

Health Insurance Coverage for Persons in HIV Care, 2006–2012

Baligh R. Yehia, MD, MPP, MSHP,*† John A. Fleishman, PhD,‡ Allison L. Agwu, MD, ScM,§
Joshua P. Metlay, MD, PhD,|| Stephen A. Berry, MD, PhD,§ and Kelly A. Gebo, MD, MPH,§
for the HIV Research Network

Abstract: We examined trends in health insurance coverage among 36,999 HIV-infected adults in care at 11 US HIV clinics between 2006 and 2012. Aggregate health insurance coverage was stable during this time. The proportions of patient-years with private, Medicaid, Medicare, and no insurance during this period were 15.9%, 35.7%, 20.1%, and 28.4%, respectively. Medicaid coverage was more prevalent among women than men, blacks, and Hispanics than whites, and individuals with injection drug use risk compared with other transmission risk factors. Hispanics and younger age groups were more likely to be uninsured than other racial/ethnic and older age groups, respectively.

Key Words: HIV, insurance, Medicare, Medicaid, Ryan White, Affordable Care Act

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INTRODUCTION

Health insurance coverage is strongly linked to better clinical outcomes, use of preventive services, and self-

perceived wellness.^{1–5} For people living with HIV (PLWH), being insured is associated with sustained viral suppression, lower use of acute care services, and lower probability of AIDS and premature death.^{6–10} Yet, nearly 30% of PLWH are without health insurance, double the proportion in the general US population.^{6,11,12}

The epidemiology of HIV infection in the United States has changed over time.¹³ The disproportionate impact of the epidemic among minority groups and disadvantaged segments of society may contribute to increases in the numbers of PLWH who receive Medicaid or are uninsured.^{13,14} Aging of the HIV-infected population may increase the proportion eligible for Medicare.¹³

In 2014, the Patient Protection and Affordable Care Act (ACA) expanded Medicaid coverage in some states to include all people with incomes up to 138% of the federal poverty level.^{15,16} The AIDS Drug Assistance Programs, which provide HIV medications to over 138,000 mostly uninsured PLWH, report that 56% of their clients have incomes at or below 133% of the federal poverty level, making them eligible for Medicaid under the ACA.¹⁷

Examination of trends in insurance may provide a context for interpreting effects of the ACA on people with HIV infection. This study examines aggregate trends in health insurance coverage between 2006 and 2012 among a large geographically diverse sample of HIV-infected patients in care.

METHODS

Data Collection and Participants

The HIV Research Network (HIVRN) is a consortium of clinics that provide primary and subspecialty care to PLWH. Descriptions of clinics' organization and practices have been presented.^{18,19} Clinics abstract data from medical records and send them to a data-coordinating center after removing personal identifying information. After quality control and verification, data are combined across sites to produce a uniform database. Institutional review boards at each site and at the data-coordinating center at Johns Hopkins University approved the collection and use of these data.

Eleven sites treating adult (age ≥18 years) patients, located in the Northeastern (6), Southern (3), and Western (2) US, provided insurance data for all years between January 1, 2006 and December 31, 2012. Nine have academic affiliations, and 2 are community based. Seven clinics followed

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From the *Department of Medicine, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA; †Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, PA; ‡Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality, Rockville, MD; §Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD; and ||Department of Medicine, Massachusetts General Hospital, Boston, MA.

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Correspondence to: Baligh R. Yehia, MD, MPP, MSHP, Perelman School of Medicine, University of Pennsylvania, 1021 Blockley Hall, 423 Guardian Drive, Philadelphia, PA 19104 (e-mail: byehia@upenn.edu).

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more than 1000 patients in 2012. Persons with 1 or more primary HIV outpatient visit and CD4 test in a calendar year during this period were defined as “in care” for that year and eligible for inclusion. Years in which a patient was not “in care” were excluded from analyses. Patients could contribute data for multiple years in care.

Variables

Demographic data (age, gender, race/ethnicity, HIV transmission risk, and health insurance status) and results of all CD4 tests were collected for every patient in each calendar year in care. Patients’ age as of July 1 in each year was categorized as 18–24, 25–34, 35–44, 45–54, 55–64, and ≥ 65 years. Self-reported race/ethnicity was categorized as non-Hispanic white, non-Hispanic black, Hispanic, and other/unknown. Self-reported HIV transmission risk behavior was grouped into men who had sex with men (MSM), heterosexual contact (HET), injection drug use (IDU), both MSM and IDU, and other/unknown.²⁰ Persons who had both IDU and HET risk factors were classified as IDU. Based on a review of all CD4 tests in the year, patients with 2 or more CD4 counts ≤ 200 cells per cubic millimeter were distinguished from those with higher values because persons with CD4 counts ≤ 200 cells per cubic millimeter may be more likely to meet Medicaid disability requirements.²¹ Insurance, age, and CD4 count were time-varying covariates.

