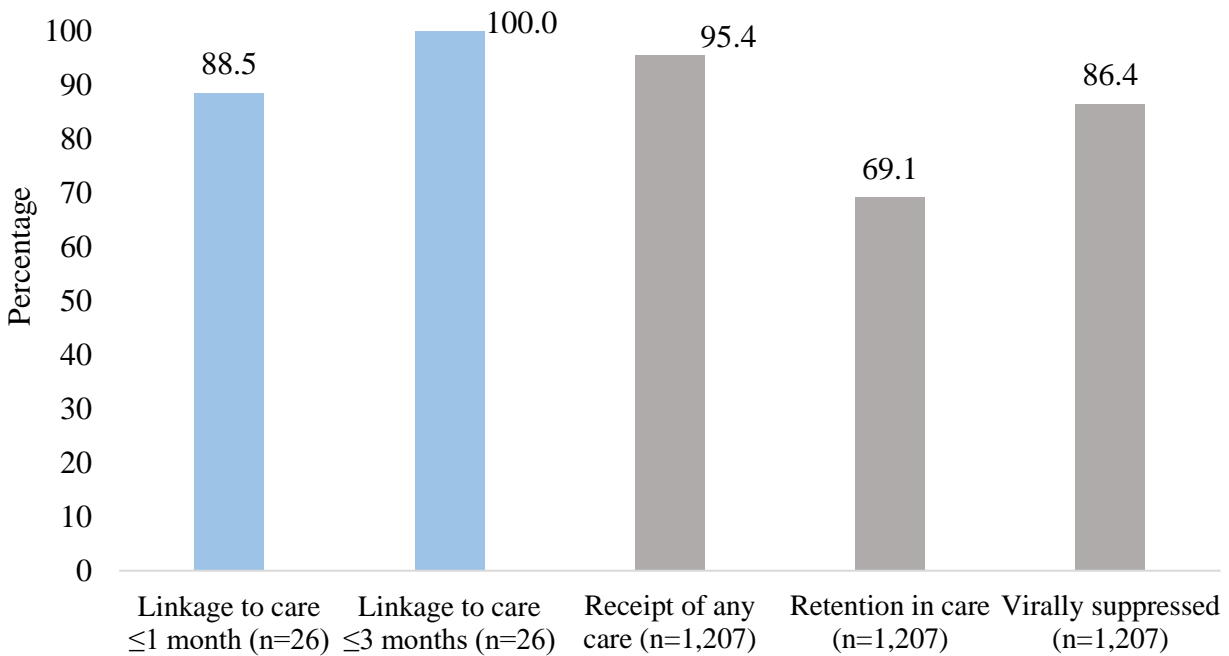
\*DS: data is suppressed if the total count is <5



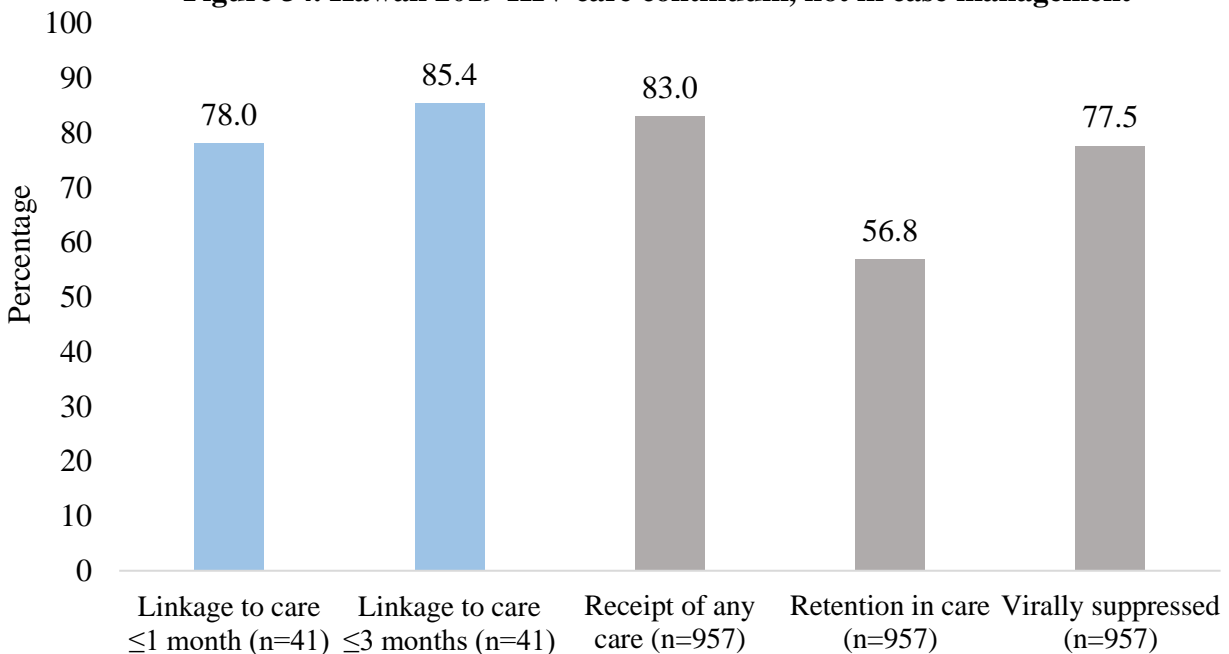
**Figures 33 and 34 present Hawaii’s 2019 HIV care continuum by whether the individual was in case management in 2019.**

Percentages of all indicators were significantly higher among persons in case management than persons not in case management. Among persons in case management in 2019, percentage of viral suppression was 86.4%, higher than the national 2020 objective of 80% (1).

**Figure 33. Hawaii 2019 HIV care continuum, in case management**



**Figure 34. Hawaii 2019 HIV care continuum, not in case management**



### **C. Characteristics of patients not in care or not virally suppressed in 2019, Hawaii**

The definition of in care was documentation of  $\geq 1$  CD4 (count or percentage) or viral load test in 2019. Viral suppression was defined as a result of  $< 200$  cells/mL on the last documented viral load test in 2019. A total of 2,164 persons aged  $\geq 13$  years at year-end 2018, whose HIV infection was diagnosed by year-end of 2018, and who were alive and residing in the state of Hawaii at year-end 2019 were included. **Table 7** compares distribution of selected patient characteristics by whether a patient was in care or was virally suppressed in 2019 in Hawaii.

No significant difference was found in the distribution of current gender or county of residence at year-end 2019. Nevertheless, significant differences were observed in the distribution of age, race/ethnicity, and case management status. Percentages of persons in case management were lower among persons not in care (25.2%) than those in care (59.2%), and lower among persons not virally suppressed (43.3%) than those virally suppressed (58.4%). Persons younger than 45 years of age accounted for a higher proportion among those not in care (38.6%) than those in care (26.8%), and among those not virally suppressed (39.6%) than those virally suppressed (25.5%). Blacks/African Americans and persons of multiple races accounted for a higher proportion among those not in care (14.7% and 14.2%, respectively) than those in care (4.6% and 10.7%, respectively), and among those not virally suppressed (11.9% and 15.8%, respectively) than those virally suppressed (4.3% and 10.0%, respectively).

By transmission category, a significant difference was observed when comparing persons in care to those not in care. Males who inject drugs accounted for a higher proportion among those not in care (6.4%) than those in care (3.3%). No significant difference was observed in the percentages of viral suppression among different transmission categories.

Please be aware that whether a person was in care or whether a person was virally suppressed described here was for 2019 and does not necessarily correspond to their care status or viral suppression status at the time of publication of this report. Percentages of and the total number of persons not in care or not virally suppressed in the state of Hawaii would differ at different points of time.



**Table 7. Patient characteristics comparing persons in care to those not in care and persons virally suppressed (VS) to those not virally suppressed, 2019, Hawaii**

