Location Matters: Site of HIV Diagnosis Strongly Associated with Linkage to Care

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Disclosures

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Linkage to Care is an Important Measure of Quality Care

- Critical to achieving HIV viral suppression

- Key to the test-and-treat to HIV prevention

- Central part of the **NHAS**

  - Increase the proportion linked to care within 3 months of their HIV diagnosis from 65% to 85%

Factors Influencing Linkage to Care

- Prior research has mostly focused on **patient** factors
  - Women, uninsured individuals, injection drugs users, persons with lower household incomes

- Few studies have examined **health system** factors

Torian et al., 2008
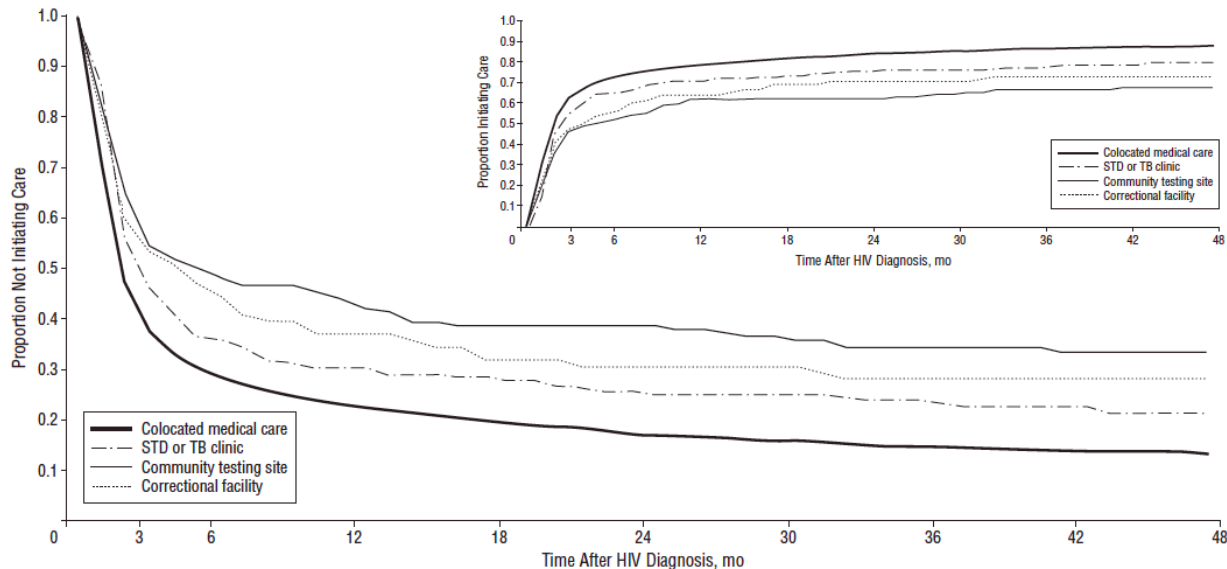
Objective

Extend prior studies by:

(1) Using more recent data from a different geographic region

(1) Employing an improved definition of linkage to care

(2) Examining linkage to care for persons diagnosed in inpatient/emergency room facilities

Provide new information on how the **site of HIV diagnosis influences linkage to care**

Data Source and Study Population

Philadelphia's Enhanced HIV/AIDS Reporting System **(eHARS)**

- Name-based case reporting of all new HIV infections in the City

- Reporting of all CD4 <350 cell/mm^3 and all HIV RNA results

- Medical record abstraction for all patients linked to care

- All laboratory results are assigned a unique identifier

All adults (≥18 years old) with a **new HIV diagnosis** (+ Western blot) in Philadelphia between **2010 and 2011**; follow-up through 2012

Variables

Predictors (at time of diagnosis): age, sex at birth, race/ethnicity, HIV transmission risk, calendar year, and site of HIV diagnosis

- Medical care clinic

- Inpatient facility (including emergency room)

- Counseling and testing center

- Correctional facilities

Outcome: linkage to care

- difference between date of HIV diagnosis and date of entry into care (date of 1st CD4 or HIV RNA at a medical care clinic)

- timely linkage was entering care within 3 months of diagnosis

Analyses

A **time-to-event analysis** was conducted using days between HIV diagnosis and entry into care as the dependent variable

- Kaplan-Meier product-limit method was used to estimate the cumulative proportion entering care after HIV diagnosis

- Multivariate Cox proportional hazards regression was used to identify factors associated with time to entry into care

Multivariable logistic regression was used to examine the association between HIV diagnosis site and timely linkage to care (within 3 mnths)

