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Factors Associated With Gaps in Medicaid Enrollment Among People With HIV and the Effect of Gaps on Viral Suppression

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Abstract

Introduction: Gaps in Medicaid enrollment may affect HIV outcomes. We evaluated factors associated with Medicaid enrollment gaps and their effect on viral suppression (VS) within the HIV Research Network.

Methods: We used a combined data set with Medicaid enrollment files from 2006 to 2010 and HIV Research Network demographic and clinical data. A gap was defined as 1 month without Medicaid and gap length was determined. We used multivariable logistic regression to determine factors associated with a gap and multivariable logistic regression with generalized estimated equations to evaluate factors associated with VS after gap.

Results: Of 5836 participants, the majority were male, of black race, and aged 25–50 years. More than half had a gap in Medicaid. Factors associated with a gap included male sex [adjusted odds ratio (aOR) 1.79, (1.53, 2.08)] and younger age (aORs ranging from 1.50 to 4.13 comparing younger age groups to age >50, $P < 0.05$ for all). About a quarter of gaps had VS information before and after gap. Of those, 53.7% had VS both before and after gap and 25.8% were unsuppressed both before and after gap. The strongest association with VS after gap was VS before gap [aOR 15.76 (10.48, 23.69)]. Transition into Ryan White HIV/AIDS Program coverage during Medicaid gaps was common (28% of all transitions).

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Conclusions: Gaps in Medicaid enrollment were common and many individuals with pre-gap VS maintained VS after gap, possibly due to accessing other sources of antiretroviral therapy coverage. Implementing initiatives to maintain Medicaid enrollment and to expedite Medicaid reenrollment and having alternate resources available in gaps are important to ensure continuous antiretroviral therapy to optimize HIV outcomes.

Keywords

viral suppression; Medicaid; uninsured

INTRODUCTION

The HIV care continuum includes steps to achieve and maintain HIV-1 RNA suppression with the goals of reducing HIV-related morbidity and mortality and reducing HIV transmission. The steps include linkage to and retention in HIV care through regular HIV clinic visits, antiretroviral therapy (ART) prescription, ART adherence, and ultimately HIV-1 RNA suppression.¹⁻³ Health care coverage has a beneficial effect of decreasing mortality among persons with HIV (PWH).^{4,5} Conversely, lack of health care coverage has been associated with adverse outcomes in every step of the HIV care continuum.⁶⁻⁸

Medicaid is the largest source of health care coverage for people living with HIV.^{9,10} Medicaid disenrollment (ie, losing Medicaid coverage) is common among adults in the general population, occurring in over half of enrolled adults within 2 years of enrollment. Disenrollment often represents being unable to overcome an administrative obstacle such as needing to reenroll at regular intervals by verifying eligibility rather than a loss of eligibility.¹¹ In the general population, African Americans are less likely to experience disenrollment, as are older adults and those in Medicaid managed care plans.¹² Previous work has examined the clinical impact of lapses in Medicaid in the general population. Low-income adults who have had a gap in coverage are more likely to skip doses or stop taking medications, are more likely to change doctors, and are more likely to report a decline in health.¹¹ Medicaid interruptions have been associated with more inpatient service use¹³ among individuals with mental health disorders. Previous work comparing individuals with consistent vs. interrupted Medicaid coverage demonstrated that interrupted coverage was associated with more emergency department use and decreased use of prescription medications.¹⁴

There is limited research examining the clinical impact of lapses in health care coverage, and specifically lapses in Medicaid, among PWH and among subpopulations of PWH (transgendered individuals, youth, etc). Lack of insurance coverage has been associated with failure to achieve HIV-1 RNA suppression⁶ and stable insurance coverage has been associated with ART use.^{7,15} Among PWH, access to ART may be obtained either through health care coverage or through the Ryan White HIV/AIDS Program (RWHAP). RWHAP includes both AIDS Drug Assistance Programs (ADAP) and funding to provide ART.¹⁶ The importance of the RWHAP ADAP for achieving viral suppression (VS) has been demonstrated in findings from the Women's Interagency HIV Study (WIHS). Women

who received support from RWHAP but were otherwise uninsured were more likely to be prescribed ART and be virally suppressed.¹⁷

We evaluated the impact of gaps in Medicaid enrollment on VS within the HIV Research Network (HIVRN). We examined VS before and after a gap in Medicaid enrollment using a unique data set that captures both Medicaid enrollment information and HIVRN clinical data. Our objectives were to describe the characteristics of individuals who had a gap in Medicaid enrollment. Among individuals with a gap, we evaluated characteristics associated with an unsuppressed HIV-1 RNA at the end of a gap, which may suggest failure to access another source of coverage for ART during a Medicaid gap.

