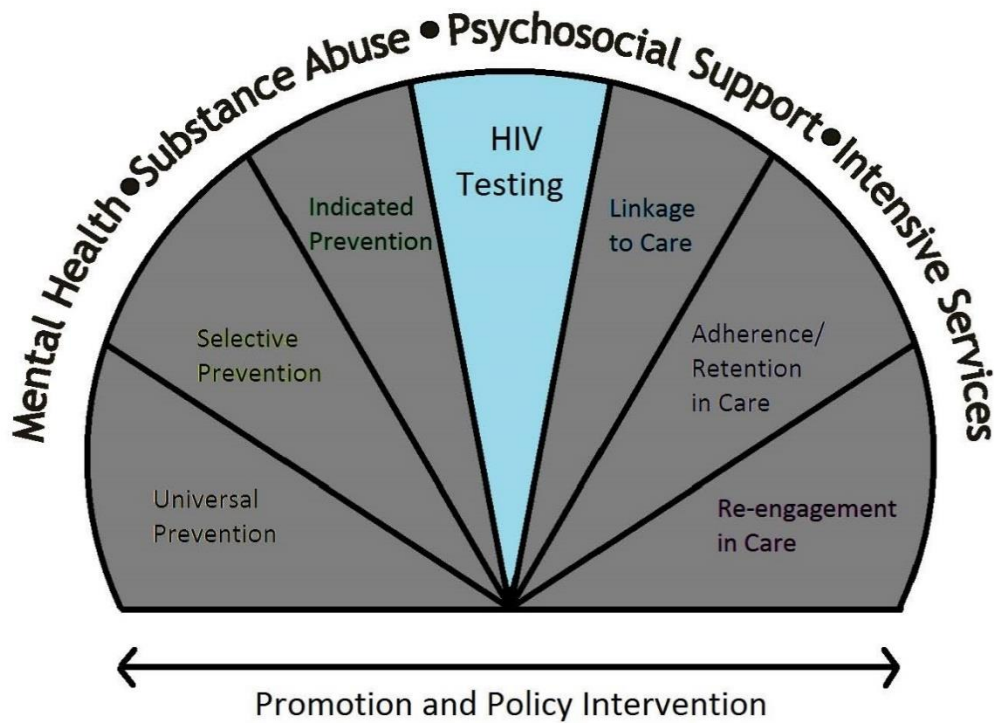


Chapter 4 - HIV Testing

Overview



HIV testing is at the center of the Colorado Model for HIV Prevention and Care. For people who are HIV negative, HIV testing provides an opportunity to be linked to evidence-based biomedical and psychosocial interventions that prevent future HIV infection. For people who are living with HIV, testing provides the opportunity to link to early HIV care, which greatly increases the likelihood of client achieving viral suppression and maintaining high quality of life while also achieving HIV prevention goals.

NHAS Goal 1: Reduce new HIV infections

Objective: HIV testing will be a gateway into evidence-based prevention for people testing HIV negative, which will reduce Colorado’s new HIV infections by _____% by December 31, 2021.

Strategy 1: Expand targeted HIV testing for populations at higher-than-average risk of HIV infection, including evidence-based prevention options for people testing HIV negative.

Activities/Interventions

1-1-a Provide at least 38,962 tests per year in venues that are accessible and acceptable to people at moderate to high risk of HIV infection. Prioritize people who are unlikely to seek HIV testing through the general health care system.

Responsible Parties: ICP Program, funded HIV testing contractors.

Timeline: Q1 2017 – Q4 2021

1-1-b Maintain Disease Intervention Specialist statewide voluntary HIV testing of high-risk partners and others engaged in high risk behavior as part of CDPHE Partner Services work.

Responsible Parties: CBP Program, DIS

Timeline: Q1 2017 – Q4 2021

1-1-c Ensure that targeted HIV testing includes screening and active referral for evidence-based prevention for people testing HIV negative, emphasizing PrEP, nPEP, mental health counseling, substance use services, and critical events assistance.

Responsible Parties: Contract Monitoring Unit, DIS supervisors, funded HIV testing contractors, Capacity Building Unit.

Timeline: Q1 2017 – Q4 2021

Target populations

Targets by Risk Group, Number of Annual HIV tests

MSM	27,690
PWID	5,572
Heterosexuals	5,700

Targets by Geography, Number of Annual HIV tests

Denver TGA	28,658
Rest of Colorado	10,304

Strategy 2: Expand HIV testing in the general health care system, including evidence-based prevention options for people testing HIV negative, which will reduce Colorado’s new HIV infections by _____% by December 31, 2021.

Activities/Interventions

1-2-a Promote HIV testing as part of routine medical care, as advised by the U.S. Preventive Services Task Force. This includes baseline HIV testing of every adolescent and adult and subsequent re-testing based on level of HIV risk.

Responsible Parties: Capacity Building Unit

Timeline: Q1 2017 – Q4 2021

1-2-b Incentivize the general health care system to provide at least 58,444 HIV tests per year for people at moderate to high risk of HIV infection.

Responsible Parties: ICP Program, clinics funded by CDPHE to provide HIV testing, other medical providers, Capacity Building Unit

Timeline: Q1 2017 – Q4 2021

1-2-c Promote screening and active referral for evidence-based prevention as part of general health care delivery, emphasizing PrEP, nPEP, mental health counseling, substance use services, and critical events assistance.

Responsible Parties: ICP Program, clinics funded by CDPHE to provide HIV testing, other medical providers, Capacity Building Unit

Timeline: Q1 2017 – Q4 2021

Target populations

Targets by Risk Group, Number of Annual HIV tests

MSM	41,536
PWID	8,358
Heterosexuals	8,550

Targets by Geography, Number of Annual HIV tests

Denver TGA	42,987
Rest of Colorado	15,456

NHAS Goal 2: Increase access to care and improve health outcomes for people living with HIV.

Objective: Late HIV/AIDS diagnosis will be reduced overall by 10% by December 31, 2018 and 15% by December 31, 2021.

Strategy 1: Encourage HIV testing at the earliest practical stage in disease progression.

Activities/Interventions

2-1-a Utilize public health reports of HIV and STIs to identify medical practices where the rate of late HIV/AIDS diagnoses exceeds the statewide average of 32%. Incentivize these “priority medical practices” to make HIV testing more of a routine part of medical care.

Responsible Parties: Surveillance Program, ICP Program, clinics funded by CDPHE to provide HIV testing, Capacity Building Unit.

Timeline: Q1 2017 – Q4 2021

2-1-b In geographic areas of the state where late HIV/AIDS diagnosis exceeds the statewide average of 32%, expand targeted HIV testing in nonclinical settings by at least 10%.

Responsible Parties: ICP Program, funded HIV testing contractors.

Timeline: Q1 2017 – Q4 2021

Target populations

Targets by Risk Group, Percentage of Late HIV Diagnoses – Colorado (2011-2015)

	Baseline	Dec 2018 Target	Dec 2021 Target
MSM	26.8%	27.0%	25.5%
MSM & IDU	17.6%		
PWID (Male and Female)	39.0%	36.0%	34.0%
Heterosexuals (Male and Female)	29.9%	29.7%	28.1%

Targets by Geography, Percentage of Late HIV Diagnoses (2011-2015)

	Baseline	Dec 2018 Target	Dec 2021 Target
Denver TGA	28%	xx%	xx%
Other Urban Counties	31%	xx%	xx%
Rest of Colorado Counties	46%		
All of Colorado	30%		

Note: percentages of late HIV diagnoses are based on the 5 year average of newly diagnosed HIV cases from 2011 – 2015.