<b>Patient characteristics</b>	<b>In care No. (column %)</b>	<b>Not in care No. (column %)</b>	<b>VS No. (column %)</b>	<b>Not VS No. (column %)</b>
<b>In case management in 2019</b>				
Yes	1,152 (59.2)	55 (25.2)	1,043 (58.4)	164 (43.3)
No	794 (40.8)	163 (74.8)	742 (41.6)	215 (56.7)
<b>Current gender</b>				
Female	206 (10.6)	23 (10.5)	181 (10.1)	48 (12.7)
Male	1,708 (87.8)	193 (88.6)	1,579 (88.5)	322 (85)
Transgender persons	32 (1.6)	2 (0.9)	25 (1.4)	9 (2.4)
<b>Age at year-end 2018 in years</b>				
13-24	29 (1.5)	6 (2.8)	24 (1.3)	11 (2.9)
25-34	206 (10.6)	38 (17.4)	182 (10.2)	62 (16.4)
35-44	286 (14.7)	40 (18.4)	249 (14.0)	77 (20.3)
45-54	501 (25.8)	62 (28.4)	459 (25.7)	104 (27.4)
≥55	924 (47.5)	72 (33)	871 (48.8)	125 (33)
<b>Race/ethnicity</b>				
Hispanic, all races	212 (10.9)	21 (9.6)	198 (11.1)	35 (9.2)
American Indian/Alaska Native	DS	DS	DS	DS
Asian	331 (17.0)	25 (11.5)	304 (17.0)	52 (13.7)
Black/African American	89 (4.6)	32 (14.7)	76 (4.3)	45 (11.9)
Native Hawaiian/other Pacific Islander	195 (10.0)	17 (7.8)	173 (9.7)	39 (10.3)
White	904 (46.5)	90 (41.3)	848 (47.5)	146 (38.5)
Multiple races	208 (10.7)	31 (14.2)	179 (10.0)	60 (15.8)
Unknown	DS	DS	DS	DS
<b>Transmission category</b>				
Male-to-male sexual contact (MSM)	1,429 (73.4)	148 (67.9)	1,323 (74.1)	254 (67)
Injection drug use (IDU), female	49 (2.5)	5 (2.3)	42 (2.4)	12 (3.2)
Injection drug use, male	64 (3.3)	14 (6.4)	60 (3.4)	18 (4.8)
MSM & IDU	142 (7.3)	11 (5.1)	125 (7.0)	28 (7.4)
Heterosexual contact <sup>a</sup> , female	135 (6.9)	16 (7.3)	121 (6.8)	30 (7.9)
Heterosexual contact, male	67 (3.4)	12 (5.5)	61 (3.4)	18 (4.7)
Perinatal	8 (0.4)	0 (0)	5 (0.3)	3 (0.8)
Other <sup>b</sup>	52 (2.7)	12 (5.5)	48 (2.7)	16 (4.2)
<b>County of residence at year-end 2019</b>				
Hawaii County	345 (17.7)	35 (16.1)	315 (17.7)	65 (17.2)
Honolulu County	1,281 (65.8)	142 (65.1)	1,171 (65.6)	252 (66.5)
Kauai County	67 (3.4)	9 (4.1)	62 (3.5)	14 (3.7)
Maui County	253 (13.0)	32 (14.7)	237 (13.3)	48 (12.7)

*Note:* "In care" was defined as documentation of ≥CD4 or viral load tests in 2019; "Virally suppressed" was defined as the last viral load test in 2019 with a result of <200 copies/mL. DS: data suppressed.

<sup>b</sup> Includes heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

<sup>c</sup> Includes hemophilia, blood transfusion, and risk factors not reported or not identified.

#### **D. Progress on receipt of HIV medical care and viral suppression, 2015-2019**

To accurately describe the proportion of PLWDH who receive HIV medical care and achieve viral suppression each year, it is critical to distinguish between PLWDH who are not engaged in HIV medical care from those who no longer live in Hawaii. Starting from 2015, HRSB undertook significant efforts to improve estimates of PLWDH who resided in Hawaii every year. Vigorous investigations were conducted using multiple internal and external data sets and resources including but not limited to laboratory data, the national deduplication project, and data from the data-to-care project, to determine whether a PLWDH resided in Hawaii at the end of the year of measurement. As a result, HRSB has been able to determine the total number of PLWDH residing in Hawaii at the end of each measurement year since 2015.

From 2015 to 2019, significant increases were observed statewide for all three indicators (**Figure 4, Table 8, Table 9, Table 10**). The percentages of receipt of any HIV medical care increased from 79.3% in 2015 to 89.9% in 2019 ( $P<.001$ ), the percentages of retention in HIV medical care increased from 51.2% in 2015 to 63.7% in 2019 ( $P<.001$ ), and the percentages of viral suppression increased from 69.4% in 2015 to 82.5% in 2019 ( $P<.001$ ), surpassing the 2020 national target of  $\geq 80\%$  (1).

When examining such progress by selected patient characteristics, almost all subgroups experienced significant increase in all three indicators except for persons in age groups 13-24 years, Blacks/African Americans, persons who inject drugs, male heterosexuals, and persons residing in Kauai County. Of note is that increases in all three indicators were observed among those subgroups listed here except for Blacks/African Americans, but with smaller magnitude compared to their respective counterparts or not reaching statistical significance due to their small sample sizes. Blacks/African Americans are the only group with minimal increase, e.g., 73.3% in 2015 to 73.6% in 2019 for receipt of any care and 58.0% in 2015 to 62.8% in 2019 for viral suppression. Retention in HIV medical care among Blacks/African Americans decreased slightly from 48.7% in 2015 to 47.1% in 2019.

Percentages of viral suppression in 2019 approached ( $\geq 75\%$ ) or surpassed the national 2020 goal of 80% for almost all subgroups except for persons in age groups 13-24 years (68.6%), 25-34 years (74.6%), Blacks/African Americans (62.8%), and persons of multiple races (74.9%).

**Table 8. Progress on receipt of any HIV medical care by selected characteristics, 2015-2019, Hawaii**

Characteristics	Total No. (% persons with $\geq 1$ CD4 or VL tests) <sup>a</sup>				
	2015	2016	2017	2018	2019
<b>Total</b>	<b>2,381 (79.3)</b>	<b>2,393 (80.8)</b>	<b>2,344 (82.1)</b>	<b>2,347 (83.2)</b>	<b>2164 (89.9)</b>
Birth sex					
Female	273 (76.9)	268 (78.7)	252 (81.0)	253 (79.1)	231 (90.0)
Male	2,108 (79.6)	2,125 (81.1)	2,092 (82.3)	2,094 (83.7)	1933 (89.9)
Age in years					
13-24	47 (70.2)	47 (83.0)	35 (62.9)	48 (64.6)	35 (82.9)
25-34	264 (70.1)	267 (72.3)	259 (72.6)	293 (72.4)	244 (84.4)
35-44	415 (70.1)	394 (75.9)	354 (78.5)	351 (78.3)	326 (87.7)
45-54	858 (82.5)	822 (82.1)	675 (83.0)	652 (86.8)	563 (89.0)
$\geq 55$	797 (84.1)	863 (84.4)	1,021 (85.9)	1,003 (86.6)	996 (92.8)
Race/ethnicity <sup>b</sup>					
Hispanic, all races	241 (73.4)	243 (77.8)	244 (81.6)	258 (82.2)	233 (91.0)
AIAN <sup>a</sup>	5 (60.0)	9 (66.7)	4 (DS)	5 (80.0)	4 (DS)
Asian	364 (81.6)	360 (85.8)	357 (88.5)	371 (88.7)	356 (93.0)
Black/African American	150 (73.3)	152 (78.3)	156 (64.1)	147 (61.9)	121 (73.6)
NHPI <sup>a</sup>	221 (80.1)	228 (81.6)	216 (85.2)	212 (89.2)	212 (92.0)
White	1,193 (80.5)	1,179 (79.8)	1,137 (83.2)	1,112 (83.5)	994 (91.0)
Multiple races	198 (79.8)	218 (83.0)	224 (77.7)	236 (82.6)	239 (87.0)
Transmission category					
MSM <sup>a</sup>	1,721 (80.1)	1,740 (81.8)	1,722 (82.2)	1,722 (84.5)	1577 (90.6)
IDU <sup>a</sup> , female	57 (82.5)	52 (80.8)	56 (82.1)	58 (84.5)	54 (90.7)
IDU, male	97 (81.4)	89 (75.3)	80 (82.5)	83 (75.9)	78 (82.1)
MSM & IDU	153 (79.7)	157 (77.7)	160 (88.8)	158 (82.3)	153 (92.8)
Heterosexual <sup>c</sup> , female	159 (81.1)	171 (84.8)	159 (85.5)	160 (83.1)	151 (89.4)
Heterosexual, male	73 (79.5)	90 (90.0)	88 (78.4)	86 (83.7)	79 (84.8)
Perinatal	10 (80.0)	10 (80.0)	9 (77.8)	10 (80.0)	8 (100)
Other <sup>d</sup>	111 (59.5)	84 (54.8)	70 (61.4)	70 (61.4)	64 (81.3)
County of residence					
Hawaii County	370 (80.8)	408 (79.7)	404 (82.5)	402 (82.8)	380 (90.8)
Honolulu County	1,622 (78.9)	1,586 (80.2)	1,554 (81.0)	1,571 (82.9)	1423 (90.0)
Kauai County	90 (81.1)	98 (81.6)	93 (88.8)	85 (82.4)	76 (88.2)
Maui County	299 (78.6)	301 (85.4)	293 (85.4)	289 (85.8)	285 (88.8)

<sup>a</sup> CD4, CD4+ T-lymphocyte; AIAN: American Indian /Alaska Native; NHPI: Native Hawaiian /other Pacific Islander; MSM: male-to-male sexual contact; IDU: injection drug use. DS: data suppressed.

<sup>b</sup> Excludes persons not differentiated between Asian and NHPI and persons of unknown race/ethnicity.

<sup>c</sup> Includes heterosexual contact with a person known to have, or to be at high risk for HIV infection.

<sup>d</sup> Includes hemophilia, blood transfusion and risk factors not reported or not identified.