METHODS

The HIVRN is a consortium of clinics that provide primary and subspecialty care to PWH. Clinical and demographic data are abstracted annually from medical records. These data are transmitted to the data coordinating center after removing identifying information and creating an encrypted ID for each patient known only to that site. The data coordinating center quality-assures and combines the data across sites. Data for individual patients are linked longitudinally across calendar years. The study was approved by the institutional review boards at the Johns Hopkins University School of Medicine and at each participating site.

A subset of 6 HIVRN sites participated in this analysis of the impact of gaps in Medicaid eligibility on clinical outcomes. Sites treating adults (age ≥18) were located in MA, MD, and NY; pediatric sites (age 0–25) were located in MD, PA, and NY. HIVRN sites with the largest number of Medicaid covered individuals were chosen to maximize the sample size. The observation period for this analysis was from January 1, 2006, through December 31, 2010. Patients who had Medicaid coverage recorded in the HIVRN database from 2006 to 2010 were identified centrally; the local sites then linked encrypted HIVRN IDs with patients' personal identifying data, which were used by the Centers for Medicare and Medicaid Services to obtain the Medicaid records for each patient from the site's state and 3 adjacent states. Of 6892 unique patient IDs that were submitted to Centers for Medicare and Medicaid Services, 6196 (90%) were able to be matched. Medicaid analytic extract (MAX) files were obtained that provide enrollment data for individual Medicaid beneficiaries on a calendar year basis. MAX data, with person identifiers removed, were merged with HIVRN data by HIVRN ID.

Among the 6196 patients in the linked MAX-HIVRN data, all data were excluded for 360 individuals due to at least one of the following reasons: individuals aged <13 years on January 1, 2006, those enrolled in the HIVRN after 2010, and those with data issues (age and sex discrepancies between Medicaid and HIVRN, Medicaid eligibility data missing, data after year of death, death year unknown, and multiple records for same person in same state and year). Individuals had to be covered for at least 30 days in 1 year to be included in the analysis. These categories were not mutually exclusive; the final sample size was 5836 (see Fig. 1A and 1B, Supplemental Digital Content, <http://links.lww.com/QAI/B155>).

Gaps in Medicaid Enrollment

The primary outcome for this analysis was having a gap in Medicaid enrollment. Time contributed began at the latter of January 1, 2006, or the date of HIVRN enrollment if enrolled in HIVRN after 2006; all gaps occurred after HIVRN enrollment. For each month of each year, it was determined whether the individual was enrolled or not enrolled using the personal summary MAX file. A patient was counted as enrolled for an entire month if there were at least 10 days of coverage in that month. If no personal summary file was available for an individual for a year, that entire year was counted as a gap. Gap length in months was determined for each participant. Gaps were allowed to be contiguous across calendar years.

Viral Suppression After a Gap

Our secondary outcome for this analysis was HIV-1 RNA suppression after a gap in Medicaid enrollment. HIV-1 RNA before the gap was captured within 90 days before the beginning of a gap or within 10 days after the start of the gap in Medicaid enrollment. HIV-1 RNA after the gap was within 10 days before the end of the gap or 90 days after the end of a gap in Medicaid enrollment. HIV-1 RNA 400 copies per milliliter was defined as unsuppressed and HIV-1 RNA <400 copies per milliliter was defined as suppressed. Assays capable of detecting virus below 400 copies per milliliter were not universally used at all clinics throughout the study period.