Strategy 2: Minimize any delay between date of initial diagnosis and linkage to care.

Activities/Interventions

2-2-a Ensure that all CDPHE-funded testing providers either directly provide linkage to care services or actively refer newly diagnosed clients to linkage services, resulting in a linkage success rate of at least 95% within 90 days of initial diagnosis.

Responsible Parties: ICP Program, funded HIV testing contractors.

Timeline: Q1 2017 – Q4 2021

2-2-b DIS will assess linkage to care for 100% of the newly diagnosed clients they get assigned. When linkage to care has not been initiated, DIS will actively refer clients to linkage to care programs at CDPHE or community partners.

Responsible Parties: CBP Program, DIS.

Timeline: Q1 2017 – Q4 2021

Target populations

Targets by Risk Group, Percentage linked to care within 90 Days of Initial Diagnosis, (2011-2015)

	Baseline	Target
MSM, including MSM /IDU (N=1300)	84%	95%
PWID (N=62)	94%	95%
Heterosexuals (N=167)	77%	95%

Targets by geography, Percentage linked to care within 90 Days of Initial Diagnosis (2011-2015)

	Baseline	Target
All of Colorado (N=1,832)	84%	95%
Denver TGA (N=1,361)	86%	95%
Other Urban Counties (N=330)	76%	95%
Rest of Colorado (N=141)	79%	95%

NHAS Goal 3: Reduce HIV-related disparities and health inequities

Objective: HIV Testing efforts will be targeted to persons at high risk of HIV acquisition. By December 31, 2017, resources will be proportional to the percentage of disease burden by community.

Strategy 1: Ensure that targeted HIV testing reaches populations experiencing disparities in HIV, particularly disparities associated with race/ethnicity and age.

Activities/Interventions

3-1-a Using surveillance data, determine overall disease burden and how this disease burden varies by race/ethnicity and age (see section on data).

Responsible Parties: Surveillance Program.

Timeline: Q1 2017 – Q4 2021

3-1-b Monitor HIV testing contracts to ensure that populations within each service area (stratified by race/ethnicity and age) are receiving HIV testing services at least proportional to their representation in the epidemic. Where this is not being achieved, incentivize contractors to improve the targeting of HIV testing.

Responsible Parties: ICP Program, funded HIV testing contractors.

Timeline: Q1 2017 – Q4 2021

Target populations

Targets by Race/Ethnicity, Number of HIV tests

White, not Hispanic	19,871
Black, not Hispanic	7,013
Hispanic (All Races)	10,520
Asian/Pacific Islander	779
Amer. Indian/Alaska Native	390
Multiple Race	390

Targets by Age, Number of HIV tests

< 13	650
13-24	7,341
25-34*	13,141
35-44*	9,103
45-54	6,383
55+	2,344
*25-29 years	
*30-34 years	
*35-39 years	
*40-44 years	

Strategy 2: Ensure that HIV testing in clinical settings reaches populations experiencing disparities in HIV, particularly disparities associated with race/ethnicity and age.

Activities/Interventions

3-2-a Using surveillance data, identify medical practices located in geographic areas where there is evidence of significant race/ethnicity and age disparities. Of these practices, identify those that are diagnosing and treating the greatest number of HIV and other STIs.

Responsible Parties: ICP Program, funded HIV testing contractors.

Timeline: Q1 2017 – Q4 2021

3-2-b Offer these “priority practices” a combination of capacity building and financial assistance to expand their HIV testing efforts to become more routine.

Responsible Parties: ICP Program, Capacity Building Unit.

Timeline: Q1 2017 – Q4 2021

Target populations

Targets by Race/Ethnicity, Number of HIV tests

White, not Hispanic	29,806
Black, not Hispanic	10,520
Hispanic (All Races)	15,780
Asian/Pacific Islander	1,169
Amer. Indian/Alaska Native	584
Multiple Race	584

Targets by Age, Number of HIV tests

< 13	975
13-24	11,011
25-34*	19,712
35-44*	13,655
45-54	9,574
55+	3,516
*25-29 years	
*30-34 years	
*35-39 years	
*40-44 years	

Strategy 3: Reduce late HIV diagnoses across all race/ethnicities and age groups, by 10% by December 31, 2018 and by 15% by December 31, 2021.

Activities/Interventions

3-3-a Using surveillance data, identify geographic areas of the state where late HIV diagnoses are the highest in terms of race/ethnicity and age disparities. Prioritize these geographic areas for funding and other assistance.

Responsible Parties: Surveillance Program.

Timeline: Q1 2017 – Q4 2021

3-3-b Incentivize HIV testing providers (both targeted and medical) to provide specialized services to lower the rate of late HIV diagnoses associated with race/ethnicity and age in the targeted geographic areas. Such specialized services include, but are not limited to, periodic targeted testing events, collaboration with community organizations to host satellite testing sites, marketing, and outreach.

Responsible Parties: ICP Program, funded HIV testing contractors.

Timeline: Q1 2017 – Q4 2021

Target populations

Targets by Race/Ethnicity, Percentage of Late HIV Diagnoses (2011-2015)

	Baseline	Dec 2018 Target	Dec 2021 Target
White, not Hispanic	27.5%	27.9%	26.4%
Black, not Hispanic	26.3%	25.2%	23.8%
Hispanic (All Races)	36.9%	34.2%	32.3%
Asian/Pacific Islander	29.0%	26.1%	24.7%
Amer. Indian/Alaska Native	20.0%	22.5%	21.3%
Multiple Race	38.1%	29.7%	28.1%

Targets by Age, Percentage of Late HIV Diagnoses (2011-2015)

	Baseline	Dec 2018 Target	Dec 2021 Target
Under 10 years	5.0%	18.9%	17.9%
10-14 years	0.0%	9.9%	9.4%
15-19 years	4.8%	18.0%	17.0%
20-24 years	13.2%	28.8%	27.2%
24-29 years	19.8%	38.7%	36.6%
30-34 years	26.3%	44.1%	41.7%
35-39 years	38.3%	50.4%	47.6%
40-44 years	41.5%	60.3%	57.0%
45-49 years	41.6%		
50-54 years	48.4%		
55-59 years	40.9%		
60-64 years	62.1%		
65 years and older	66.7%		

Strategy 4: Increase the linkage to care rate within 90 days of diagnosis to 95% across all race/ethnicities and age groups.

Activities/Interventions

3-4-a Using surveillance data, identify geographic areas of the state where linkage to care rates are the lowest in terms of race/ethnicity and age disparities. Prioritize these geographic areas for funding and other assistance.

Responsible Parties: Surveillance Program.

Timeline: Q1 2017 – Q4 2021

3-4-b Incentivize HIV testing providers to collaborate with linkage to care providers to address race/ethnicity and age disparities.

Responsible Parties: ICP Program, funded HIV linkage to care contractors, CDPHE linkage to care staff.

Timeline: Q1 2017 – Q4 2021

Target populations

Targets by Race/Ethnicity, Percentage linked to care within 90 Days of Initial Diagnosis (Due to small cell size the race categories of Asian, Pacific Islander, Native American, Alaska Native and Multi-Racial were not analyzed).