HIVRN clinics recorded health insurance coverage when patients signed-in at an outpatient visit. Some sites provided insurance data for 1 primary HIV outpatient visit in a calendar year, usually the first visit, whereas others provided data for all HIV outpatient visits. If insurance was recorded on multiple clinic visits, the first recorded coverage in a calendar year was used. Insurance was classified as private, Medicaid, Medicare (including dual eligibles), and uninsured. Patients whose care was solely funded by Ryan White (ie, no other health insurance coverage), local government programs, or were self-pay were classified as uninsured. In some areas, Ryan White funds are used to purchase health insurance; if this occurred, patients were classified in terms of the insurance provided for them, not as uninsured.

Data Analysis

The person-year was the unit of analysis. Analyses were restricted to person-years in which a patient was aged at least 18 years and “in care.” We examined the proportion of patients with each type of insurance by calendar year (2006–2012) and by demographic and clinical characteristics. In exploratory analyses, we compared the distribution of insurance for the 8 clinics in states pursuing Medicaid expansion (CA, MA, MD, NY, OR) to the 3 clinics in states foregoing expansion (FL, PA, TX). To adjust for confounding, we used multinomial logistic regression, which included binary indicators for each HIVRN site. Since the same person could contribute multiple years of data, robust standard errors were calculated. To test for linear time trend, additional analyses coded year as integers from 1 to 7.

Analyses excluded 3561 person-year records (2.7%) with missing insurance information and 104 records with

missing CD4 data. It is possible that in some instances, uninsured patients were inappropriately classified as missing. We conducted a sensitivity analysis in which missing insurance was combined with uninsured.

RESULTS

Between 2006 and 2012, 36,999 HIV-infected adults were followed for a total of 129,970 person-years (Table 1). Nearly, 18 percent (17.6%) of patients provided data for all 7 calendar years; 8.8% for 6, 8.2% for 5, 9.4% for 4, 11.6% for 3, 17.5% for 2, and 26.9% for 1 year. At a person level, the majority were male (73.5%), of minority race/ethnicity (67.6%), and had MSM (43.5%) or HET (35.0%) as their HIV transmission risk behavior. Mean age increased from 43.6 years in 2006 to 45.4 in 2012. The proportion with 2 or more CD4 counts ≤ 200 cells per cubic millimeter dropped from 16.6% in 2006 to 10.0% in 2012 (results not shown; Table 1 reports person-year results).

Table 1 shows the unadjusted distribution of health insurance coverage by calendar year. The overall percentages of person-years with private insurance, Medicaid, Medicare, and no insurance were 15.9%, 36.7%, 20.1%, and 28.4%, respectively. Overall, there were slight fluctuations over time in the proportion of patients with each insurance type, with no clear trends. A formal test for linear trend using multinomial logistic regression produced relative risk ratios of 0.97 ($P = 0.001$), 0.99 ($P = 0.23$), and 0.98 ($P = 0.01$) for Medicaid, Medicare, and uninsured compared with private, respectively (results not shown). The low magnitude of these associations also suggests that time trends were substantively negligible. In sensitivity analyses combining missing insurance codes with uninsured, the proportion of uninsured persons fluctuated between 28.5% in 2008 and 32.5% in 2012, with no clear time trend.

Insurance was significantly ($P < 0.001$) associated with other characteristics, summarizing across years (Table 1). Women were more likely than men to have Medicaid (51.4%–29.6%). Whites were more likely to have private insurance (27.1%) than blacks (11.0%) or Hispanics (9.6%). Hispanics were more likely to be uninsured (35.8%) than whites (26.3%) or blacks (25.9%). More persons with MSM transmission risk had private insurance (23.8%) than other risk groups, whereas those with IDU risk more commonly had Medicaid than MSM or HET. Younger age groups had higher proportions of uninsured individuals than older age groups, whereas the proportion on Medicare was highest among those aged 65 or older.