**Table 9. Progress on retention in HIV medical care by selected characteristics, 2015-2019, Hawaii**

Characteristics	Total No. (% persons with $\geq 2$ CD4 or viral load tests) <sup>a</sup>				
	2015	2016	2017	2018	2019
<b>Total</b>	<b>2,381 (51.2)</b>	<b>2,393 (58.9)</b>	<b>2,344 (56.3)</b>	<b>2,347 (58.0)</b>	<b>2164 (63.7)</b>
Birth sex					
Female	273 (46.2)	268 (54.5)	252 (55.2)	253 (57.7)	231 (60.2)
Male	2,108 (51.9)	2,125 (59.5)	2,092 (56.5)	2,094 (58.1)	1933 (64.1)
Age in years					
13-24	47 (31.9)	47 (40.4)	35 (31.4)	48 (47.9)	35 (48.6)
25-34	264 (44.7)	267 (48.7)	259 (38.6)	293 (44.7)	244 (56.2)
35-44	415 (42.2)	394 (50.8)	354 (48.0)	351 (51.3)	326 (58.3)
45-54	858 (52.1)	822 (61.8)	675 (56.3)	652 (60.1)	563 (59.7)
$\geq 55$	797 (58.2)	863 (64.1)	1,021 (64.5)	1,003 (63.4)	996 (70.1)
Race/ethnicity <sup>b</sup>					
Hispanic, all races	241 (47.7)	243 (53.5)	244 (50.8)	258 (50.8)	233 (62.7)
AIAN <sup>a</sup>	5 (40.0)	9 (33.3)	4 (DS)	5 (60.0)	4 (DS)
Asian	364 (55.5)	360 (66.7)	357 (66.1)	371 (66.0)	356 (67.7)
Black/African American	150 (48.7)	152 (52.6)	156 (34.0)	147 (38.1)	121 (47.1)
NHPI <sup>a</sup>	221 (51.1)	228 (62.7)	216 (61.1)	212 (65.1)	212 (64.6)
White	1,193 (51.2)	1,179 (57.9)	1,137 (57.5)	1,112 (58.5)	994 (64.7)
Multiple races	198 (51.0)	218 (59.6)	224 (52.2)	236 (56.8)	239 (62.3)
Transmission category					
MSM <sup>a</sup>	1,721 (52.1)	1,740 (59.3)	1,722 (57.1)	1,722 (58.8)	1577 (64.9)
IDU <sup>a</sup> , female	57 (52.6)	52 (51.9)	56 (51.8)	58 (62.1)	54 (55.6)
IDU, male	97 (48.5)	89 (60.7)	80 (57.5)	83 (48.2)	78 (53.9)
MSM & IDU	153 (51.6)	157 (59.2)	160 (54.4)	158 (52.5)	153 (64.7)
Heterosexual <sup>c</sup> , female	159 (45.9)	171 (61.4)	159 (58.5)	160 (61.9)	151 (60.3)
Heterosexual, male	73 (64.4)	90 (73.3)	88 (54.6)	86 (62.8)	79 (59.5)
Perinatal	10 (70.0)	10 (50.0)	9 (44.4)	10 (70.0)	8 (62.5)
Other <sup>d</sup>	111 (35.1)	84 (33.3)	70 (41.4)	70 (42.9)	64 (62.5)
County of residence <sup>e</sup>					
Hawaii County	370 (47.0)	408 (53.7)	404 (48.8)	402 (52.0)	380 (60.3)
Honolulu County	1,622 (52.1)	1,586 (60.2)	1,554 (56.7)	1,571 (59.5)	1423 (65.7)
Kauai County	90 (54.4)	98 (63.3)	93 (63.7)	85 (63.5)	76 (61.8)
Maui County	299 (50.5)	301 (57.8)	293 (62.6)	289 (56.7)	285 (58.6)

<sup>a</sup> CD4, CD4+ T-lymphocyte; the two tests (CD4/viral load) should be performed  $\geq 3$  months apart each year. AIAN: American Indian /Alaska Native; NHPI: Native Hawaiian /other Pacific Islander; MSM: male-to-male sexual contact; IDU: injection drug use; DS: data suppressed.

<sup>b</sup> Excludes persons not differentiated between Asian and NHPI and persons of unknown race/ethnicity.

<sup>c</sup> Includes heterosexual contact with a person known to have, or to be at high risk for HIV infection.

<sup>d</sup> Includes hemophilia, blood transfusion and risk factors not reported or not identified.

**Table 10. Progress on HIV viral suppression by selected characteristics, 2015-2019, Hawaii**

Characteristics	Total No. (% virally suppressed) <sup>a</sup>				
	2015	2016	2017	2018	2019
<b>Total</b>	<b>2,381 (69.4)</b>	<b>2,393 (73.4)</b>	<b>2,344 (73.3)</b>	<b>2,347 (76.4)</b>	<b>2164 (82.5)</b>
Birth sex					
Female	273 (63.7)	268 (68.3)	252 (73.0)	253 (73.5)	231 (79.2)
Male	2,108 (70.1)	2,125 (74.0)	2,092 (73.3)	2,094 (76.8)	1933 (82.9)
Age in years					
13-24	47 (53.2)	47 (74.5)	35 (51.4)	48 (62.5)	35 (68.6)
25-34	264 (56.4)	267 (63.7)	259 (60.2)	293 (60.4)	244 (74.6)
35-44	415 (58.1)	394 (66.5)	354 (65.3)	351 (67.2)	326 (76.4)
45-54	858 (73.2)	822 (74.7)	675 (74.1)	652 (80.7)	563 (81.5)
≥55	797 (76.4)	863 (78.2)	1,021 (79.6)	1,003 (82.3)	996 (87.5)
Race/ethnicity <sup>b</sup>					
Hispanic, all races	241 (66.8)	243 (72.4)	244 (75.4)	258 (75.6)	233 (85.0)
AIAN	5 (60.0)	9 (44.4)	4 (DS)	5 (80.0)	4 (DS)
Asian	364 (71.7)	360 (80.3)	357 (79.8)	371 (83.0)	356 (85.4)
Black/African American	150 (58.0)	152 (64.5)	156 (51.9)	147 (52.4)	121 (62.8)
NHPI	221 (68.3)	228 (71.9)	216 (75.5)	212 (78.8)	212 (81.6)
White	1,193 (71.9)	1,179 (73.5)	1,137 (75.8)	1,112 (78.2)	994 (85.3)
Multiple races	198 (63.6)	218 (71.6)	224 (62.1)	236 (72.0)	239 (74.9)
Transmission category					
MSM	1,721 (71.6)	1,740 (75.3)	1,722 (74.0)	1,722 (78.0)	1577 (83.9)
IDU, female	57 (64.9)	52 (67.3)	56 (71.4)	58 (79.3)	54 (77.8)
IDU, male	97 (69.1)	89 (64.0)	80 (72.5)	83 (62.7)	78 (76.9)
MSM & IDU	153 (62.7)	157 (66.2)	160 (73.1)	158 (74.1)	153 (81.7)
Heterosexual <sup>c</sup> , female	159 (69.8)	171 (75.4)	159 (79.9)	160 (78.1)	151 (80.1)
Heterosexual, male	73 (64.4)	90 (81.1)	88 (65.9)	86 (75.6)	79 (77.2)
Perinatal	10 (60.0)	10 (70.0)	9 (66.7)	10 (70.0)	8 (62.5)
Other <sup>d</sup>	111 (50.5)	84 (48.8)	70 (52.9)	70 (55.7)	64 (75.0)
County of residence					
Hawaii County	370 (72.4)	408 (71.3)	404 (76.7)	402 (76.6)	380 (82.9)
Honolulu County	1,622 (68.3)	1,586 (73.0)	1,554 (71.0)	1,571 (75.6)	1423 (82.3)
Kauai County	90 (70.0)	98 (74.5)	93 (82.1)	85 (78.8)	76 (81.6)
Maui County	299 (71.2)	301 (78.1)	293 (77.5)	289 (79.9)	285 (83.2)

<sup>a</sup> Viral suppression was defined as the last viral load test in the year of measurement with a result of <200 copies/mL; AIAN: American Indian /Alaska Native; NHPI: Native Hawaiian /other Pacific Islander; MSM: male-to-male sexual contact; IDU: injection drug use; DS: data suppressed.

<sup>b</sup> Excludes persons not differentiated between Asian and NHPI and persons of unknown race/ethnicity.

<sup>c</sup> Includes heterosexual contact with a person known to have, or to be at high risk for HIV infection.

<sup>d</sup> Includes hemophilia, blood transfusion and risk factors not reported or not identified.

## **E. Epidemiology of HIV/AIDS and HIV care continuum among 7 key populations**

### **I. Children, adolescents, and young adults**

#### **1) Diagnoses of HIV infection through 2019**

The designation “children” refers to persons younger than 13 years of age. The designation “adolescents” refers to persons aged 13 to 19 years and the designation “young adults” refers to persons aged 20-24 years (10). From the beginning of the epidemic in the early 1980s through 2019, a total of 476 Hawaii residents <25 years of age were diagnosed with HIV infections, of whom 27 (5.7%) were children, 78 (16.4%) were adolescents and 371 (77.9%) were young adults. Three (11.1%) of the 27 children, 14 (17.9%) of the 78 adolescents, and 98 (26.4%) of the 371 young adults were diagnosed between 2010 and 2019.