	Baseline	Target
White, not Hispanic (N=916)	84%	95%
Black, not Hispanic (N=312)	75%	95%
Hispanic (All Races) (N=537)	88%	95%

Targets by Age, Percentage linked to care within 90 Days of Initial Diagnosis (Due to Small Cell Size, some age groups were collapsed).

	Baseline	Target
Under 20 years (N=67)	68.7%	95%
20-24 years (N=287)	77.0%	95%
24-29 years (N=328)	82.3%	95%
30-34 years (N=300)	84.1%	95%
35-39 years (N=227)	88.4%	95%
40-44 years (N=212)	91.5%	95%
45-49 years (N=185)	92.4%	95%
50-54 years (N=126)	97.6%	95%
55 years and older (N=100)	97.6%	95%

Resources

Goal/Activity	CHAPP	CDC 1201	CDC 1506	HRSA	Rebate	Tobacco MSA	Health Coverage	Minimal or no identified funding source
Goal 1								
1-1-a Provide targeted HIV testing	X	X		X	X	X		
1-1-b Maintain HIV testing by DIS		X		X	X	X		
1-1-c Ensure prevention screening and referrals in targeted HIV testing	X	X	X	X	X	X		
1-2-a Promote HIV testing as routine medical care	X	X		X	X	X	X	
1-2-b Incentivize medical HIV testing for people at moderate to high risk	X	X		X	X	X	X	
1-2-c Promote prevention screening and referrals in general health care delivery	X	X	X	X	X	X	X	
Goal 2								
2-1-a Incentivize medical practices with high late HIV diagnoses rates	X	X		X	X	X	X	
2-1-b Target geographic areas with high late HIV diagnoses rates	X	X		X	X	X		
2-2-a Improve linkage to care at CDPHE funded HIV testing providers	X	X		X	X	X		
2-2-b Utilize DIS for linkage to HIV care		X		X	X	X		
Goal 3								
3-1-a Determine how disease burden varies by race/ethnicity and age		X		X	X	X		
3-1-b Ensure services are proportional to the epidemic	X	X		X	X	X		
3-2-a Identify medical practices where there are significant disparities		X		X	X	X		
3-2-b Incentivize these priority practices to address disparities	X	X		X	X	X		
3-3-a Identify geographic areas where there are race/ethnicity and age disparities in late HIV diagnosis rates		X		X	X	X		
3-3-b Incentivize HIV testing providers to address race/ethnicity and age late HIV diagnosis disparities with specialized services	X	X		X	X	X	X	
3-4-a Identify geographic areas where there are race/ethnicity and age disparities in linkage to care rates		X		X	X	X		
3-4-b Incentivize HIV testing providers to address race/ethnicity and age linkage to care disparities	X	X		X	X	X	X	

Metrics needed to monitor the progress of HIV testing

Goal 1

- Metric 1.1 Number of targeted HIV tests overall
- Metric 1.2 Number of HIV tests delivered in healthcare settings overall
- Metric 1.3 Number of clients screened and referred to additional services overall

Goal 2

- Metric 2.1 HIV positivity rate
- Metric 2.2 Rate of late HIV diagnoses
- Metric 2.3 Number of days between initial HIV diagnosis and evidence of initial HIV care
- Metric 2.4 Percentage of patients who attended a routine HIV medical care visit within 3 months of HIV diagnosis.

Goal 3

- Metric 3.1 Number of Targeted HIV tests, stratified by race/ethnicity and age
- Metric 3.2 Number of HIV tests delivered in healthcare settings, stratified by race/ethnicity and age
- Metric 3.3 Rate of late HIV diagnoses, stratified by race/ethnicity and age
- Metric 3.4 Number of days between initial HIV diagnosis and evidence of initial HIV care, stratified by race/ethnicity and age

Challenges or barriers related to; reducing new HIV infections, increasing access to care and improving health outcomes for people living with HIV, and reducing HIV-related disparities and health inequities.

Early identification of HIV infection faces several challenges and gaps. With the implementation of the Affordable Care Act and the Colorado Medicaid expansion in 2014, an unprecedented opportunity became real to maximize the impact of opt out HIV screening for everyone ages 13 to 64 in healthcare settings. However, cooperation of health care settings to test priority populations needs further development. In addition, improvements in data sharing among and between CDPHE, local county health departments, and HIV testing providers would improve efforts to assess HIV screening in the priority populations.

Stigma is strongly associated with delayed HIV testing. A 2013 study examined the effect of anticipated stigma on HIV testing behavior, with anticipated stigma defined as “the expectation of rejection or discrimination against by others in the event of seroconversion.”¹ Anticipated stigma was negatively associated with risk perception; every standard deviation increase in anticipated HIV stigma was associated with a 54% decrease in the odds of having had an HIV test in the previous 6 months (AOR = 0.54, 95% CI: 0.40, 0.73, p < 0.001).

¹ Sarit A. Golub, PhD, MPH,^{1,2} and Kristi E. Gamarel, EdM. The Impact of Anticipated HIV Stigma on Delays in HIV Testing Behaviors: Findings from a Community-Based Sample of Men Who Have Sex with Men and Transgender Women in Nerk City. AIDS PATIENT CARE and STDs Volume 27, Number 11, 2013

People who are incarcerated face special challenges regarding HIV testing, and this is particularly true in city and county jails. There are multiple reasons for this situation. CDC cites the following reasons, which are consistent with experiences of those who serve incarcerated and recently incarcerated Coloradans:

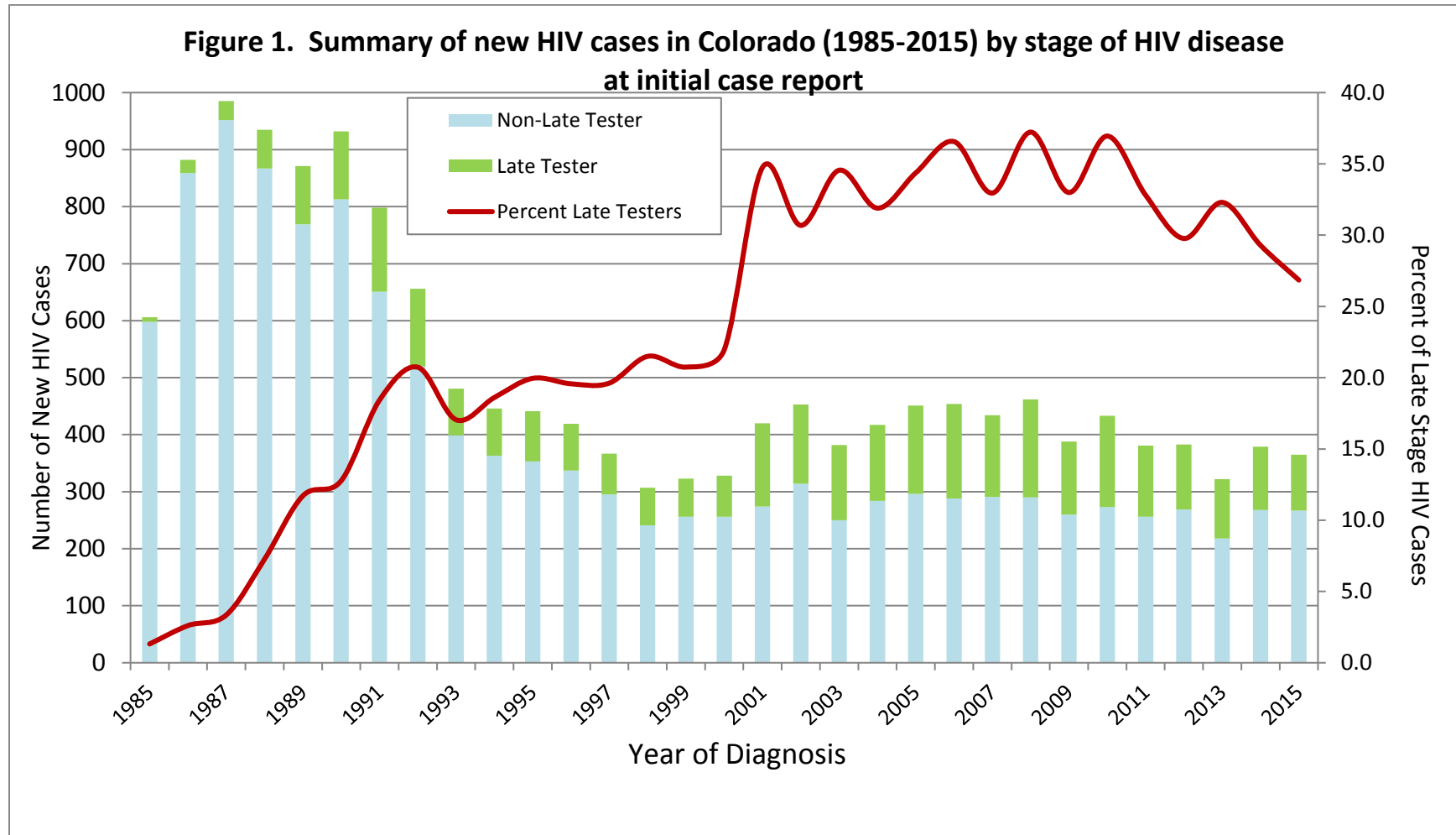
- Lack of resources for HIV testing and treatment in correctional facilities. Prison and jail administrators must weigh the costs of HIV testing and treatment against other needs, and some correctional systems may not provide such services.
- Rapid turnover among jail populations. While most HIV programs in correctional facilities are in prisons, most incarcerated people are detained in jails. Nine out of ten jail inmates are released in under 72 hours; the shorter the stay in the jail, the less likely the jail will find time to offer an HIV test, administer the test, deliver results, and (when necessary) arrange for HIV care.
- Inmate concerns about privacy and fear of stigma. Many inmates do not disclose their high-risk behaviors, such as anal sex or injection drug use, because they fear being stigmatized.² Concerns cited include unprofessional correctional staff, lack of proper record keeping, unsecured medical records, inadequate staff training, inconsistent disciplining of staff for stigmatizing behavior or confidentiality breaches, and disregard for privacy protections such as HIPAA.

In state prisons, people are routinely tested for HIV at admission and are linked to HIV care at that time. However, ongoing HIV testing in prison, including HIV testing upon release, is not routine. This is partially driven by concerns about legal liability when a person becomes HIV infected while in state custody. Late diagnoses, delayed access to HIV care, and continued HIV transmission are the direct result.

As shown in Figures 1 through 4, there has been steady progress made in lowering the rate of late diagnoses overall in Colorado. However, there are considerable variations among various groups within Colorado, both geographically and by other demographics (risk group, age, and gender).

² <http://www.cdc.gov/hiv/group/correctional.html>

Figures 1 - 4 summarize the new HIV cases from 1985 through 2015, showing stage of diagnosis at initial case report.



Summary of HIV Cases in Colorado (2005-2015) by stage of HIV Disease with in 12 Months of Diagnosis, Gender and Major Risk Categories (N= 4,440)

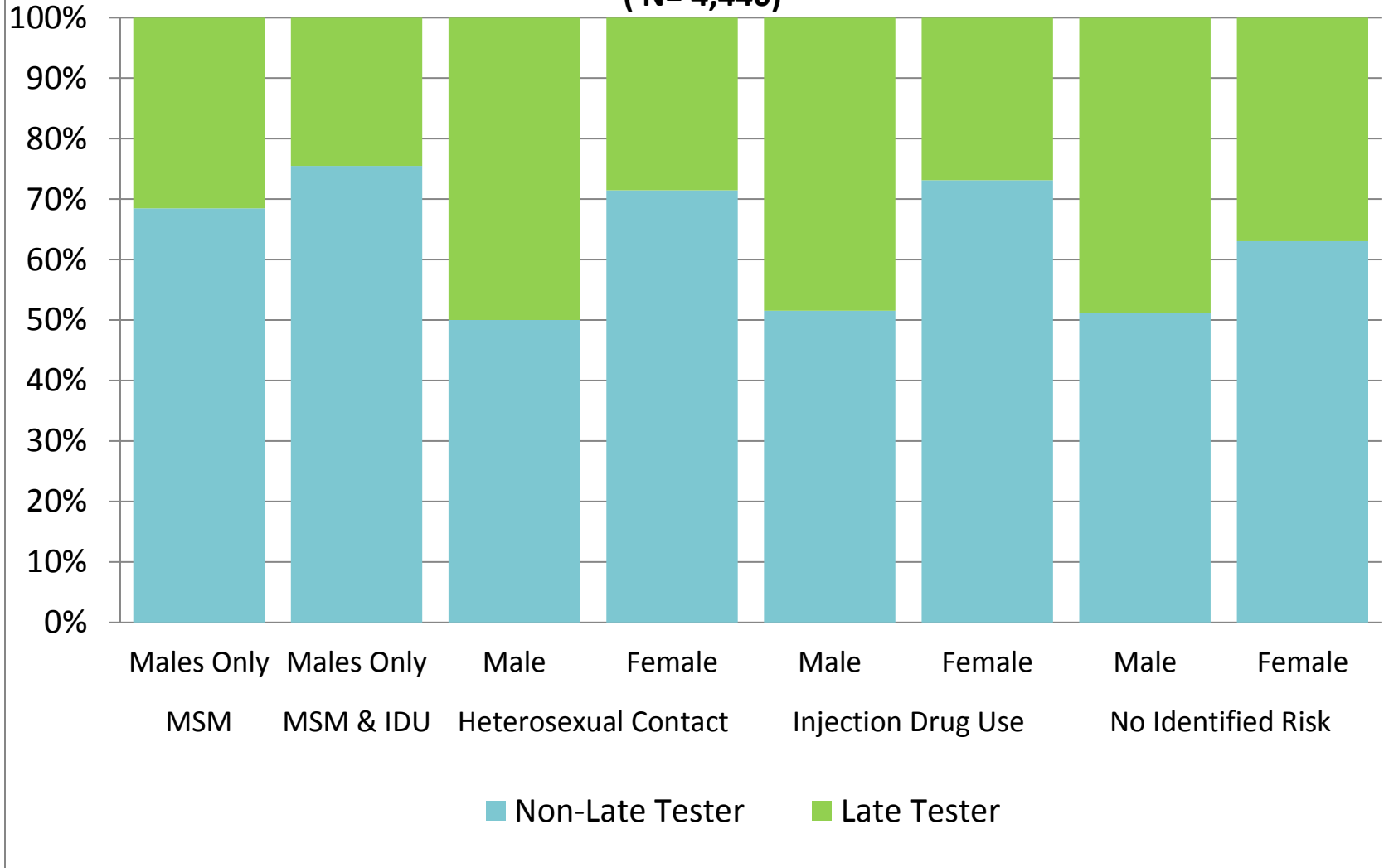


Figure 3. Summary of HIV Cases in Colorado (2005-2015) by Race/Ethnicity, Gender and Stage of HIV Disease within 12 months of Diagnosis (N=4,440)