Predictor Variables

Demographic and clinical variables were based on HIVRN data. Age was calculated as of January 1, 2006, and was categorized as 13–24, 25–35, 36–50, and >50 years. Self-reported race/ethnicity was categorized as non-Hispanic white, non-Hispanic black, Hispanic, and other/unknown. Mutually exclusive categories of self-reported HIV transmission risk behavior reported at time of cohort enrollment were: men who had sex with men (MSM), heterosexual contact (HET), injection drug use (IDU), including individuals who had both HET or MSM with IDU, perinatal transmission, and other/unknown (female who has sex with a female, blood products, eg.). Patients were classified as either enrolling in the HIVRN before 2006, or in 2006 or later. First CD4 level in the observation period was the first reported test after January 1, 2006, and was stratified as 200, 201–500, and >500 cells/mm³, or missing. Pre-gap viral load was collected within 90 days of the start of the enrollment gap and within 10 days after the start of the gap. This viral load was classified as either suppressed (<400 copies/mL), not suppressed (≥400 copies/mL), or missing. Pre-gap CD4 cell count was collected within 90 days of the start of the enrollment gap and within 10 days after the start of the gap.

Alternate Health Care Coverage During a Medicaid Enrollment Gap

HIVRN sites collect health care coverage information from the demographic information at the time of each clinic visit. We generated summary statistics for the type of health care coverage billed for encounters during Medicaid enrollment gaps.

Statistical Analysis

Summary statistics were generated to describe the length and frequency of gaps. Factors associated with having a gap in Medicaid were compared using *t* tests. Multivariable logistic regression was performed to assess demographic (age, race, sex, and HIV transmission risk factor) and clinical (CD4 cell count and HIV-1 RNA) factors associated with having a gap in Medicaid enrollment.

Multivariable logistic regression was used to determine factors associated with VS after a gap. Multiple gaps per patient were included using general estimating equation (GEE) analysis to account for repeated measures. For all regression models, covariates were determined a priori and adjusted results are presented in the tables. Stata Version 14.2 (College Station, TX) was used for the analysis.

Because missing data (CD4 cell count and HIV-1 RNA) was assumed to not be missing at random, imputation could not be performed without making substantial assumptions about the missing data mechanism. Statistical analyses included complete cases.

RESULTS

This study included 5836 patients, and most of the participants were from New York (57%), were male (67%), and of black race (58%) (Table 1). The HIV transmission risk factor was approximately 36% HET, 31% MSM, and 28% IDU. Of the overall sample, 3362 (57.6%) had at least 1 gap. Of those with a gap, 57% had 1 gap, 29% had 2 gaps, 10% 3 gaps, and 4% had 4 or more gaps during the study period.

Among patients with a gap (N = 3362), the median length of a gap (in consecutive months) was 3 months for individuals contributing <1 year of data, 5.5 months for those

Patients with a gap were more likely to attend a clinic in MA [adjusted odds ratio (aOR) 3.90, 95% confidence interval: 2.92 to 5.21], be male [aOR 1.79, (1.53 to 2.08)], and younger than 50 years (aOR 1.50 to 4.13 depending on age category) (Table 2). Hispanic patients were less likely to have a gap in Medicaid (aOR 0.70 [0.57 to 0.88]) than whites. Individuals who enrolled in HIVRN after 2006 (representing shorter overall duration of HIV care) were less likely to have a gap compared with those who enrolled earlier [aOR 0.45 (0.39 to 0.52)].

Table 3 shows the results of regression analyses including 705 individuals with at least 1 Medicaid gap with HIV-1 RNA data available within 90 days before the start of the gap (allowing 10 additional days after the start of the gap) and HIV-1 RNA data available within 90 days after the end of the Medicaid gap (allowing 10 additional days before the end of the gap). These individuals contributed data on 884 gaps. Only complete cases were included in the regression analyses. Of all gaps with HIV-1 RNA data available (N = 898 gaps), 53.7% had suppressed viral load both before and after the ap, 25.8% had unsuppressed viral load both before and after the gap, 7.2% had suppressed viral load before the gap and unsuppressed viral load after the gap, and 13.3% had unsuppressed viral load before the gap and suppressed viral load after the gap (Table 4).

The GEE analysis of factors associated with HIV-1 RNA suppression after a gap is shown in Table 3. By far, the strongest association of being virally suppressed after a gap was being virally suppressed before the gap [aOR 15.76 (10.48 to 23.69)]. We compared the demographic and clinical characteristics of individuals who were included in the GEE with the overall sample who had a gap (Table 5). There were significant differences between the 2 groups, with fewer individuals who had both pre- and post-gap viral load attending a clinic in NY, and more who were of white race and MSM.