**Table 11** describes diagnosed HIV infection among children, adolescents, and young adults by selected characteristics and time periods. A third of the children, 9.0% of adolescents, and 15.6% of young adults were diagnosed with stage 3 (AIDS) at HIV diagnosis. Among children, almost 60% were males, 29.6% were Asian, 22.2% were NHPI, and 74.1% resided in Honolulu County at the time of HIV diagnoses. Almost two thirds (63.0%) were due to perinatal transmission and the rest were attributed to hemophilia, blood transfusion, or risk factors not reported or not identified. Among both adolescents and young adults with HIV infections, males accounted for over three quarters (79.5% among adolescents and 85.7% among young adults, respectively). Whites accounted for 28.2% of adolescents and 38.5% of young adults, followed by NHPIs (19.2% of adolescents and 12.1% of young adults). MSM was the main category of transmission (55.1% among adolescents and 65.0% among young adults, respectively).

#### **2) Prevalent cases at year-end 2019**

At year-end 2019, a total of 42 persons younger than 25 years of age were living with diagnosed HIV in Hawaii, of whom two (4.8%) were children, 7 (16.7%) were adolescents, and 33 (78.6%) were young adults. Almost a quarter (73.8%) resided in Honolulu County and another 6 (14.3%) resided in Hawaii County. Hispanics accounted for 21.4%, followed by Whites (19.0%), then by Asians (16.7%) and Blacks/African Americans (16.7%). Male-to-male sexual contact accounted for 59.5%, followed by perinatal transmission (16.7%), then by those with risk factors not reported or not identified (11.9%).

**Table 11. Diagnoses of HIV infection through 2019 among children, adolescents, and young adults, by selected characteristics and time periods, Hawaii**

Characteristics	Children		Adolescents		Young Adults	
	No.	Percent	No.	Percent	No.	Percent
<b>State total (n=476)</b>	<b>27</b>	<b>5.7</b>	<b>78</b>	<b>16.4</b>	<b>371</b>	<b>77.9</b>
Stage 3 (AIDS) at HIV diagnosis	9	33.3	7	9.0	58	15.6
Birth sex						
Female	11	40.7	16	20.5	53	14.3
Male	16	59.3	62	79.5	318	85.7
Race/ethnicity <sup>a</sup>						
Hispanic, all races	3	11.1	11	14.1	53	14.3
American Indian/Alaska Native	0	0	2	2.6	0	0
Asian	8	29.6	8	10.3	53	14.3
Black/African American	2	7.4	6	7.8	34	9.2
Native Hawaiian/other Pacific Islander	6	22.2	15	19.2	45	12.1
White	5	18.5	22	28.2	143	38.5
Multiple races	3	11.1	14	18.0	42	11.3
Transmission category						
Male-to-male sexual contact (MSM)	0	0	43	55.1	241	65.0
Injection drug use, female	0	0	1	1.3	7	1.9
Injection drug use (IDU), male	0	0	1	1.3	9	2.4
MSM & IDU	0	0	9	11.5	49	13.2
Heterosexual contact <sup>b</sup> , female	0	0	10	12.8	39	10.5
Heterosexual contact, male	0	0	1	1.3	9	2.4
Perinatal	17	63.0	1	1.3	0	0
Other <sup>c</sup>	10	37.0	12	15.4	17	4.6
County of residence at HIV diagnosis <sup>d</sup>						
Hawaii County	4	14.8	9	11.5	41	11.1
Honolulu County	20	74.1	53	68.0	276	74.8
Kauai County	2	7.4	6	7.7	11	3.0
Maui County	1	3.7	10	12.8	41	11.1

Notes: the designation “children” refers to persons younger than 13 years old, “adolescents” refers to persons aged 13 to 19 years, and “young adults” refers to persons aged 20-24 years. Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Percent represents column percent except for the row “State total” which represents row percent. Percent total may not add up to 100 because of rounding.

<sup>a</sup> Excludes one young adult unable to be differentiated between Asian and Native Hawaiian/other Pacific Islander.

<sup>b</sup> Includes heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

<sup>c</sup> Includes hemophilia, blood transfusion, and risk factors not reported or not identified.

<sup>d</sup> Excludes two young adults missing data on county of residence at HIV diagnosis.

### 3) 2019 HIV care continuum

**Figure 11** presents 2019 HIV care continuum among adolescents, and young adults living with diagnosed HIV at year-end 2019. The study population for linkage to HIV medical care included a total of 10 persons in age group 13-24 years with HIV infection diagnosed in 2019. Of those 10 persons, one was younger than 19 years of age. Eight (80.0%) of the 10 were linked to HIV medical care  $\leq 1$  month and 9 (90%) were linked to HIV medical care  $\leq 3$  months after HIV diagnosis. The study population for receiving HIV medical care and viral suppression included a total of 35 persons  $\geq 13$  years at year-end 2018 with HIV diagnosed through 2018 and resided in Hawaii at year-end 2019. Among the 35 persons included, 24 (68.6%) were in case management, 29 (82.9%) received any HIV medical care, 17 (48.6%) were retained in HIV medical care, and 24 (68.6%) were virally suppressed in 2019.



## **II. Female adolescents and adults**

### **1) Diagnosis of HIV infection through 2019**

In this section, only data from female adolescents and adults ( $\geq 13$  years old) were included based on birth sex. As a result, female-to-male transgender persons and females with additional gender identity were included here. Data from children younger than 13 years old were reported under the section “HIV infection among children, adolescents, and young adults” on pages 53 to 55.

**Table 12** describes diagnoses of HIV infection among female adolescents and adults by selected patient characteristics and time periods. From the beginning of the epidemic in the early 1980s through 2019, a total of 479 female adolescents and adults were diagnosed with HIV infection. At HIV diagnosis, over two thirds (70.6%) resided in Honolulu County, 13.8% resided in Hawaii County, 9.4% resided in Maui County, and 6.3% in Kauai County. About one third (31.1%) were diagnosed as stage 3 (AIDS) at HIV diagnosis.

Persons in age group 25-34 years constituted the largest percentage (34.5%), followed by those in age group 35-44 years (29.9%). Over a third (34.4%) were White, followed by Asian (21.5%), then by NHPI (18.2%). Heterosexual contact with a person known to have, or at increased risk of, HIV infection, was the most dominant risk factor (54.5%), followed by IDU (27.6%), then by risk factors not reported or not identified (17.8%).

When comparing the most recent 5-year period (2015-2019) to previous years, a larger proportion of infections was observed among persons  $\geq 55$  years (19.4% vs 5.6%, respectively), among Asians (38.9% vs 20.1%, respectively) and persons of multiple races (16.7% vs. 12.0%). Distribution of risk factors were similar between the two time periods.

### **2) Prevalent cases at year-end 2019**

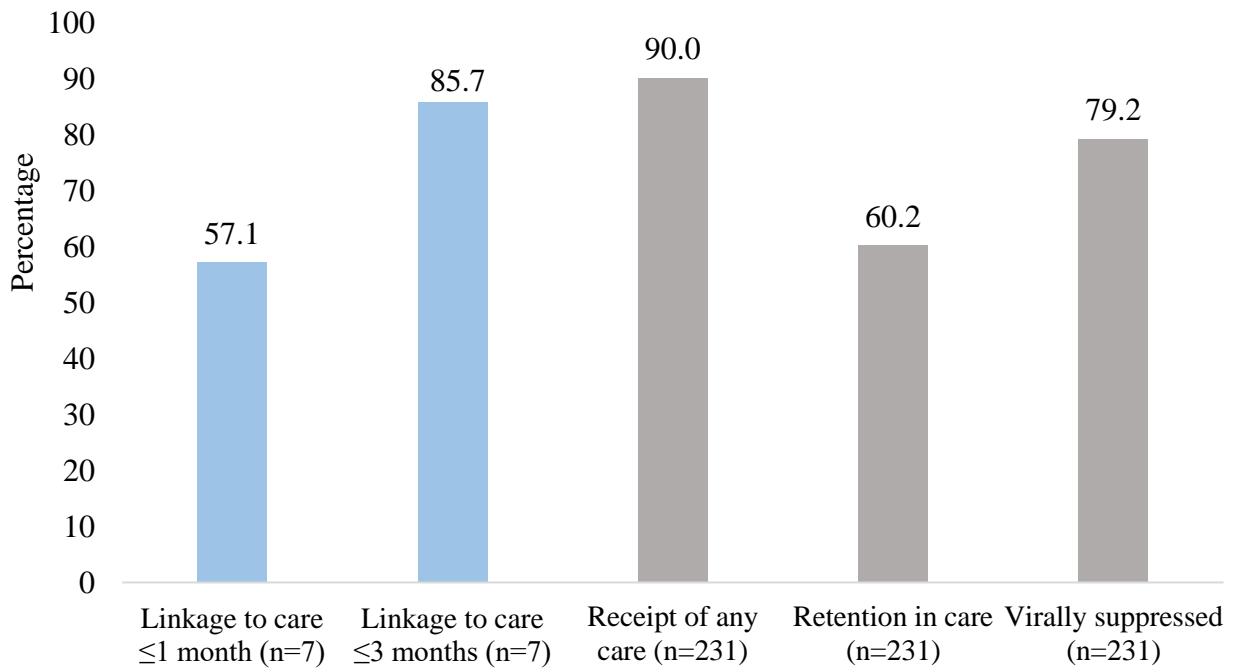
At year-end 2019, a total of 238 female adolescents and adults were living with diagnosed HIV infection in Hawaii. Persons  $\geq 55$  years old constituted 42.9%, followed by those in age group 45-54 years (26.9%). Persons in age group 13-24 years constituted 2.9%. Whites constituted 33.6%, followed by Asians (21.9%), NHPIs (15.1%), and persons of multiple races (14.7%). Over 60% (64.7%) were attributed to heterosexual contact, 23.1% attributed to IDU, 9.2% due to risk factors not reported or not identified, and 2.9% due to perinatal transmission. About two thirds (64.3%) resided in Honolulu County and 18.1% in Hawaii County.