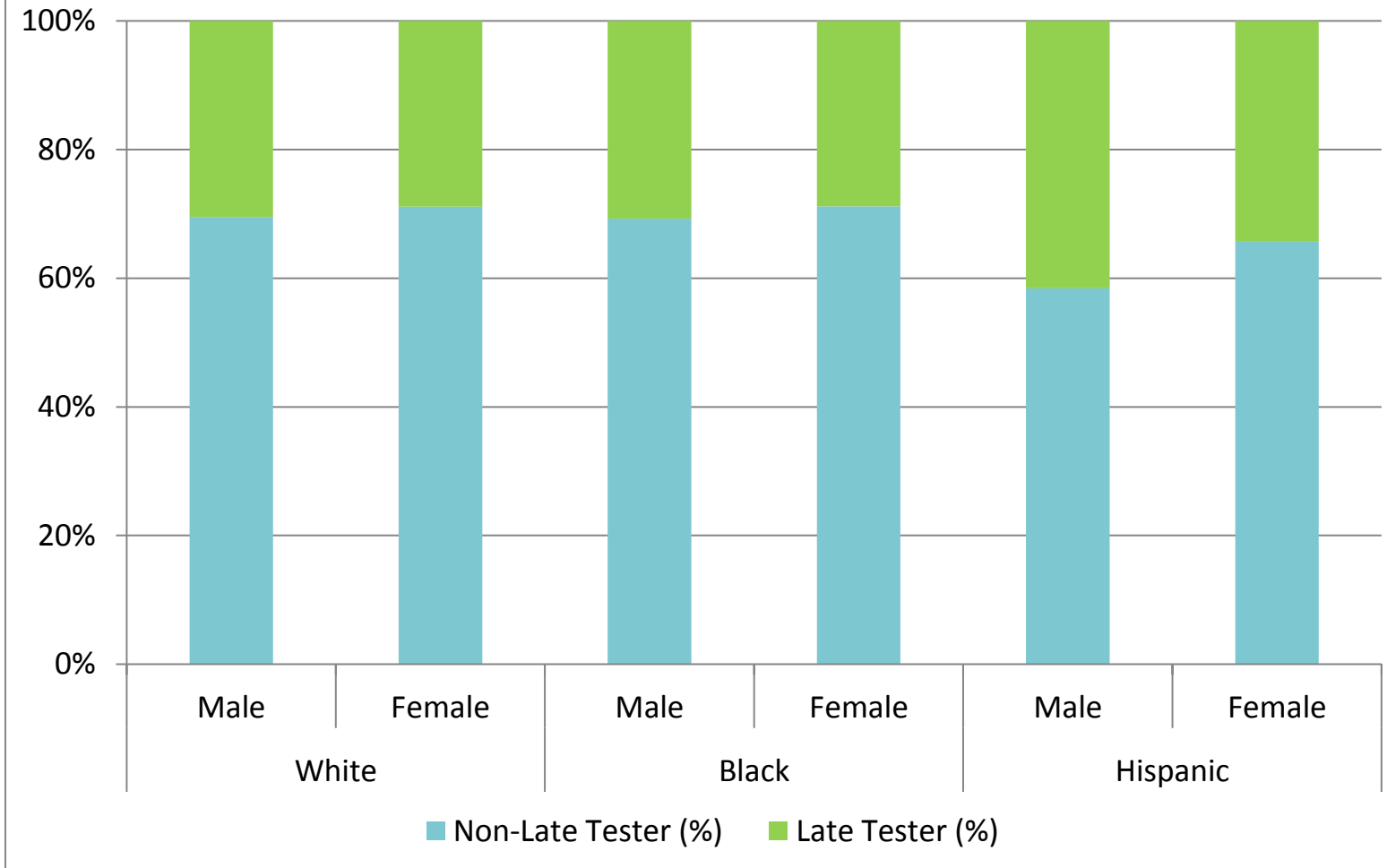
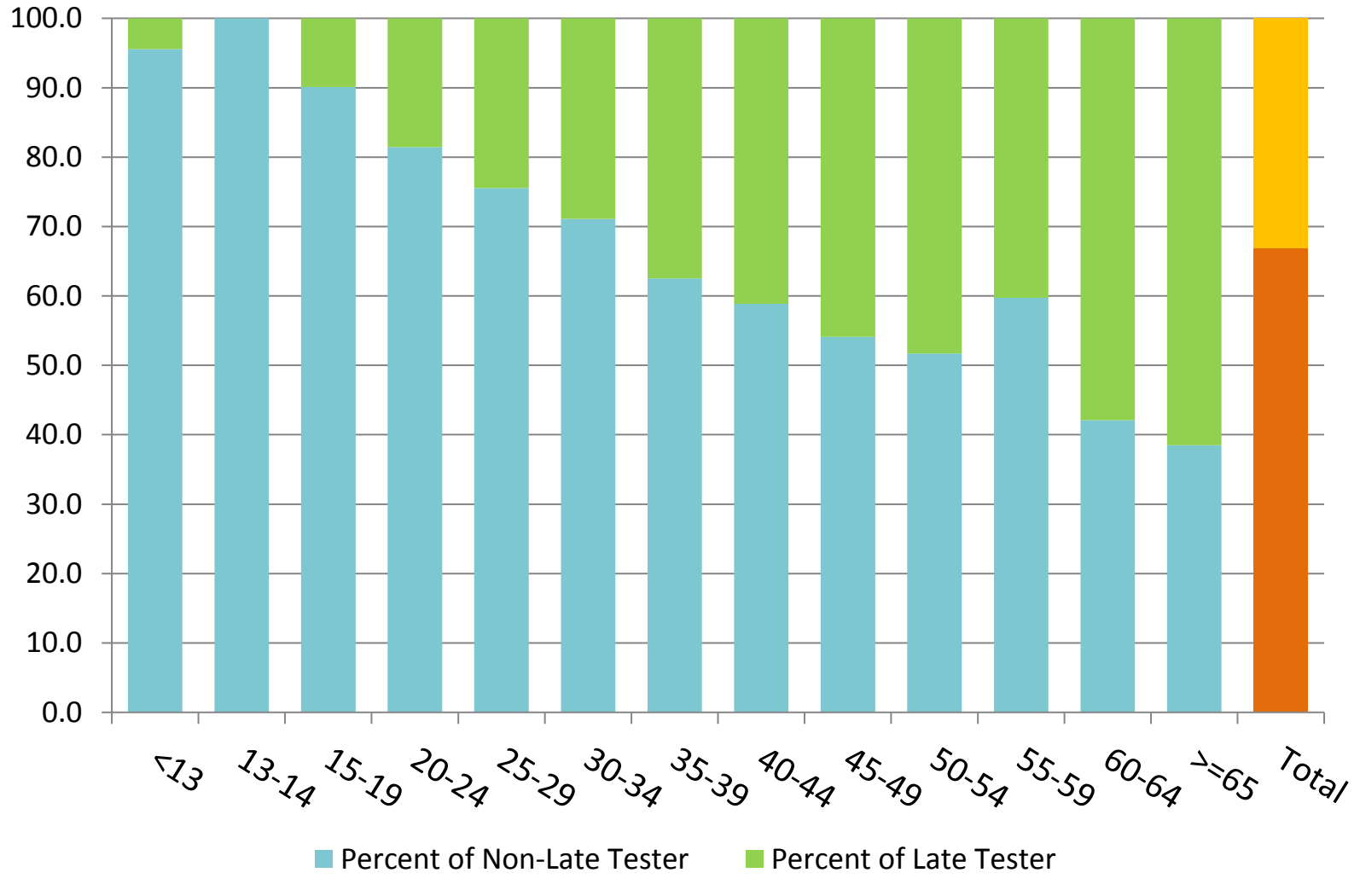


