Combining Multisite Payor Data with Clinical Data to Quantify Medicaid Payments for HIV Care

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BACKGROUND

- Costs of care for persons living with HIV (PLWH) have been high historically and may increase as the HIV-infected population ages.
- Cost estimates based on data from one health care site likely underestimate total expenditures; using insurance claims avoids this limitation.

Objective:
To use Medicaid claims data to comprehensively measure payments for care for PLWH.

HYPOTHESES

- Older age and lower CD4 count will be associated with higher payments
- Inpatient services and ART will be the most costly components of HIV care

METHODS

Study Design: Cross-sectional analysis using Medicaid MAX files to quantify Medicaid payments for medical care for PLWH

Setting: Sites from the HIV Research Network (HIVRN)

Population: HIVRN participants covered by Medicaid FFS in NY, MD, and MA from 2006-2010

Exclusions from this analysis
Less than 18 years old; Eligibility data are missing; Records are multiple records for the same person, year, and state; In a comprehensive managed care plan for any time in a year; Dually eligible for any time in a year; Restricted benefits for any time in a year; Transgender (HIVRN database); Final N=2,160

Data Source: Medicaid data were obtained from the sites' states (MD, NY, and MA) and 3 surrounding states per site and matched to HIVRN medical record-based data.

Outcome: Payments Payment information collected from the Medicaid MAX PS file, with payments for various types of services designated by CMS

Statistical analysis: Adjusted linear regression analyses were performed to examine the relationship between total payments and HIVRN demographic and clinical variables

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RESULTS

Table 1. Fee-For-Service Sample Description and Mean Annual Payment

Variable	N* (%)	Mean Annual Payment (95% CI)†
Gender		
Male	7,964 (69.6)	41,985 (40,821 – 43,149)
Female	3,476 (30.4)	53,483 (51,374 – 55,593)
Race/Ethnicity		
White	2,109 (18.4)	31,466 (29,674 – 33,258)
Black	5,654 (49.4)	51,131 (49,451 – 52,811)
Hispanic	3,490 (30.5)	45, 827 (44,194 – 47,461)
Other	143 (1.3)	29,395 (21,774 – 37,016)
HIV Risk		
MSM	3,525 (30.8)	28,751 (27,504 – 29,998)
IDU	2,594 (23.6)	59,704 (57,276 – 62,132)
HET	4,484 (39.2)	49,118 (47,397 – 50,839)
MSM+IDU	199 (1.7)	42,337 (35,469 – 49,206)
VRT	136 (1.2)	41,634 (30,728 – 52,539)
Age Category on Jan 1		
18-35	1,957 (17.1)	27,522 (25,557 – 29,486)
36-49	6,407 (56.0)	46,022 (44,653 – 47,391)
50 or older	3,076 (26.9)	55,770 (53,578 – 57,963)
CD4 Category**		
<200	1,665 (14.6)	64,228 (61,031 – 67,423)
201-499	3,333 (29.1)	41,839 (40,229 – 43,450)
≥500	2,578 (22.5)	34,584 (33,016 – 36,150)
State		
NY	9,310 (81.4)	49,660 (48,493 – 50,827)
MA	1,467 (12.8)	16,585 (15,507 – 17,663)
MD	576 (5.0)	52,866 (46,282 – 59,451)
Year		
2006	2,502 (21.9)	45,408 (43,074 – 47,743)
2007	2,570 (22.5)	42,996 (40,844 – 45,149)
2008	2,443 (21.4)	44,571 (42,404 – 46,739)
2009	2,173 (19.0)	46,704 (44,321 – 49,087)
2010	1,752 (15.1)	48,964 (46,335 – 51,593)