### 3) 2019 HIV care continuum

**Figure 35** presents 2019 HIV care continuum among female adolescents and adults living with diagnosed HIV at year-end 2019. The study population for linkage to HIV medical care included a total of 7 female adolescents and adults diagnosed with HIV infections in 2019. Of those 7 persons, the youngest one was 15.3 years old. Four (57.1%) were linked to HIV medical care  $\leq 1$  month and 6 (85.7%) were linked  $\leq 3$  months after HIV diagnosis.

The study population for receiving HIV medical care and viral suppression was based on a total of 231 females (based on birth sex)  $\geq 13$  years at year-end 2018 with HIV diagnosed through 2018 and who lived in Hawaii at year-end 2019. This included one female-to-male transgender and another female with additional gender identity. Of those 231 persons included, 150 (64.9%) were in case management, 208 (90.0%) received any HIV medical care, 139 (60.2%) were retained in HIV medical care, and 183 (79.2%) were virally suppressed in 2019.

**Figure 35. Hawaii 2019 HIV care continuum among female adolescents and adults based on birth sex**



**Table 12. Diagnoses of HIV infection through 2019 among female adolescents and adults, by selected characteristics and time period, Hawaii**

Characteristics	2015-2019		Before 2015		Cumulative	
	No.	Percent	No.	Percent	No.	Percent
<b>State total (n=479)</b>	<b>36</b>	<b>7.5</b>	<b>443</b>	<b>94.6</b>	<b>479</b>	<b>100</b>
Stage 3 (AIDS) at HIV diagnosis	5	13.9	144	32.5	149	31.1
Age at diagnosis in years						
13-24	4	11.1	65	14.7	69	14.4
25-34	11	30.6	154	34.8	165	34.5
35-44	10	27.8	133	30.0	143	29.8
45-54	4	11.1	66	14.9	70	14.6
≥55	7	19.4	25	5.6	32	6.7
Race/ethnicity						
Hispanic, all races	1	2.8	31	7.0	32	6.7
American Indian/Alaska Native	0	0	2	0.5	2	0.4
Asian	14	28.9	89	20.1	103	21.5
Black/African American	1	2.8	30	6.8	31	6.5
Native Hawaiian/other Pacific Islander	5	13.9	82	18.5	87	18.2
White	9	25.0	156	35.2	165	34.4
Multiple races	6	16.7	53	12.0	59	12.3
Transmission category						
Heterosexual contact <sup>a</sup>	19	52.8	242	54.6	261	54.5
Injection drug use	9	25.0	123	27.8	132	27.6
Perinatal transmission	1	2.8	0	0	1	0.2
Other <sup>b</sup>	7	19.4	78	17.6	85	17.7
County of residence at HIV diagnosis						
Hawaii County	4	11.1	62	14.0	66	13.8
Honolulu County	25	69.4	313	70.7	338	70.6
Kauai County	2	5.6	28	6.3	30	6.3
Maui County	5	13.9	40	9.0	45	9.4

Notes: the designation “female adolescents and adults” refers to females by birth sex ≥ 13 years old at the time of HIV diagnosis. Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Percent represents column percent except for the row “State total” which represents row percent. Percent total may not add up to 100 because of rounding.

<sup>a</sup> Includes heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

<sup>b</sup> Includes hemophilia, blood transfusion, and risk factors not reported or not identified.

### **III. HIV infection among gay, bisexual, and other men who have sex with men**

#### **1) Diagnosis of HIV infection through 2019**

Gay, bisexual, and other men who have sex with men (MSM) refers to men who have had sexual contact with men (i.e., homosexual contact) and men who have had sexual contact with both men and women (i.e., bisexual contact) (11). MSM is the population most affected by HIV in the United States. Data included in this section are for MSM only. It does not include data for the dual-risk category, MSM & IDU. Data from MSM&IDU will be covered in a later section.

**Table 13** describes diagnoses of HIV infection among MSM by selected patient characteristics and time periods. From the beginning of the epidemic in the early 1980s through 2019, a total of 3,438 MSM were diagnosed with HIV infection in Hawaii. At HIV diagnosis, nearly three quarters (73.6%) resided in Honolulu County, 12.0% resided in Hawaii County, 10.2% resided in Maui County, and 4.2% in Kauai County. Slightly over 40% (40.5%) were diagnosed as stage 3 (AIDS) at HIV diagnosis. Persons in age group 25-34 years (35.0%) constituted the largest percentage, followed by those in age group 35-44 years (33.3%), then those in age group 45-54 years (17.0%). Persons in age group 13-24 years constituted 8.3%. A total of 43 (1.3%) were in age group 13-19 years old. Over half (55.7%) were White, followed by Asian (15.5%), then by NHPI (10.2%).

When comparing data from the most recent 5-year period (2015-2019) to data from previous years (before 2015), percentages of stage 3 (AIDS) at HIV diagnosis decreased (16.2% vs 39.2%, respectively). Percentages of HIV diagnoses decreased among persons in age group 35-44 years (17.6% vs 34.7%, respectively), in age group 45-54 years (14.5 vs 17.2%, respectively), and among Whites (27.6% vs 58.3%, respectively). Nevertheless, a larger proportion of infections was observed among persons in age group 13-24 years (16.9% vs 7.5%, respectively) and in age group 25-34 years (42.8% vs 34.3%, respectively), among Asians (24.1% vs 14.6%, respectively), Blacks/African Americans (8.3% vs 3.4%, respectively), persons of multiple races (12.1% vs 5.4%), and Hispanics (14.8 vs 7.9%, respectively).

**Table 13. Diagnoses of HIV infection through 2019 among gay, bisexual, and other men who have sex with men (MSM), by selected characteristics and time periods, Hawaii**

Characteristics	2015-2019		Before 2015		Cumulative	
	No.	Percent	No.	Percent	No.	Percent
<b>State total (n=3,438)</b>	<b>290</b>	<b>8.4</b>	<b>3,148</b>	<b>91.6</b>	<b>3,438</b>	<b>100</b>
Stage 3 (AIDS) at HIV diagnosis	47	16.2	1,346	39.2	1,393	40.5
Age in years at HIV diagnosis						
13-24	49	16.9	235	7.5	284	8.3
25-34	124	42.8	1,079	34.3	1,203	35.0
35-44	51	17.6	1,094	34.7	1,145	33.3
45-54	42	14.5	543	17.2	585	17.0
≥55	24	8.3	197	6.3	221	6.4
Race/ethnicity						
Hispanic, all races	43	14.8	250	7.9	293	8.5
American Indian/Alaska Native	3	1.0	7	0.2	10	0.3
Asian	70	24.1	461	14.6	531	15.5
Black/African American	24	8.3	107	3.4	131	3.8
Native Hawaiian/other Pacific Islander	35	12.1	315	10.0	3450	10.2
White	80	27.6	1,836	58.3	1,916	55.7
Multiple races	35	12.1	169	5.4	204	5.9
Unknown	0	0	3	0.1	3	0.1
County of residence at HIV diagnosis						
Hawaii County	31	10.7	379	12.1	410	12.0
Honolulu County	226	77.9	2,297	73.2	2,523	73.6
Kauai County	11	3.8	134	4.3	145	4.2
Maui County	22	7.6	326	10.4	348	10.2

Notes: Gay, bisexual, and other men who have sex with men (MSM) refer to men who have had sexual contact with men (i.e., homosexual contact) and men who have had sexual contact with both men and women (i.e., bisexual contact). Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Percent represents column percent except for the row “State total” which represents row percent. Percent total may not add up to 100 because of rounding.

## 2) Prevalent cases at year-end 2019

At year-end 2019, a total of 1,624 MSM were living with diagnosed HIV infection in Hawaii. Persons  $\geq 55$  years old constituted 50.8%, followed by those in age group 45-54 years (22.2%). Persons in age group 13-24 constituted 1.5%. The youngest was 19 years old. Whites constituted 46.8%, followed by Asians (16.7%), then by Hispanics (11.8%). About two thirds (65.2%) resided in Honolulu County, 18.0% in Hawaii County, 13.4% in Maui County and 3.4% in Kauai County.

## 3) 2019 HIV care continuum among MSM

**Figure 22** presents 2019 HIV care continuum among MSM during 2019. The study population for linkage to HIV medical care included a total of 49 MSM with HIV infection diagnosed in 2019. Of those 49 MSM, 43 (87.8%) were linked to HIV medical care  $\leq 1$  month and 46 (93.9%) were linked to HIV medical care  $\leq 3$  months after HIV diagnosis.