Figure 4. Summary of HIV Cases in Colorado (2005-2015) by age group at diagnosis and stage of HIV disease at 12 months of initial case report (N= 4,440)



Data used to determine the goals and metrics

Population Size Estimates

Estimating the sizes of Colorado’s populations at greatest risk of HIV infection is a complex task that must be based on several important assumptions. For MSM, the estimate utilizes a model published in 2015³ that sets the prevalence of MSM behavior from 1.1 to 4.4 percent⁴ of the overall male population age 18 to 59, as shown in Table 13 below.

Table 13: Colorado MSM Estimate

	Total	HIV positive	HIV negative or Unaware
Denver Transitional Grant Area	24,196	5,949	18,247
Remainder of Colorado	15,566	1,559	14,007
Statewide estimate of MSM	39,762	7,508	32,254

For IDU, the estimate is based on a study published in 2014⁵ and provides an overall estimate of PWID within the past 12 months at 0.30% of the total population (Stratified by gender, prevalence is 0.36% among males and 0.21% among females). The estimate in table 14 is calculated for the total population, not stratified by gender for those ages 18-59 years old with injection drug use within the past 12 months.

Table 14: Colorado IDU Estimate

	Total	HIV positive	HIV negative or Unaware
Denver Transitional Grant Area	4,811	606	4,205
Remainder of Colorado	4,578	292	4,286
Statewide estimate of IDU	9,389	898	8,491

Not all populations of heterosexuals are at equal risk of becoming HIV positive in Colorado, with equal levels of urgency for HIV testing. Heterosexual risk is higher than average whenever two driving factors are higher than average: 1) practicing unsafe sexual behaviors, 2) in a community where there are potential partners living with HIV or AIDS. As a marker for the extent of unsafe sexual behaviors in a community, COHAS utilized gonorrhea (GC) rates. The CDPHE Surveillance Program ranked all Colorado census tracts by 5-year rates of GC and then by 5-year rates of HIV.

These data result in a three-layer estimate of heterosexuals who at higher than average risk of becoming infected with HIV and therefore in need of selective HIV testing efforts, as shown in Table 15 below.

³ Alexandra M. Oster, Maya Sternberg, Amy Lansky, Dita Broz, Cyprian Wejnert, and Gabriela Paz-Bailey. Population Size Estimates for Men who Have Sex with Men and Persons who Inject Drugs. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, Vol. 92, No. 4 doi:10.1007/s11524-015-9970-3. 2015.

⁴ Considers only those men with MSM behavior in the prior 12 months, and the percentage varies by the population density in the county.

Table 15: Colorado High Risk Heterosexual Estimate

	Description	Population age 18-59
Layer 1	The ten highest-ranking census tracts within the six county* TGA in terms of HIV and GC rates. Of these six counties in the TGA, only Denver had a high enough rate to be included in the top ten highest-ranking tracts.	22,922
Layer 2	The five highest-ranking census tracts <i>within an urban county but outside of the six county* TGA</i> in terms of HIV and GC rates. This includes census tracts in El Paso and Pueblo counties.	9,420
Layer 3	The five highest-ranking census tracts <i>outside of the twelve urban counties**</i> in terms of HIV and GC rates. This includes census tracts in Alamosa, Kit Carson and Otero counties.	12,758
SUBTOTAL		45,100
Minus the estimated MSM population of the 20 census tracts		(675)
Minus the estimated IDU population of the 20 census tracts		(161)
TOTAL ESTIMATE SIZE OF POPULATION AT ENHANCED RISK DUE TO HETEROSEXUAL BEHAVIOR		44,264

*Six county TGA is defined as Adams, Arapahoe, Broomfield Denver, Douglas and Jefferson counties.

**Twelve urban counties include the six county TGA, Boulder, El Paso, Larimer, Mesa, Pueblo and Weld

These 20 census tracts represent a very diverse population of people. In terms of race, the highlighted Denver area census tracts have nearly twice the Blacks/African Americans percentage of residents as compared to the state overall (18.8% versus 3.9%, with two tracts over 25% Blacks/African Americans). The highlighted census tracts outside the Denver area have a disproportionate percentage of Hispanic/Latino residents (43.3% in the urban counties and 43.5% in the rural counties, with two tracts over 70% Hispanic/Latino). All of the census tracts are have at least 10 percent of the population living below the federal poverty rate, with eleven (11) tracts exceeding 25 percent and one tract exceeding 75 percent. The gonorrhea rates per 100,000 in these tracts range from 37.2 to 823.4. The HIV rates per 100,000 in these tracts range from 2.7 to 94.1. Additional details regarding the case information and demographics of these census tracts may be found in Appendix X⁵.

COHAS has identified these census tracts as being representative of the types of communities that appear to be most in need of HIV testing services, particularly for high risk heterosexuals. Contractors funded by CDPHE will not be required to deliver HIV testing services exclusively in these 20 census tracts, nor will clients be denied services because they do not reside in these

⁵ Data Source: 2010-2014 American Community Survey 5 year estimates. Selected tables include; S0101-Age and Sex, S0601-Selected Sociodemographic Characteristics, S1701-Poverty Status, S2301-Employment Status, S2701-Health Insurance Coverage and B03002 Hispanic Origin by Race. (<http://www.census.gov/acs>)

neighborhoods. It is well known that HIV risk honors no artificial boundaries; people who reside in an apparently “low risk profile area” practice unsafe behaviors in a “high risk profile area,” and too often bring HIV home to unknowing partners. However, in evaluating the targeting of selective prevention resources through requests for applications and proposals, CDPHE will identify the extent to which the communities receiving funding meet or exceed the risk profiles of these representational census tracts and will continually advocate for the most optimal investment of scarce resources, while excluding no person or group with demonstrable need.

Utilizing Population Size Estimates to Set HIV Testing Targets

Regarding screening intervals, the U.S. Preventive Services Task Force notes, “The evidence is insufficient to determine optimum time intervals for HIV screening.”⁶ However, based on the USPSTF’s “reasonable approach” and CDC PrEP guidelines, the following intervals are used for COHAS:

Target Population	HIV testing frequency
MSM	At least annually for MSM with at least one sexual encounter in the prior 12 months, quarterly for those with PrEP indicators
PWID	At least annually for all PWID who have injected in the prior 12 months, quarterly for those with PrEP indicators
Heterosexuals with a higher than average risk of becoming infected with HIV	Every 3 years for those at moderate risk, quarterly for those with PrEP indicators

To set HIV testing targets, there also need to be assumptions made about the variations within the risk-defined groups. Utilizing a model released by CDC in 2015, the following percentages are utilized in COHAS:⁷

- MSM with indicators for PrEP..... 24.7%
- PWID with indicators for PrEP 18.5%
- Heterosexuals with indicators for PrEP 0.6%

A further assumption is that the health care delivery system will deliver 60% of the tests needed by moderate and highest risk individuals and the targeted HIV testing system will deliver the remaining 40%. This approximates the levels at which the two systems are identifying newly diagnosed individuals.