Table 2. Factors associated with Medicaid Payments‡

Variable	β	p-value
Gender		
Male	Ref	
Female	3118.78	0.014
Race/Ethnicity		
White	Ref	
Black	2520.45	0.13
Hispanic	-1979.31	0.25
Other	-2256.64	0.63
HIV Risk		
MSM	Ref	
IDU	15723.94	<0.0001
HET	6864.45	<0.0001
MSM+IDU	6090.94	0.12
VRT	6922.25	0.16
Age Category on Jan 1		
18-35	Ref	
36-49	10684.65	<0.0001
50 or older	15960.14	<0.0001
CD4 Category		
<200	Ref	
201-499	-19245.60	<0.0001
≥500	-25615.86	<0.0001
State		
NY	Ref	
MA	-12737.78	<0.0001
MD	10447.82	<0.0001
Year		
2006	Ref	
2007	-1342.20	0.37
2008	-657.28	0.67
2009	2257.29	0.15
2010	5230.77	0.002

*Person-years **CD4 not performed if not enrolled in HIVRN clinic (33.8% of pt-years) ‡ Adjusted for eligibility days & (eligibility days)^2
†Includes both medical and non-medical services (e.g., transportation). Inflation adjusted to 2010 dollars. No adjustment for differences in eligibility period/year

- Factors associated with higher Medicaid payments include female sex, older age, lower CD4 cell category, calendar year (2010 compared with 2006) and HIV risk factor (both IDU and HET compared with MSM)

Table 3. Mean Annual Payments for Specific Services

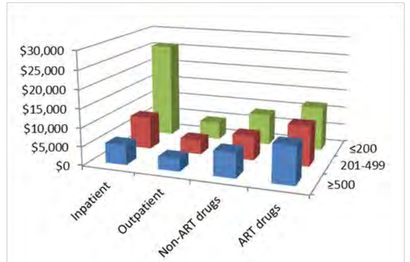
Type of Service	Proportion with Payment > 0	Mean Payment†
Outpatient	92.3	3,773 (3,679-3,868)
Other medications	90.4	7,542 (7,312-7,771)
Lab/Xray	81.8	643 (623-664)
ART Medications	75.8	10,297 (10,128-10,466)
Dental	36.5	251 (241-262)
Inpatient	34.7	14,299 (13,611-14,988)
Durable Med Equip	33	151 (140-163)
Transportation	20	216 (194-238)
Home Health	9.9	1,376 (1,213-1,540)
Personal care*	8.5	1,197 (1,081-1,313)
Psychiatric	6.1	705 (628-782)
Nursing*	3.8	4 (3-5)

† Payments inflation-adjusted to 2010 dollars. No adjustment for differences in eligibility period/year. Mean payment includes zero payment for non-users of service.
*Personal care combines adult day care and personal care services; Nursing combines nurse practitioner services and private duty nursing.

- Most person-years included payments for outpatient visits, non-ART medications, lab tests, and ART medications.
- A larger proportion of person-years included non-ART medications than ART medications.

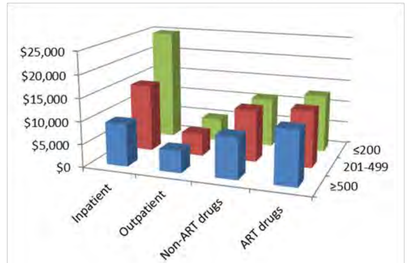
Figure 1. Mean Payment per Medicaid Beneficiary by Type of Service, CD4 count, and Age (2006-2010)

Figure 1a. Beneficiaries aged < 50 years



CD4 cell categories
- ≤200 cells/mm^3
- 201-499 cells/mm^3
- ≥500 cells/mm^3

Figure 1b. Beneficiaries aged ≥ 50 years



- Payments were higher for beneficiaries aged 50 and older.
- Inpatient costs were high among patients with low CD4 counts among both younger and older patients.
- ART costs were similar across all CD4 categories.

CONCLUSIONS AND IMPLICATIONS

- Payments for care for PLWH remain high, particularly in PLWH with the lowest CD4 counts, emphasizing the importance of effective treatment and immune reconstitution.
- Payments for older individuals are high and will likely continue to grow as PLWH live longer.

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