The study population for receiving HIV medical care and viral suppression was based on MSM  $\geq 13$  years of age at year-end 2018 with HIV diagnosed through 2018 and who resided in Hawaii at year-end 2019. A total of 1,577 persons were included, of whom 850 (53.9%) were in case management, 1,429 (90.6%) received any HIV medical care, 1,024 (64.9%) were retained in HIV medical care, and 1,323 (83.9%) were virally suppressed during 2019.

#### **IV. HIV infection among persons who inject drugs**

##### **1) Diagnosis of HIV infection through 2019**

**Table 14** describes diagnoses of HIV infection among females who inject drugs (FWID) and males who inject drugs (MWID) by selected patient characteristics and time periods. From the beginning of the epidemic in the early 1980s through December 31, 2019, a total of 132 FWID were diagnosed with HIV infection in Hawaii, of whom 51 (38.6%) were diagnosed as stage 3 (AIDS) at HIV diagnosis. Persons in age group 25-34 years constituted the largest percentage (43.2%), followed by persons in age group 35-44 years (34.1%). The youngest was 19 years old. Whites constituted near half (47.7%), followed by NHPs (16.7%) and multiple races (15.2%). At the time of HIV diagnosis, over two thirds (70.5%) resided in Honolulu County and 17.4% resided in Hawaii County.

A total of 225 MWID were diagnosed with HIV infection in Hawaii as of December 31, 2019, of whom 111 (49.3%) were diagnosed as stage 3 (AIDS) at HIV diagnosis. The largest percentage was among persons in age group 35-44 years (41.3%), followed by those in age group 25-34 years (25.3%), then by those in age group 45-54 years (22.2%). Only one person was younger than 20 years old. Nearly half (48.4%) were White, followed by NHP (14.2%) and Asian (11.1%). At the time of HIV diagnosis, almost three quarters (73.7%) resided in Honolulu County, 14.7% resided in Hawaii County, 7.1% resided in Maui County, and 4.5% in Kauai County.

When comparing data from the most recent 5-year period (2015-2019) to previous years, the percentage of diagnoses among persons younger than 45 years decreased among both groups (FWID: 55.5% vs 85.4%, respectively; MWID: 46.6% vs 72.9%, respectively). Percentages of stage 3 (AIDS) at HIV diagnosis also decreased (FWID: 22.2% vs 39.8%, respectively; MWID: 40.0% vs 50.0%, respectively). During 2015 to 2019, there were no HIV infections among persons younger than 25 years old for either group. Among both groups, the percentages who were White decreased (FWID: 44.4% vs 48.0%; MWID, 33.3% vs 49.5%), while the percentage who were persons of multiple races increased (FWID, 22.2 vs. 14.6%; MWID, 13.3 vs 6.7%).

**Table 14. Diagnoses of HIV infection through 2019 among persons who inject drugs, by selected characteristics and time periods, Hawaii**

Characteristics	2015-2019		Before 2015		Cumulative	
	No.	Percent	No.	Percent	No.	Percent
<b>Female</b>	<b>9</b>	<b>6.8</b>	<b>123</b>	<b>93.2</b>	<b>132</b>	<b>100</b>
Stage 3 (AIDS) at HIV diagnosis	2	22.2	49	39.8	51	38.6
Age in years at HIV diagnosis						
13-24	0	0	8	6.5	8	6.1
25-34	3	33.3	54	43.9	57	43.2
35-44	2	22.2	43	35.0	45	34.1
45-54	2	22.2	12	9.8	14	10.6
≥55	2	22.2	6	4.9	8	6.1
Race/ethnicity						
Hispanic, all races	0	0	12	9.8	12	9.1
Asian	1	11.1	8	6.5	9	6.8
Black/African American	0	0	6	4.9	6	4.6
Native Hawaiian/other Pacific Islander	2	22.2	20	16.3	22	16.7
White	4	44.4	59	48.0	63	47.7
Multiple races	2	22.2	18	14.6	20	15.2
County of residence at HIV diagnosis						
Hawaii County	1	11.1	22	17.9	23	17.4
Honolulu County	7	77.8	86	69.9	93	70.5
Kauai County	1	11.1	9	7.3	10	7.6
Maui County	0	0	6	4.9	6	4.5
<b>Male</b>	<b>15</b>	<b>6.7</b>	<b>210</b>	<b>93.3</b>	<b>225</b>	<b>100</b>
Stage 3 (AIDS) at HIV diagnosis	6	40.0	105	50.0	111	49.3
Age in years at HIV diagnosis						
13-24	0	0	10	4.8	10	4.4
25-34	2	13.3	55	26.2	57	25.3
35-44	5	33.3	88	41.9	93	41.3
45-54	4	26.7	46	21.9	50	22.2
≥55	4	26.7	11	5.2	15	6.7
Race/ethnicity <sup>a</sup>						
Hispanic, all races	0	0	21	10.0	21	9.3
Asian	2	13.3	23	11.0	25	11.1
Black/African American	3	20.0	18	8.6	21	9.3
Native Hawaiian/other Pacific Islander	3	20.0	29	13.8	32	14.2
White	5	33.3	104	49.5	109	48.4
Multiple races	2	13.3	14	6.7	16	7.1
County of residence at HIV diagnosis						
Hawaii County	1	6.7	32	15.3	33	14.7
Honolulu County	13	86.7	152	72.7	165	73.7
Kauai County	1	6.7	9	4.3	10	4.5
Maui County	0	0	16	7.7	16	7.1

Notes: Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Column percent total may not add up to 100 because of rounding.

<sup>a</sup> Excludes one person of unknown race/ethnicity who was diagnosed before 2014.



## **2) Prevalent cases at year-end 2019**

At year-end 2019, there were a total of 55 FWID living with diagnosed HIV infection in Hawaii. Of those 55 FWID, persons  $\geq 55$  years constituted 47.3%, followed by persons among age group 45-54 years (29.1%). The youngest person was 22 years old. Whites constituted 45.5%, followed by multiple races (16.4%), NHPs (14.6%), Hispanics (12.7%), and Asians (10.9%). Among the 55 FWID living with diagnosed HIV infection at year-end 2019, about 70% (69.1%) resided in Honolulu County and 18.2% in Hawaii County.

A total of 78 MWID were living with diagnosed HIV infection in Hawaii at year-end 2019, of whom 70.5% resided in Honolulu County and 16.7 in Hawaii County. Persons  $\geq 55$  years constituted 57.7%, followed by those in age group 45-54 years (23.1%). The youngest age was 24 years old. Whites constituted 46.2%, followed by Asians (16.7%), and NHPs (12.8%).

## **3) 2019 HIV care continuum**

**Figure 23 and 24** present 2019 HIV care continuum among FWID and MWID, respectively. The study population for linkage to HIV medical care included one FWID with HIV infection diagnosed in 2019. No MWID was diagnosed with HIV infection in 2019. The study population for receiving HIV medical care and viral suppression was based on PWID  $\geq 13$  years old at year-end 2018 with HIV diagnosed through 2018 and who resided in Hawaii at year-end 2019. A total of 54 FWID and 78 MWID were included, of whom the youngest person was 22 years old at year-end 2019.

Of the 54 FWID, 72.2% were in case management, 90.7% received any HIV medical care, 55.6% were retained in care, and 77.8% were virally suppressed during 2019. Among the 78 MWID, 62.8% were in case management, 82.1% received any HIV medical care, 53.9% were retained in care, and 76.9% were virally suppressed.

## **V. HIV infection attributed to male-to-male sexual contact & injection drug use (MSM& IDU)**

### **1) Diagnosis of HIV infection through 2019**

**Table 15** describes persons with HIV infection attributed to MSM&IDU by selected patient characteristics and time periods. From the beginning of the epidemic in the early 1980s through 2019, a total of 346 persons were diagnosed with HIV infections attributed to MSM&IDU, of whom 137 (39.6%) were diagnosed as stage 3 (AIDS) at HIV diagnosis. Persons in age group 25-34 years constituted the largest percentage (41.3%), followed by persons in age group 35-44 years (32.7%). Persons in age group 13-24 years constituted 16.8%, with the youngest person at 18 years old. More than half were White (55.2%), followed by Hispanic (9.5%), Asian (9.5%), and persons of multiple races (9.0%). At the time of HIV diagnosis, over two thirds (72.3%) resided in Honolulu County and 11.8% resided in Hawaii County.

When comparing the most recent 5-year period (2015-2019) to previous years, percentages of stage 3 (AIDS) at HIV diagnosis decreased (6.3% vs 41.2%, respectively). The percentage of HIV diagnoses among persons in age group 13-24 years decreased (6.3% vs 17.3%, respectively) while the percentage among persons in age group 25-34 years increased (56.3% vs 40.6%, respectively). The percentage among Whites decreased dramatically (6.3% vs 57.6%, respectively) while percentages among persons of multiple races increased dramatically (43.8% vs 7.3%, respectively). Percentages among Asians (12.5% vs 9.4%, respectively), Hispanics (18.8 vs 9.1%, respectively), and NHPIs (12.5 vs 7.6%) all increased slightly.