The following testing goals are derived from applying these population estimates, screening

⁶ <http://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/human-immunodeficiency-virus-hiv-infection-screening#risk>

⁷ Estimated percentages and numbers of adults with indications for pre-exposure prophylaxis (PrEP), by transmission risk group — United States, 2015 (Smith et.al – Presented at National HIV Prevention Conference, 2015)

intervals, and estimates of highest risk:

	Estimated Sizes of Populations for HIV testing	Annual Testing frequency	Tests delivered by the health care system (60%)	Targeted HIV testing funded by public health sources (40%)
MSM (moderate risk, 75.3%)	29,941	1.0	17,965	11,976
MSM (highest risk, 24.7%)	9,821	4.0	23,571	15,714
IDU (moderate risk, 81.5%)	7,301	1.0	4,381	2,920
IDU (highest risk, 18.5%)	1,657	4.0	3,977	2,652
HRH (moderate risk, 99.4%)	43,998	0.3	7,919	5,280
HRH (highest risk, 0.6%)	266	4.0	638	426
TOTAL ANNUAL NUMBER OF TESTS			58,451	38,968

Baseline Data for Late Diagnoses

Baselines for late diagnosis goals were set using data from 2010 to 2014, as reflected below.

Table 1. New HIV Cases, All of Colorado

Year of HIV diagnosis	Newly Diagnosed Cases of HIV Disease							Late HIV Diagnoses	
	2011	2012	2013	2014	2015	2011-2015		2011-2015	
	No.	No.	No.	No.	No.	No.	%	Rate	%
Total	381	383	322	380	366	1832	100	6.9	30.1
Gender									
Male	327	324	280	328	316	1575	86%	11.9	30.8
Female	54	59	42	52	50	257	14%	2.0	26.1
Age at HIV Diagnosis									
Under 10 years	9	6	3	1	0	19	1%	0.5	5.0
10-14 years	0	0	2	2	1	5	0%	0.3	0.0
15-19 years	4	2	2	8	3	19	1%	1.1	4.8
20-24 years	46	56	46	39	56	243	13%	13.0	13.2
25-29 years	58	70	54	77	70	329	18%	16.7	19.8
30-34 years	66	60	58	62	67	313	17%	16.2	26.3
35-39 years	40	59	35	56	47	237	13%	13.3	38.3
40-44 years	46	49	44	39	35	213	12%	11.8	41.5
45-49 years	50	35	39	46	34	204	11%	11.7	41.6
50-54 years	32	30	18	24	28	132	7%	7.1	48.4
55-59 years	17	6	8	11	16	58	3%	3.3	40.9
60-64 years	6	3	8	8	6	31	2%	2.0	62.1
65 years and over	8	7	5	7	3	30	2%	0.9	66.7
Race and Hispanic Origin									
White, not Hispanic	205	190	156	184	181	916	50%	5.0	27.5
Black, not Hispanic	56	66	59	71	60	312	17%	30.3	26.3
Hispanic (All Races)	108	114	94	109	112	537	29%	9.7	36.9
Asian/Pacific Islander	6	6	8	7	4	31	2%	3.8	29.0
Amer. Indian/Alaska Native	4	5	2	2	2	15	1%	8.9	20.0
Multiple Race	2	2	3	7	7	21	1%	3.8	38.1
Exposure Category - All									
Male-male sex (MSM)	236	238	207	237	227	1145	63%	---	27.95
Injection Drug Use (IDU)	10	6	7	8	4	35	2%	---	40.3
MSM & IDU	35	36	14	30	40	155	8%	---	18.1
Heterosexual contact	12	11	14	8	1	46	3%	---	29.9
Pediatric*	5	2	4	0	1	12	1%	---	4.4
Transfusion/Hemophiliac	0	0	0	0	0	0	0.0%	---	0.0
No Identified Risk/Other	29	31	34	45	43	182	10%	---	45.7
Exposure Category - Female									
Injection Drug Use (IDU)	10	7	3	5	2	27	11%	---	29.6
Heterosexual contact	24	33	24	20	20	121	47%	---	22.3
Pediatric^	4	4	1	2	0	11	4%	---	0.0
Transfusion/Hemophiliac	0	0	0	0	0	0	0.0%	---	0.0
No Identified Risk/Other	16	15	14	25	28	98	38%	---	32.7

* Pediatric cases are individuals under age 13 years at the time of HIV or AIDS diagnosis.

‡ 2011-2015 U.S. Census population estimate released 6/23/16 used in calculating the rates

All HIV/AIDS surveillance data reported to the Colorado Department of Public Health & Environment as of March 31, 2016.

Table 2. New HIV Cases, TGA

Year of HIV diagnosis	Newly Diagnosed Cases of HIV Disease							Late HIV Diagnoses	
	2011 No.	2012 No.	2013 No.	2014 No.	2015 No.	2011-2015 No. %		2011-2015 Rate	2011-2015 %
Total	289	283	245	281	263	1361	100	10.3	28.3
Gender									
Male	252	241	219	244	229	1185	87%	18.0	28.9
Female	37	42	26	37	34	176	13%	2.6	24.4
Age at HIV Diagnosis									
Under 10 years	5	1	2	0	0	8	1%	0.4	12.5
10-14 years	0	0	1	2	0	3	0%	0.3	0.0
15-19 years	2	1	1	6	2	12	1%	1.5	3.2
20-24 years	31	37	37	32	36	173	13%	20.9	12.3
25-29 years	41	51	44	59	53	248	18%	23.5	20.1
30-34 years	55	49	44	46	50	244	18%	23.0	23.6
35-39 years	32	49	25	38	34	178	13%	18.4	34.1
40-44 years	36	36	29	30	27	158	12%	16.3	37.7
45-49 years	33	24	33	30	23	143	11%	15.8	39.6
50-54 years	27	21	12	19	23	102	7%	11.1	42.6
55-59 years	13	6	7	8	9	43	3%	5.1	44.1
60-64 years	6	3	7	6	3	25	2%	3.0	62.5
65 years and over	8	5	3	5	3	24	2%	1.6	45.2
Race and Hispanic Origin									
White, not Hispanic	153	135	117	139	123	667	49%	7.8	26.1
Black, not Hispanic	43	54	44	58	51	250	18%	34.2	22.8
Hispanic (All Races)	84	85	75	77	79	400	29%	13.1	35.8
Asian/Pacific Islander	4	4	5	3	4	20	1%	3.7	30.0
Amer. Indian/Alaska Native	3	3	1	1	1	9	1%	13.8	11.1
Multiple Race	2	2	3	3	5	15	1%	5.3	33.3
Exposure Category - All									
Male-male sex (MSM)	188	176	172	181	168	885	65%	---	26.8
Injection Drug Use (IDU)	5	3	4	6	2	20	1%	---	39.0
MSM & IDU	28	32	11	22	32	125	9%	---	17.6
Heterosexual contact	8	8	7	5	1	29	2%	---	29.9
Pediatric*	3	0	2	0	0	5	0%	---	10.0
Transfusion/Hemophilia	0	0	0	0	0	0	0.0%	---	0.0
No Identified Risk/Other	20	22	23	30	26	121	9%	---	40.4
Exposure Category - Female									
Injection Drug Use (IDU)	8	5	3	4	1	21	12%	---	28.6
Heterosexual contact	15	24	12	14	13	78	44%	---	21.8
Pediatric^	2	1	1	1	0	5	3%	---	0.0
Transfusion/Hemophilic	0	0	0	0	0	0	0.0%	---	0.0
No Identified Risk/Other	12	12	10	18	20	72	41%	---	27.8

* Pediatric cases are individuals under age 13 years at the time of HIV or AIDS diagnosis.