Results of the multinomial model appear in Table S1 (see **Supplemental Digital Content**, <http://links.lww.com/QAI/A544>). For each type of insurance (compared with private coverage), the set of indicators for year was statistically significant ($\chi^2 = 60.9$ for Medicaid, 46.4 for Medicare, and 48.8 for no insurance, $df = 6$; $P < 0.001$ for each). However, there was no clear monotonic trend over time for any insurance type. The marginal predicted proportions for each insurance type by calendar year (see **Table S2, Supplemental Digital Content**, <http://links.lww.com/QAI/A544>) are similar to the unadjusted proportions in Table 1. Comparing 2006–

TABLE 1. Proportion of Person-Years With Each Insurance Type by Calendar Year and Patient Characteristics

Characteristics	Total, N = 129,970 (%) [*]	Private (%) [†]	Medicaid (%) [†]	Medicare (%) [†]	Uninsured (%) [†]
Year[‡]					
2006	15,691 (12.1)	14.9	35.9	20.1	29.1
2007	16,515 (12.7)	16.0	36.0	19.9	28.0
2008	17,678 (13.6)	16.4	37.5	19.6	26.5
2009	18,617 (14.3)	16.2	36.5	19.9	27.4
2010	19,760 (15.2)	16.1	35.7	20.1	28.1
2011	20,912 (16.1)	15.4	34.9	20.1	29.6
2012	20,797 (16.0)	16.2	33.5	20.7	29.6
Age group, yrs[‡]					
18–24	4512 (3.5)	12.3	32.4	1.5	53.8
25–34	18,240 (14.0)	16.4	31.5	6.8	45.4
35–44	38,865 (29.9)	17.1	34.6	15.5	32.8
45–54	46,724 (36.0)	15.7	39.0	23.3	22.0
55–64	17,856 (13.7)	15.9	39.5	28.5	16.2
≥65	3773 (2.9)	8.4	11.0	73.9	6.7
Gender[‡]					
Male	93,760 (72.1)	18.1	29.6	21.9	30.4
Female	36,210 (27.8)	10.2	51.4	15.2	23.2
Race/ethnicity[‡]					
White	38,292 (29.5)	27.6	21.4	24.7	26.3
Black	58,151 (44.7)	11.0	43.3	19.9	25.9
Hispanic	30,502 (23.5)	9.6	39.5	15.1	35.8
Other/unknown	3025 (2.4)	26.4	30.8	14.9	27.9
HIV risk factor[‡]					
MSM	56,172 (43.2)	23.8	21.2	21.8	33.3
HET	47,122 (36.3)	10.4	42.7	17.7	29.2
IDU	16,847 (13.0)	6.0	60.8	18.9	14.2
MSI	4165 (3.2)	10.1	32.7	30.9	26.3
Other/unknown	5664 (4.4)	17.2	48.2	18.1	16.4
CD4 count ≤ 200 cells/mm³[‡]					
0–1	112,385 (86.5)	17.1	34.7	19.7	28.6
2 or more	17,585 (13.5)	8.2	42.1	22.6	27.1

Person-years are the units of analysis; persons could contribute multiple years. The χ^2 test of independence was used to identify differences in demographic and clinic characteristics across the 4 insurance categories.

^{*}Percentages represent column percents.

[†]Percentages represent row percents.

[‡] $P < 0.001$ for χ^2 test of independence.

MSI, combination of MSM and IDU risk.

2012, the predicted proportion of patients with each insurance type varied by only 1%–2%.

Three HIVRN clinics were in states foregoing Medicaid expansion. In 2012, the distribution of insurance in these clinics was 6.1% private, 24.7% Medicaid, 21.0% Medicare, and 48.2% uninsured. In contrast, the 2012 insurance distribution in states expanding Medicaid was 23.5% private, 39.9% Medicaid, 20.4% Medicare, and 16.1% uninsured. In both sets of clinics, the distribution of insurance was stable over time (results not shown).

DISCUSSION

Among patients receiving care for HIV infection, the aggregate distribution of health insurance coverage was stable between 2006 and 2012. This stability may reflect a complex

process in which individual patients are changing coverage, but these changes offset each other on the aggregate level. Alternatively, for many individuals, insurance coverage may remain constant over time. Regardless, these results suggest an aggregate equilibrium and provide a baseline for interpreting any changes post-ACA.