**Table 15. Diagnoses of HIV infection through 2019 among persons whose infection were attributed to male-to-male sexual contact & injection drug use (MSM&IDU), by selected characteristics and time periods, Hawaii**

Characteristics	2015-2019		Before 2015		Cumulative	
	No.	Percent	No.	Percent	No.	Percent
<b>State total (n=346)</b>	<b>16</b>	<b>4.6</b>	<b>330</b>	<b>95.4</b>	<b>346</b>	<b>100</b>
Stage 3 (AIDS) at HIV diagnosis	1	6.3	136	41.2	137	39.6
Age in years at HIV diagnosis						
13-24	1	6.2	57	17.3	58	16.8
25-34	9	56.3	134	40.6	143	41.3
35-44	5	31.3	108	32.7	113	32.7
45-54	1	6.3	26	7.9	27	7.8
≥55	0	0	5	1.5	5	1.5
Race/ethnicity						
Hispanic, all races	3	18.8	30	9.1	33	9.5
American Indian/Alaska Native	0	0	4	1.2	4	1.2
Asian	2	12.5	31	9.4	33	9.5
Black/African American	0	0	25	7.6	25	7.2
Native Hawaiian/other Pacific Islander	2	12.5	26	7.9	28	8.1
White	1	6.3	190	57.6	191	55.2
Multiple races	7	43.8	24	7.3	31	9.0
Unknown	1	6.3	0	0	1	0.3
County of residence at HIV diagnosis <sup>a</sup>						
Hawaii County	2	12.5	38	11.8	40	11.8
Honolulu County	12	75.0	233	72.1	245	72.3
Kauai County	1	6.3	14	4.3	15	4.4
Maui County	1	6.3	38	11.8	39	11.5

Notes: MSM&IDU: refers to men who have had sexual contact with men (i.e., homosexual contact) and men who have had sexual contact with both men and women (i.e., bisexual contact) and who inject drugs. Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Percent represents column percent except for the row “State total” which represents row percent. Percent total may not add up to 100 because of rounding.

<sup>a</sup> Excludes a total of 7 cases missing county of residence at HIV diagnosis. All those 7 cases were diagnosed before 2001.

## **2) Prevalent cases at year-end 2019**

At year-end 2019, there were a total of 153 PLWDH whose HIV infections were attributed to MSM&IDU in Hawaii. Persons in age group 45-54 years constituted 34.6%, followed by persons  $\geq 55$  years old (32.7%), then by persons in age group 35-44 years (20.3%). The youngest one was 23 years old at year-end 2019. Whites constituted 49.7%, followed by persons of multiple races (17.7%), Hispanics (11.8%), and Asians (9.2%). Over two thirds (71.2%) resided in Honolulu County, 13.1% in Hawaii County, 10.5% in Maui County, and 5.2% in Kauai County.

## **3) HIV care continuum**

**Figure 25** presents 2019 HIV care continuum among persons whose HIV infections were attributed to MSM & IDU during 2019. The study population for linkage to HIV medical care included one person with HIV infection attributed to MSM&IDU in 2019. Data on linkage to HIV medical care was suppressed as the total number of diagnosed HIV infections among this group was  $<5$ .

The study population for receiving HIV medical care and viral suppression was based on persons  $\geq 13$  years old at year-end 2018 with HIV diagnosed through 2018 and attributed to MSM & IDU, and who resided in Hawaii at year-end 2019. A total of 153 persons were included, of whom 106 (69.3%) were in case management, 142 (92.8%) received any HIV medical care, 99 (64.7%) were retained in HIV medical care, and 125 (81.7%) were virally suppressed during 2019.

## **VI. HIV infection among transgender persons**

In this report, persons were classified as transgender if sex at birth and current gender (the gender with which a person identifies) reported by the person were different (12, 13). Transgender women refer to persons who reported their sex assigned at birth as male but identify their current gender as female. Transgender men refer to persons who reported their sex assigned at birth as female but identify their current gender as male (11-13).

Data on sex at birth and current gender in eHARS are self-reported, collected and reported by the individual's medical provider (11-13). There may be significant inconsistency among medical providers in how they report current gender, and there may be inconsistency in whether an individual shares their gender identity with their medical provider. Data on sex at birth and current gender in eHARS may also come from information on laboratory reports, and such data may reflect sex at birth or gender as listed on legal identification, rather than self-reported gender.

Sex at birth is a required field in eHARS and it was populated for all individual with values of either "Male" or "Female." In contrast, current gender is not a required variable in eHARS. Starting in 2009, jurisdictions had the option to submit information on current gender identity to CDC using eHARS with values of "male, female, male-to-female, female-to-male, and additional gender identity" (11-13). As a result, data on current gender were mostly missing until more recent years, i.e., until after 2009. For example, among the 3,949 persons diagnosed with HIV before 2010, only 403 (10.2%) of records had data on self-reported current gender. Among the 878 persons diagnosed with HIV between 2010 and 2019, 786 (89.5%) of records had data on self-reported current gender.

CDC uses a hierarchical algorithm to assign transmission categories that incorporate an individual's HIV risk factors and sex at birth (12). According to CDC's hierarchical algorithm, MSM would be the assigned transmission category for a transgender woman who had sexual contact with a male (12). In order to provide a more meaningful analysis of reported HIV among transgender individuals, we analyzed transgender cases by combining the transmission categories of MSM and heterosexual contact into one category, "sexual contact" (13). MSM&IDU was referred as 'sexual contact & IDU'.

## **1) Diagnosis of HIV infection among transgender persons**

From the beginning of the epidemic in the early 1980s through 2019, a total of 4,827 Hawaii residents had been diagnosed with HIV infections. Of these, birth sex was included in all records but current gender was included for only 1,189 (24.6%). Of those 1,189 persons for whom data on both birth sex and current gender were reported, 123 (10.3%) were females and 1,066 (89.7%) were males based on birth sex. Among the 123 with female sex at birth, one individual was reported with male current gender, and is therefore categorized here as a transgender man. Among the 1,066 with male sex at birth, 47 (4.4%) individuals were reported with female current gender and are therefore categorized here as transgender women.

Of the 47 transgender women diagnosed with HIV infections, 13 (27.7%) were in age group 13-24 years, 21 (44.7%) in age group 25-34 years, 9 (19.2%) in age group 35-44 years and 4 (8.5%) persons were 55 years or older. The youngest was 14.7 years old at HIV diagnosis. NHPIs accounted for 38.3%, followed by persons of multiple races (27.7%), then by Asians (14.9%) and Hispanics (14.9%). For 38 (80.9%) of the 47 transgender women, HIV transmission was attributed to sexual contact. For the remaining 9 (19.1%), transmission was attributed to sexual contact & IDU. At HIV diagnosis, 43 (91.5%) resided in Honolulu County and the remaining 4 (8.5%) resided in neighbor island counties.

## **2) Transgender persons living with HIV infection at year-end 2019**

At year-end 2019, there were a total of 38 transgender persons living with diagnosed HIV in Hawaii, of whom 36 were transgender women, one was a transgender man, and one was female at birth with “additional gender identity” for current gender. Among the 36 transgender women, 11 (30.6%) were in age group 25-34 years, 10 (27.8%) in age group 35-44 years, and 14 (38.9%) were  $\geq 45$  years of age. The youngest was 22 years of age at year-end 2019. The three most common race/ethnicity groups were NHPI (38.9%), persons of multiple races (19.4%), and Hispanic (16.7%). Twenty-five (69.4%) were diagnosed with HIV infections attributed to sexual contact, 10 (27.8%) attributed to sexual contact & IDU, and one with risk factors not identified or reported.

### 3) 2019 HIV care continuum among transgender persons

Among the 67 HIV infections diagnosed among Hawaii residents in 2019, all (100%) had data on both sex at birth and current gender. A total of four were identified as transgender women. Data on linkage to HIV medical care among those four people was suppressed because the total number of infections in this group was <5.

**Figure 10** presents 2019 HIV care continuum among transgender persons. The population for receipt of any HIV medical care and viral suppression was based on transgender persons  $\geq 13$  years old at year-end 2018, with HIV infections diagnosed through 2018, and resided in Hawaii at year-end 2019. A total of 34 transgender persons were included, of whom 32 were transgender women, one was transgender man, and one was female at birth and additional gender identify for current gender. Of those 34 transgender persons, 24 (70.6%) were in case management, 32 (94.1%) were in care, 22 (64.7%) were retained in care, and 25 (73.5%) were virally suppressed in 2019 (**Figure 10**).