We also performed analyses of the 454 youth with HIV (YWH), aged 13–24, to determine whether there were differences between the factors associated with Medicaid gaps among YWH and/or the factors associated with HIV-1 RNA suppression after a gap. Of the 454 individuals, 24.4% had a gap in Medicaid (Table 1). Among these YWH, none of the demographic or clinical factors studied were associated with a gap (Table 2). Similarly to the entire sample, among the YWH, the association between being virally suppressed before a gap and being virally suppressed after the gap was strong, although the point estimate had a wide confidence interval due to small sample size [aOR 95.72 (7.23 to 1266.36)] (Table 3). Compared with MSM, YWH with either an HIV transmission risk category of “other” or heterosexual transmission risk factor were less likely to be virally suppressed after a gap (aOR 0.03 for both).

Using data from the entire sample, among the Medicaid gaps, 1754 had health care coverage information recorded during the gap. We examined what health care coverage was transitioned into and counted each unique transition. If someone had multiple transitions during a gap, for example, was funded by the RWHAP, then private insurance, then RWHAP again, this would be counted as one transition into the RWHAP and one transition into private insurance during a gap. There were 4077 unique transitions during Medicaid gaps. By far, the most frequent was transition into RWHAP (N = 1138, 28% of all transitions). This was followed by private insurance (N = 670, 16%) and Medicare (N = 504, 12%). Other transitions were to uninsured status, government funded (not further specified), dual Medicare/Medicaid, and other/missing/unknown status.

DISCUSSION

This study has several important findings. We examined gaps in Medicaid enrollment among individuals in the HIVRN and found that close to 60% of the individuals in our sample had at least one Medicaid enrollment gap. Additionally, male sex and younger age were associated with having a gap among all patients. Of the patients with gaps, 33% had an unsuppressed HIV-1 RNA after the gap; most (78%) had not been virologically suppressed before the gap either. A transition from suppressed to unsuppressed HIV-1 RNA was relatively rare among our sample.

Previous work has shown that access to health care coverage has important effects on clinical outcomes in HIV.⁶ Not having health care coverage can delay HIV diagnosis and linkage to HIV care.^{8,18} Once in care, PWH who do not have continuous health care coverage are more likely to discontinue ART,⁷ which can lead to an unsuppressed HIV-1 RNA. Interestingly, our results showed a fairly high degree of stability of VS despite

Medicaid enrollment gaps. One potential explanation for this finding is that RWHAP support can be used for provision of ART.¹⁶ Indeed, our results showed that individuals with Medicaid frequently relied on RWHAP during gaps in Medicaid. RWHAP is not a comprehensive health care coverage plan, and there are certainly benefits to maintaining continuous Medicaid rather than using RWHAP.¹⁹ In addition, Medicaid recipients may benefit from receiving their HIV care at RWHAP-funded locations. These care venues are more likely to offer case management, mental health, and substance use treatment and additional support services. Regardless of health care coverage type, having these services supports PWH's engagement in HIV care.²⁰

The Affordable Care Act extended Medicaid eligibility to individuals with incomes up to 138% of the Federal Poverty Level, without regard for disability status. This analysis involves data before Medicaid expansion. Although Medicaid expansion made more PWH eligible for Medicaid,¹⁹ the administrative requirements to stay enrolled in Medicaid such as reapplying each year still pose a barrier to eligible individuals.¹¹ Our findings demonstrate that younger individuals and males are more likely to have enrollment gaps. These groups of PWH have previously been shown to be less likely to be insured⁹ and to have worse care continuum outcomes.^{21,22} These disparities may be mitigated to some extent by receiving HIV care at RWHAP-funded sites with case management services and ART during periods without health care coverage. We performed a subanalysis of YWH to examine factors associated with gaps in Medicaid enrollment specifically in that age group. Similar to the overall study population, male YLH were more likely to have a gap.