‡ 2011-2015 U.S. Census population estimate released 6/23/16 used in calculating the rates

All HIV/AIDS surveillance data reported to the Colorado Department of Public Health & Environment as of March 31, 2016.

Table 3. New HIV Cases, Other Urban Counties

Year of HIV diagnosis	Newly Diagnosed Cases of HIV Disease							Rate	Late HIV
	2011	2012	2013	2014	2015	2011-2015			Diagnoses
						No.	No.		No.
Total	67	63	63	70	67	330	100	3.5	31.4
Gender									
Male	53	50	49	60	58	270	82%	5.8	32.3
Female	14	13	14	10	9	60	18%	1.3	27.4
Age at HIV Diagnosis									
Under 10 years	4	5	0	1	0	10	3%	0.8	0.0
10-14 years	0	0	1	0	1	2	1%	0.3	0.0
15-19 years	2	1	1	1	1	6	2%	0.9	0.0
20-24 years	13	14	9	6	13	55	17%	6.7	18.2
25-29 years	11	11	8	15	8	53	16%	7.9	10.7
30-34 years	8	6	12	9	10	45	14%	7.2	28.0
35-39 years	8	5	9	13	10	45	14%	7.8	42.1
40-44 years	5	10	11	8	4	38	12%	6.5	53.5
45-49 years	12	5	4	10	9	40	12%	6.9	54.1
50-54 years	2	5	5	3	2	17	5%	2.7	57.9
55-59 years	2	0	1	1	6	10	3%	1.6	28.6
60-64 years	0	0	0	2	3	5	2%	1.0	75.0
65 years and over	0	1	2	1	0	4	1%	0.3	25.0
Race and Hispanic Origin									
White, not Hispanic	37	32	32	30	41	172	52%	2.5	25.7
Black, not Hispanic	11	10	14	11	7	53	16%	22.4	41.8
Hispanic (All Races)	16	19	14	20	18	87	26%	5.0	35.6
Asian/Pacific Islander	2	1	3	4	0	10	3%	4.3	27.3
Amer. Indian/Alaska Native	1	1	0	1	1	4	1%	7.8	50.0
Multiple Race	0	0	0	4	0	4	1%	1.9	50.0
Exposure Category - All									
Male-male sex (MSM)	34	37	28	40	36	175	53%	---	28.8
Injection Drug Use (IDU)	5	2	2	1	2	12	4%	---	40.0
MSM & IDU	4	4	3	7	7	25	8%	---	15.4
Heterosexual contact	2	2	6	2	0	12	4%	---	30.4
Pediatric*	2	2	1	0	1	6	2%	---	0.0
Transfusion/Hemophiliac	0	0	0	0	0	0	0.0%	---	0.0
No Identified Risk/Other	6	3	9	10	12	40	12%	---	50.8
Exposure Category - Female									
Injection Drug Use (IDU)	1	1	0	0	1	3	5%	---	33.3
Heterosexual contact	7	6	11	3	3	30	50%	---	21.9
Pediatric^	2	3	0	1	0	6	10%	---	0.0
Transfusion/Hemophiliac	0	0	0	0	0	0	0.0%	---	0.0
No Identified Risk/Other	4	3	3	6	5	21	35%	---	42.9

* Pediatric cases are individuals under age 13 years at the time of HIV or AIDS diagnosis.

‡ 2011-2015 U.S. Census population estimate released 6/23/16 used in calculating the rates

All HIV/AIDS surveillance data reported to the Colorado Department of Public Health & Environment as of March 31, 2016.

Table 4. New HIV Cases, Rest of Colorado

Year of HIV diagnosis	Newly Diagnosed Cases of HIV Disease							Rate	Late HIV Diagnoses
	2011	2012	2013	2014	2015	2011-2015	2011-2015		
	No.	No.	No.	No.	No.	No.	%		%
Total	25	37	14	29	36	141	100	3.7	46.3
Gender									
Male	22	33	12	24	29	120	85%	6.0	48.1
Female	3	4	2	5	7	21	15%	1.1	36.8
Age at HIV Diagnosis									
Under 10 years	0	0	0	0	0	0	0%	0.0	0.0
10-14 years	0	0	0	0	0	0	0%	0.0	0.0
15-19 years	0	0	0	1	0	1	1%	0.4	50.0
20-24 years	2	5	0	1	7	15	11%	6.7	5.9
25-29 years	6	8	2	3	9	28	20%	11.5	39.1
30-34 years	3	5	2	7	7	24	17%	9.8	58.8
35-39 years	0	5	1	5	3	14	10%	6.0	75.0
40-44 years	4	3	4	1	4	16	11%	6.5	46.7
45-49 years	5	6	2	6	2	21	15%	8.2	28.6
50-54 years	3	4	1	2	3	13	9%	4.4	76.9
55-59 years	2	0	0	2	1	5	4%	1.6	33.3
60-64 years	0	0	1	0	0	1	1%	0.4	0.0
65 years and over	0	1	1	1	0	3	2%	0.5	100.0
Race and Hispanic Origin									
						0			
White, not Hispanic	15	23	7	15	17	77	55%	2.7	47.7
Black, not Hispanic	2	2	1	2	2	9	6%	21.0	28.6
Hispanic (All Races)	8	10	5	12	15	50	35%	6.6	48.9
Asian/Pacific Islander	0	1	0	0	0	1	1%	3.2	0.0
Amer. Indian/Alaska Native	0	1	1	0	0	2	1%	3.8	0.0
Multiple Race	0	0	0	0	2	2	1%	4.1	50.0
Exposure Category - All									
						0			
Male-male sex (MSM)	14	25	7	16	23	85	60%	---	40.0
Injection Drug Use (IDU)	0	1	1	1	0	3	2%	---	50.0
MSM & IDU	3	0	0	1	1	5	4%	---	50.0
Heterosexual contact	2	1	1	1	0	5	4%	---	28.6
Pediatric*	0	0	1	0	0	1	1%	---	0.0
Transfusion/Hemophiliac	0	0	0	0	0	0	0.0%	---	0.0
No Identified Risk/Other	3	6	2	5	5	21	15%	---	75.0
Exposure Category - Female									
						0			
Injection Drug Use (IDU)	1	1	0	1	0	3	14%	---	33.3
Heterosexual contact	2	3	1	3	4	13	62%	---	27.3
Pediatric^	0	0	0	0	0	0	0%	---	0.0
Transfusion/Hemophiliac	0	0	0	0	0	0	0.0%	---	0.0
No Identified Risk/Other	0	0	1	1	3	5	24%	---	60.0

* Pediatric cases are individuals under age 13 years at the time of HIV or AIDS diagnosis.

‡ 2011-2015 U.S. Census population estimate released 6/23/16 used in calculating the rates

All HIV/AIDS surveillance data reported to the Colorado Department of Public Health & Environment as of March 31, 2016.