## **VII. HIV infection in prison**

In the state of Hawaii, the Department of Public Safety oversees four jails and four prisons. The four jails and their addresses are:

- (1) Hawaii Community Correctional Center: 60 Punahale Street, Hilo, HI 96720. HCCC's reintegration program, Hale Nani, is located at Panaewa Street.
- (2) Kauai Community Correctional Center: 3-5351 Kuhio Highway, Lihue, HI 96766;
- (3) Maui Community Correctional Center: 600 Waiale Drive, Wailuku, HI 96793
- (4) Oahu Community Correctional Center: 2199 Kamehameha Highway, Honolulu, HI 96819

The four prisons and their addresses are:

- (1) Halawa Correctional Facility, 99-902 Moanalua Road, Aiea, HI 96701; Some inmates from HCF were housed in Saguaro Correction Center located at 1250 East Arica Road, Eloy, AZ 85131;
- (2) Waiawa Correctional Facility: 94-560 Kamehameha Highway, Waipahu, HI 96797;
- (3) Women's Community Correctional Center: 42-477 Kalaniana'ole Highway, Kailua, HI 96734;
- (4) Kulani Correctional Facility: P.O. Box 4459 Hilo, HI 96720

The only federal prison, the Federal Detention Center is located at 351 Elliott Street, Honolulu, HI 96819.

There is no data field in the eHARS data system that directly indicates whether a person is in the custody of state and federal corrections authorities at a particular time. There is also no data field in eHARS that directly indicates, at the time of HIV diagnosis, whether a person was in custody of state and federal correctional authorities. For this report, to determine whether a person was in the custody of state and federal correctional authorities at HIV/AIDS diagnosis, we used data fields including name and address of the facility at HIV/AIDS diagnosis and the person's residential address at HIV/AIDS diagnosis and assumed that facility or residential address matching the name and address of any of the jails and prisons in Hawaii indicated that the individual was in the custody of state or federal correctional authorities.



To determine whether a person living with diagnosed HIV infection (PLWDH) was in custody of state and federal correctional authorities at the end of 2019, we use the last known address of that person in 2019. Indicators of the HIV care continuum, including whether a person had received any HIV medical care (or in care), whether a person was retained in HIV medical care, or whether a person was virally suppressed during 2019, were based on documented CD4 and viral load testing data, in eHARS during 2019.

### **1) Diagnosed HIV infection among persons in custody**

From the beginning of the epidemic in the early 1980s through 2019, a total of 29 persons were diagnosed with HIV infection while in custody of state and federal correctional authorities in Hawaii. Of those 29 persons, 2 were diagnosed in the 1980s, 5 diagnosed between 1990 and 1999, 11 diagnosed between 2000 to 2009, and 11 were diagnosed between 2010 and 2019. At the time of HIV/AIDS diagnosis, a total of 14 (48.3%) were in custody in Oahu Community Correctional Center, 7 (24.1%) in the Federal Detention Center in Honolulu, and 5 (17.2%) in Halawa Correctional Center.

At the time of HIV diagnosis, 6 (20.7%) were diagnosed as stage 3 (AIDS). Males accounted for 89.7% and females accounted for 10.3%. Persons in age group 25-34 years accounted for 37.9%, followed by those in age group 35-44 years (27.6%), then by those  $\geq 45$  years of age (20.7%). Persons in age group 13-24 years accounted for 13.8%.

Whites accounted for 37.9%, followed by persons of multiple races (24.2%), Asians (17.2%), and NHPs (10.3%). MSM was the dominant transmission category (41.4%), followed by IDU (34.4%), then by MSM & IDU (17.2%).

### **2) Persons living with diagnosed HIV/AIDS while in custody at year-end 2019**

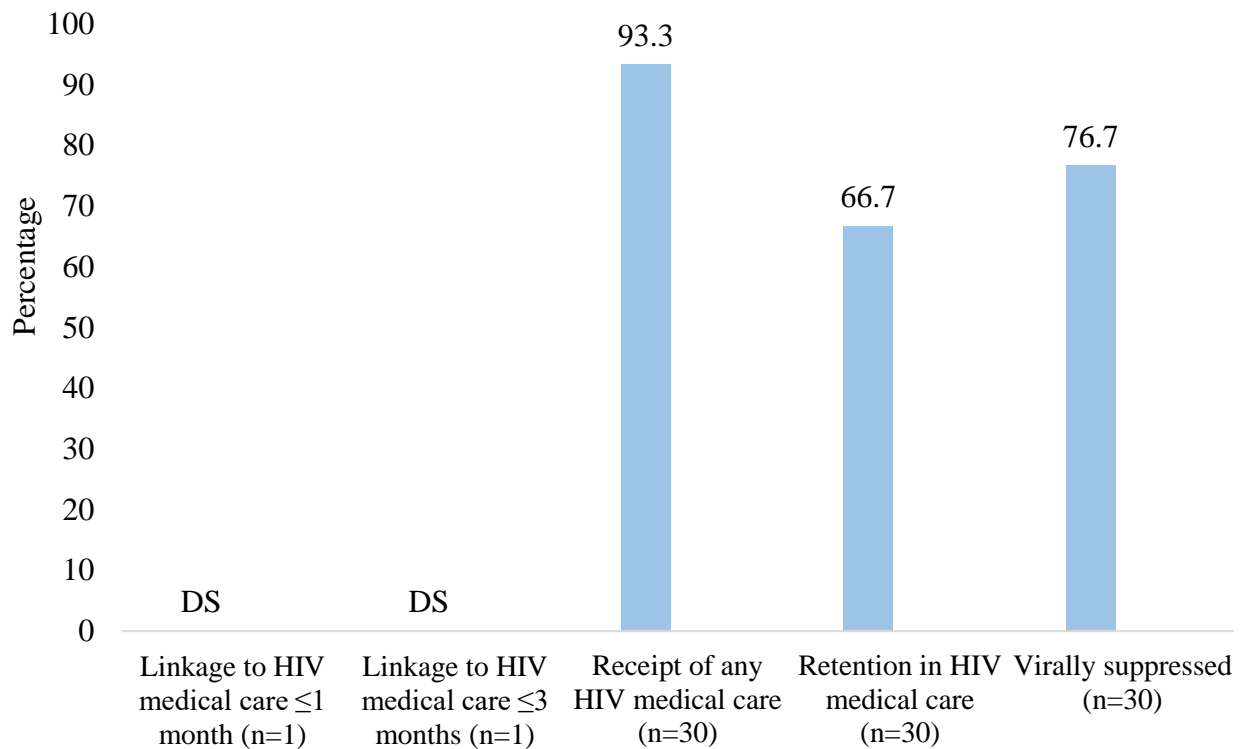
At year-end 2019, a total of 31 persons living with diagnosed HIV infection were in the custody of state and federal correctional authorities in Hawaii. Of those 31 persons, 27 (87.1%) were males, 17 (54.8%) were younger than 35 years at year-end 2019, with the youngest being 27 years of age. Whites and NHPs each accounted for 29.0%, followed by persons of multiple races (16.1%). MSM and IDU were the two dominant risk factors (MSM: n=13, 41.9%; IDU: n=10, 32.2%), followed by MSM & IDU (n=6, 19.4%).

### 3) 2019 HIV Care Continuum among PLWDH while in custody at year-end 2019

In 2019, there was one person diagnosed with HIV infection while in the custody of state and federal correctional authority. Data on linkage to HIV medical care was suppressed. A total of 30 persons with HIV diagnosed through 2018 and in state and federal custody during 2019 constituted the study population for receipt of HIV medical care and viral suppression. Of those 30 persons, 18 (60.0%) were in case management, 28 (93.3%) received any HIV medical care, 20 (66.7%) were retained in HIV medical care, and 23 (76.7%) were virally suppressed in 2019.

**Figure 36. Hawaii 2019 HIV care continuum among persons in custody of state and federal correctional facilities**

\*DS: data is suppressed if the total count is <5



## Limitations

Several limitations need to be addressed in the development of this epidemiologic profile. First, despite extensive investigation of a person's most recent known address at year-end 2019, there remained 138 individuals whose last known Hawaii address was  $\geq 10$  years old and who have not been in care for  $\geq 10$  years as of June 30<sup>th</sup>, 2021. Those 138 individuals were excluded from further analysis. This might have resulted in underestimating prevalence cases and prevalence rates, but overestimating indicators such as receipt of any HIV medical care, retention in care and viral suppression.

Nevertheless, the bias should be minimal for the following reasons. First, these 138 persons were diagnosed in 2010 or earlier, and 77 (55.8%) were diagnosed before 2000, which was almost 20 years ago. Secondly, 72 (52.2%) of those 138 individuals were diagnosed with stage 3 (AIDS) prior to 2009. Based on the natural progression of untreated HIV infection, if an individual had not been in care for  $\geq 10$  years since HIV diagnosis, the odds of survival were likely low (8). It is therefore reasonable to assume that those individuals were no longer living in Hawaii.

Due to missing data on self-reported current gender, estimates on prevalent cases of transgender persons living with HIV infection would be underestimated (10). As data collection on current gender improves each year, future data may provide a more accurate and comprehensive description of HIV infection among this population. HIV data on persons in the custody of state or federal correctional authorities were foremost an estimate since we did not have access to data from state or federal correctional authorities and eHARS does not have data fields that directly indicate whether a person is in custody of state and federal correctional authorities at the time of HIV diagnosis or at a particular time of measurement.

Lastly, results based on analysis of a dataset exported at a point in time are limited to the information available at the time the data was exported. The HIV surveillance system is dynamic, receiving updates whenever new information is available through ongoing national deduplication and data cleaning efforts. Hence, data reported from datasets exported at different times could result in slight differences in selected outcomes, such as number of new diagnoses in the most recent years.

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