Strengths of this study include the large multisite sample and the length of follow-up. There are several important limitations, including that the data may not accurately reflect current practice. Our data were from 2006 to 2010, and it was not until 2011 that ART was universally recommended for all PWH at any CD4 cell count.²³ Participants in the sample who were unsuppressed before a Medicaid gap and were unsuppressed after the gap may not have been recommended to be on ART by their HIV care provider. There were demographic differences between our overall sample of individuals with a gap and the sample who had viral load data available to be included in the GEE analysis. The demographic differences limit the generalizability of our findings regarding HIV-1 RNA suppression after gap. However, that would not likely significantly impact the strength of the association between VS before a gap and VS after a gap. These data may not be representative of patients who were not well engaged in care before their Medicaid gap, patients who went to a different clinical site after their gap, or who did not reengage in care at all after their gap. Finally, in the analysis restricted to YWH, the sample size for the analysis of viral load before and after a Medicaid enrollment gap was quite small.

In conclusion, gaps in Medicaid enrollment were common; however, the impact of Medicaid gaps on VS in our sample was limited. This may be due in part to RWHAP coverage of ART during gaps in Medicaid enrollment. This study did not examine other clinical outcomes beyond VS, and there are certainly other benefits to maintaining a comprehensive health care coverage plan. Active engagement in case management and decreased burden for Medicaid enrollment can help insure continuous Medicaid coverage for PWH.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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TABLE 1.

Demographic and Clinical Characteristics of Participants in a Sample of 6 HIVRN Clinics Who had Medicaid Coverage;2006–2010 (N = 5836)

Variable	Overall Sample		
	Participants Without Gap (N = 2474, 42.4%), N (%)	Participants With Gap (N = 3362, 57.6%), N (%)	Entire Study Sample (N = 5836), N (%)
Location of HIVRN site			
Massachusetts	111 (4.5)	576 (17.1)	687 (11.8)
Maryland	816 (33.0)	943 (28.1)	1759 (30.1)
New York	1524 (61.6)	1815 (54.0)	3339 (57.2)
Pennsylvania	23 (0.9)	28 (0.8)	51 (0.9)
Sex			
Female	1002 (41.0)	879 (26.4)	1881 (32.2)
Male	1444 (59.0)	2455 (73.6)	3899 (66.8)
Transgender	28 (1.1)	28 (0.8)	56 (1.0)
Race/ethnicity			
White	317 (12.8)	767 (22.8)	1084 (18.6)
Black	1535 (62.1)	1869 (55.6)	3404 (58.3)
Hispanic	599 (24.2)	657 (19.5)	1256 (21.5)
Other/missing	23 (0.9)	69 (2.1)	92 (1.6)
HIV transmission category			
MSM	532 (21.5)	1249 (37.2)	1781 (30.5)
IDU	842 (34.0)	1122 (33.4)	1628 (27.9)
HET	956 (38.6)	786 (23.4)	2078 (35.6)
Perinatal	67 (2.7)	79 (2.4)	146 (2.5)
Other/unknown	77 (3.1)	126 (3.8)	203 (3.5)
Age on January 1, 2006			
13–24	111 (4.5)	343 (10.2)	454 (7.8)
25–35	260 (10.5)	616 (18.3)	876 (15.0)
36–50	1461 (59.1)	1908 (56.8)	3369 (57.7)
>50	642 (26.0)	495 (14.7)	1137 (19.5)
Enroll in HIVRN before 2006			
No	7457 (30.6)	1778 (52.9)	2535 (43.4)
Yes	1717 (69.4)	1584 (47.1)	3301 (56.6)
First CD4 count category (CD4 after January 1, 2006) *			
200 cells/mm ³	665 (28.0)	872 (27.0)	1537 (27.4)
201–500	984 (41.4)	1393 (43.1)	2377 (42.4)
501	730 (30.7)	967 (29.9)	1697 (30.2)
First HIV-1 RNA suppressed ^{†‡} (HIV-1 RNA after January 1, 2006)			
No	1351 (57.3)	2047 (65.1)	3398 (61.8)
Yes	1007 (42.7)	1098 (34.9)	2105 (38.3)

* N with CD4 count available = 5611 for entire sample.

[†] N with HIV-1 RNA available = 5503 for entire sample.

[‡] Suppressed defined as HIV-1 RNA <400 copies/mL.

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TABLE 2.