The distribution of insurance coverage for PLWH differs from that of the general US population. Based on nationally representative data from the 2010 Medical Expenditure Panel Survey, 20% of adults had no insurance and 9% had Medicaid coverage on December 31, 2010.²² In contrast, 28.1% of patients in our sample were uninsured, and 35.7% had Medicaid coverage in 2010. These differences reflect the relatively high proportions of racial/ethnic minorities, injection drug users, and low-income people infected with HIV, groups that are more likely to be uninsured or have Medicaid coverage.^{13,23,24}

In the current analysis, Medicaid coverage was more prevalent among black and Hispanic than white patients, and more common among individuals with IDU transmission risk than those with MSM or HET risk. Hispanics were more likely to be uninsured than other racial/ethnic groups. These findings are likely a consequence of the socioeconomic and citizenship differences between these groups.^{25–28} Unfortunately, data on patients' income, employment, or citizenship were unavailable. Future studies examining the relationship between socioeconomic status, insurance coverage, and demographic factors are necessary, since the ACA expansion of Medicaid and distribution of premium subsidies for the purchase of private health insurance through the Health Insurance Marketplace will be income based.²⁹

As expected, the majority of patients aged 65 or older had Medicare coverage. Although low, the 7% in this age group reported as uninsured was unexpected. In part, this may be explained by factors such as (1) some patients may not be US citizens and thus not eligible for Medicare; (2) some patients may have insufficient Medicare-relevant employment history; and (3) some patients may have turned 65 after their first insurance was recorded in a year. These factors, along with the possibility of dual coverage, may also explain the proportions in this age group with private and Medicaid coverage.

This study is limited by relying on insurance status assessed at 1 point in time in each calendar year. We conducted a sensitivity analysis using a subset of HIVRN sites that provide insurance data at each primary HIV outpatient visit, defining patient's primary coverage for a calendar year as the insurance type held for the longest period. These analyses also showed no clear aggregate trends over time (results not shown). Additionally, our study focused on patients who engaged in care sufficiently to have laboratory testing and clinical follow-up. The distribution of insurance coverage for PLWH in care may be different from that of persons not in care. Further studies are needed to evaluate the insurance distribution of PLWH not in care. Finally, our findings may not generalize to all HIV-infected patients and care settings. However, HIVRN sites encompass a broad geographic distribution and include patients with a variety of demographic and clinical characteristics.

When the ACA is fully implemented, many PLWH will be eligible for Medicaid, and others may be able to purchase private health insurance through the Health Insurance Marketplace.^{16,29} These changes could reduce the number of PLWH who are uninsured and increase the proportion of individuals with Medicaid or private coverage. Future studies should assess how health insurance coverage changes post-ACA. Monitoring health insurance trends will be critical to ensuring that PLWH benefit from health reform and for defining the future role of the Ryan White Program.

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APPENDIX

Participating Sites: Alameda County Medical Center, Oakland, CA (Howard Edelstein, MD); Children's Hospital of Philadelphia,

Philadelphia, PA (Richard Rutstein, MD); Community Health Network, Rochester, NY (Roberto Corales, DO); Drexel University, Philadelphia, PA (Jeffrey Jacobson, MD, Sara Allen, CRNP); Fenway Health, Boston, MA (Stephen Boswell, MD); Johns Hopkins University, Baltimore, MD (Kelly Gebo, MD, Richard Moore, MD, Allison Agwu MD); Montefiore Medical Group, Bronx, NY (Robert Beil, MD); Montefiore Medical Center, Bronx, NY (Lawrence Hanau, MD); Oregon Health and Science University, Portland, OR (P. Todd Korthuis, MD); Parkland Health and Hospital System, Dallas, TX (Ank Nijhawan, MD, Muhammad Akbar, MD); St. Jude's Children's Hospital and University of Tennessee, Memphis; Tennessee (Aditya Gaur, MD); St. Luke's Roosevelt Hospital Center, New York, NY (Victoria Sharp, MD, Stephen Arpadi, MD); Tampa General Health Care, Tampa, FL (Charurut Somboonwit, MD); University of California, San Diego, CA (W. Christopher Mathews, MD).

Sponsoring Agencies: Agency for Healthcare Research and Quality, Rockville, MD (Fred Hellinger, PhD, John Fleishman, PhD, Irene Fraser, PhD); Health Resources and Services Administration, Rockville, MD (Robert Mills, PhD, Faye Malitz, MS).

Data-Coordinating Center: Johns Hopkins University (Richard Moore, MD, Jeanne Keruly, CRNP, Kelly Gebo, MD, Cindy Voss, MA, Nikki Balding, MS).