Factors Associated With Having a Gap in Medicaid Coverage Among Participants in a Sample of 6 HIVRN Clinics; 2006–2010, (N = 4904) and a Subsample of Youth Aged 13–24 Years (N = 310)

Variable	Overall Sample		Youths (Ages 13–24)	
	Adjusted OR (95% Confidence Interval) (N = 4904*)	Variable	Adjusted OR (95% Confidence Interval) (N = 310*)	
Location of HIVRN Site				
New York	Ref		Ref	
Massachusetts	3.90 (2.92 to 5.21)		Empty	
Maryland	1.12 (0.96 to 1.30)		0.49 (0.23 to 1.02)	
Pennsylvania	1.11 (0.52 to 2.37)		0.79 (0.32 to 1.96)	
Sex				
Female	Ref		Ref	
Male	1.79 (1.53 to 2.08)		1.78 (0.90 to 3.52)	
Transgender	0.75 (0.41 to 1.38)		Empty	
Race/ethnicity				
White	Ref		Ref	
Black	0.84 (0.69 to 1.03)		1.23 (0.47 to 3.23)	
Hispanic	0.70 (0.56 to 0.88)		0.83 (0.25 to 2.73)	
HIV transmission category				
MSM	Ref		Ref	
IDU	0.88 (0.73 to 1.06)		1.98 (0.17 to 23.25)	
HET	1.08 (0.89 to 1.30)		0.98 (0.35 to 2.74)	
Other/unknown	1.09 (0.73 to 1.63)		0.36 (0.06 to 2.11)	
Perinatal	0.61 (0.33 to 1.13)		0.57 (0.20 to 1.67)	
Age on January 1, 2006				
13–24	4.13 (2.79 to 6.12)	Age on January 1, 2006	Ref	
25–35	2.30 (1.84 to 2.88)	13 to 18	1.33 (0.70 to 2.54)	
36–50	1.50 (1.28 to 1.75)	18 to 24	—	
>50	Ref	—	—	
Enroll in HIVRN before 2006				
No	Ref		Ref	

Variable	Overall Sample		Youths (Ages 13–24)	
	Adjusted OR (95% Confidence Interval) (N = 4904 [*])	Variable	Adjusted OR (95% Confidence Interval) (N = 310 [*])	
Yes	0.45 (0.39 to 0.52)		0.61 (0.25 to 1.54)	
First CD4 count category (CD4 after January 1, 2006)				
200 cells/mm ³	Ref		Ref	
201–500	1.09 (0.95 to 1.28)		1.09 (0.53 to 2.27)	
501	1.00 (0.84 to 1.20)		0.76 (0.34 to 1.70)	
First HIV-1 RNA suppressed [†] (HIV-1 RNA after January 1, 2006)				
No	Ref		Ref	
Yes	0.81 (0.71 to 0.93)		1.50 (0.75 to 3.00)	

Bold text indicates statistically significant ($P < 0.05$) results.

^{*} Only individuals with baseline CD4 and HIV-1 RNA data available included in regressions.

[†] Suppressed defined as HIV-1 RNA <400 copies/mL.

TABLE 3.

Factors Associated With Viral Suppression After a Gap in Medicaid Coverage Among Participants in a Sample of 6 HIVRN Clinics;2006–2010, (N = 705 Individuals With Gaps, 884 Total Gaps) and a Subsample of Youth Aged 13–24 Years (n = 63 Individuals With Gaps, 75 Total Gaps)

Overall Sample				
Variable	Adjusted OR (95% Confidence Interval)		Youths (Ages 13–24)	
Location of HIVRN site				
New York	Ref		Ref	
Massachusetts	0.95 (0.52 to 1.74)		0.29 (0.02 to 4.13)	
Maryland	0.97 (0.59 to 1.58)		0.64 (0.11 to 3.84)	
Pennsylvania	1.49 (0.18 to 11.88)		1.49 (0.14 to 16.27)	
Sex				
Female	Ref		Ref	
Male	1.44 (0.86 to 2.42)		0.42 (0.06 to 3.07)	
Transgender	0.79 (0.12 to 5.36)		*	
Race/ethnicity				
White	Ref		Ref	
Black	0.78 (0.46 to 1.31)		0.76 (0.08 to 7.26)	
Hispanic	1.07 (0.56 to 2.06)		1.28 (0.05 to 31.35)	
Other	0.41 (0.15 to 1.15)		1	
HIV transmission category				
MSM	Ref		Ref	
IDU	0.67 (0.36 to 1.23)		1	
HET	0.81 (0.43 to 1.52)		0.03 (0.00 to 0.27)	
Perinatal	0.30 (0.04 to 2.26)		0.03 (0.00 to 0.52)	
Other/unknown	2.02 (0.71 to 5.73)		*	
Age on January 1, 2006		Age on January 1, 2006		
13–24	0.95 (0.44 to 2.07)		13–18	Ref
25–35	0.98 (0.53 to 1.82)		18–24	1.42 (0.31 to 6.52)
36–50	0.97 (0.60 to 1.56)		—	—
>50	Ref		—	—
Pre-gap CD4 cell count category				
200 cells/mm ³	Ref		Ref	
201–500	0.71 (0.41 to 1.24)		1.35 (0.15 to 12.45)	
501	0.72 (0.39 to 1.30)		0.34 (0.03 to 3.90)	
Pre-gap viral load suppressed [†]				
No	Ref		Ref	
Yes	15.76 (10.48 to 23.69)		95.72 (7.23 to 1266.36)	
Length of gap (per 30 days)		1.01 (0.99 to 1.03)		0.97 (0.92 to 1.03)
Percent of time contributed spent in gap				
91%–99%	Ref		1	
67%–90%	0.13 (0.01 to 1.12)		Omitted	

Overall Sample		
Variable	Adjusted OR (95% Confidence Interval)	Youths (Ages 13–24)
33%–66%	0.13 (0.01 to 1.17)	0.25 (0.04 to 1.80)
0%–32%	0.10 (0.01 to 0.89)	0.48 (0.06 to 4.01)

Bold text indicates statistically significant ($P < 0.05$) results.

* No observations contributed by individuals from this category.

[†] Suppressed defined as HIV-1 RNA <400 copies/mL.

TABLE 4.

HIV-1 RNA Status Before and After Medicaid Enrollment Gap (Allowing for an Extension of 10 Days Into the Medicaid Gap) Among Participants in a Sample of 6 HIVRN Clinics;2006–2010

	HIV-1 RNA After Gap Suppressed	HIV-1 RNA After Gap Unsuppressed	
HIV-1 RNA before gap suppressed *	482 (53.7%)	65 (7.2%)	547
HIV-1 RNA before gap unsuppressed	119 (13.3%)	232 (25.8%)	351
	601	297	898

Of those gaps with HIV-1 RNA data available, 53.7% had suppressed viral load both before and after the gap, 25.8% had unsuppressed viral load both before and after the gap, 7.2% had suppressed viral load before the gap and unsuppressed viral load after the gap, and 13.3% had unsuppressed viral load before the gap and suppressed viral load after the gap.

* Suppressed defined as HIV-1 RNA <400 copies/mL.

TABLE 5.

Comparison of Characteristics of Individuals With a Gap in Medicaid Enrollment Overall vs. Those With a Gap Included in the Viral Suppression Analysis in a Sample of Six HIVRN Clinics;2006–2010

Variable	Participants With Gap (N = 3362), %	Participants With HIV-1 RNA Data Available Both Before and After Gap (N = 705), %	P
Location of HIVRN Site			<0.0001
Massachusetts	17.1	30.2	
Maryland	28.1	34.0	
New York	54.0	33.3	
Pennsylvania	0.8	2.4	
Sex			0.63
Female	26.2	24.4	
Male	73.0	74.8	
Transgender	0.8	0.9	
Race/ethnicity			<0.0001
White	22.8	32.1	
Black	55.6	50.8	
Hispanic	19.5	14.9	
Other/missing	2.0	2.3	
HIV transmission category			<0.0001
MSM	37.2	45.1	
IDU	23.4	19.0	
HET	33.4	29.9	
Perinatal	2.4	4.0	
Other/unknown	3.8	2.0	
Age on January 1, 2006			0.06
13–24	10.2	9.2	
25–35	18.3	16.0	
36–50	56.8	56.3	
>50	14.7	18.4	
Enroll in HIVRN before 2006			<0.0001
No	52.9	28.4	
Yes	47.1	71.6	
First CD4 (after January 1, 2006) category			0.002
200 cells/mm ³	27.0	22.3	
201–500	43.1	41.4	
501	29.9	36.3	
First HIV-1 RNA (after January 1, 2006) suppressed*			<0.0001
No	65.1	57.0	
Yes	34.9	43.0	

* Suppressed defined as HIV-1 RNA <400 copies/mL.