Sample Characteristics, Overall

Characteristics	N=1,359 (%)
Age (years)	
18-29	495 (36%)
30-39	324 (24%)
40-49	313 (23%)
≥ 50	227 (17%)
Sex	
Male	1,010 (74%)
Female	349 (26%)
Race/Ethnicity	
White	202 (15%)
Black	921 (68%)
Hispanic	208 (15%)
HIV Risk Factor	
HET	622 (46%)
MSM	563 (41%)
IDU	142 (10%)

Sample Characteristics, Diagnosis Site

Characteristics	Medical Care Clinic 986 (73%)	Inpatient Setting 201 (15%)	Counseling & Testing Center 90 (7%)	Correctional Facility 82 (6%)

Baligh R. Yehia, MD, MPP, MSHP

Sample Characteristics, Diagnosis Site

Characteristics	Medical Care Clinic N=986 (100%)	Inpatient Setting N=201 (100%)	Counseling & Testing Center N=90 (100%)	Correctional Facility N=82 (100%)
Age (years)				
18-29	396 (40%)	30 (15%)	45 (50%)	24 (29%)
30-39	222 (23%)	52 (26%)	22 (24%)	28 (34%)
40-49	210 (21%)	67 (33%)	14 (16%)	22 (27%)
≥ 50	158 (16%)	52 (26%)	9 (10%)	8 (10%)

Sample Characteristics, Diagnosis Site

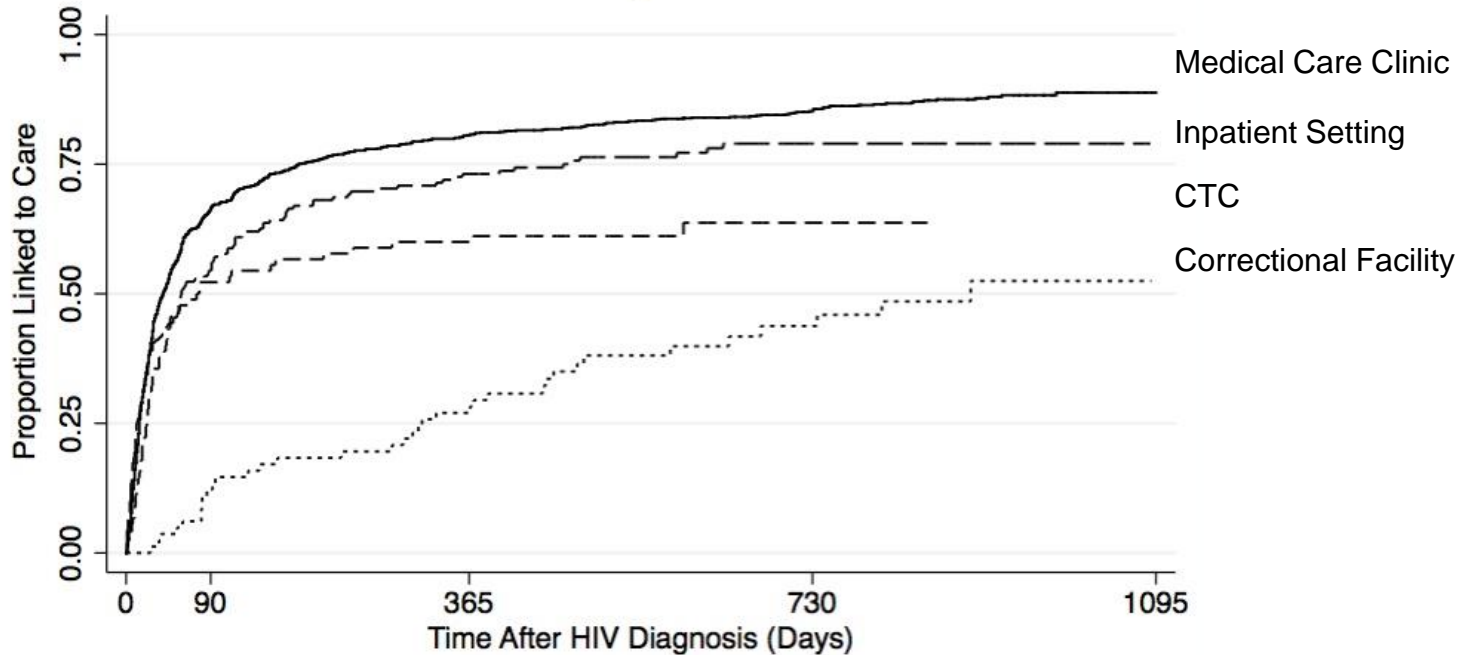| Characteristics	Medical Care Clinic N=986 (100%)	Inpatient Setting N=201 (100%)	Counseling & Testing Center N=90 (100%)	Correctional Facility N=82 (100%)
Sex				
Male	730 (74%)	139 (69%)	76 (84%)	65 (79%)
Female	256 (26%)	62 (31%)	14 (16%)	17 (21%)

Sample Characteristics, Diagnosis Site

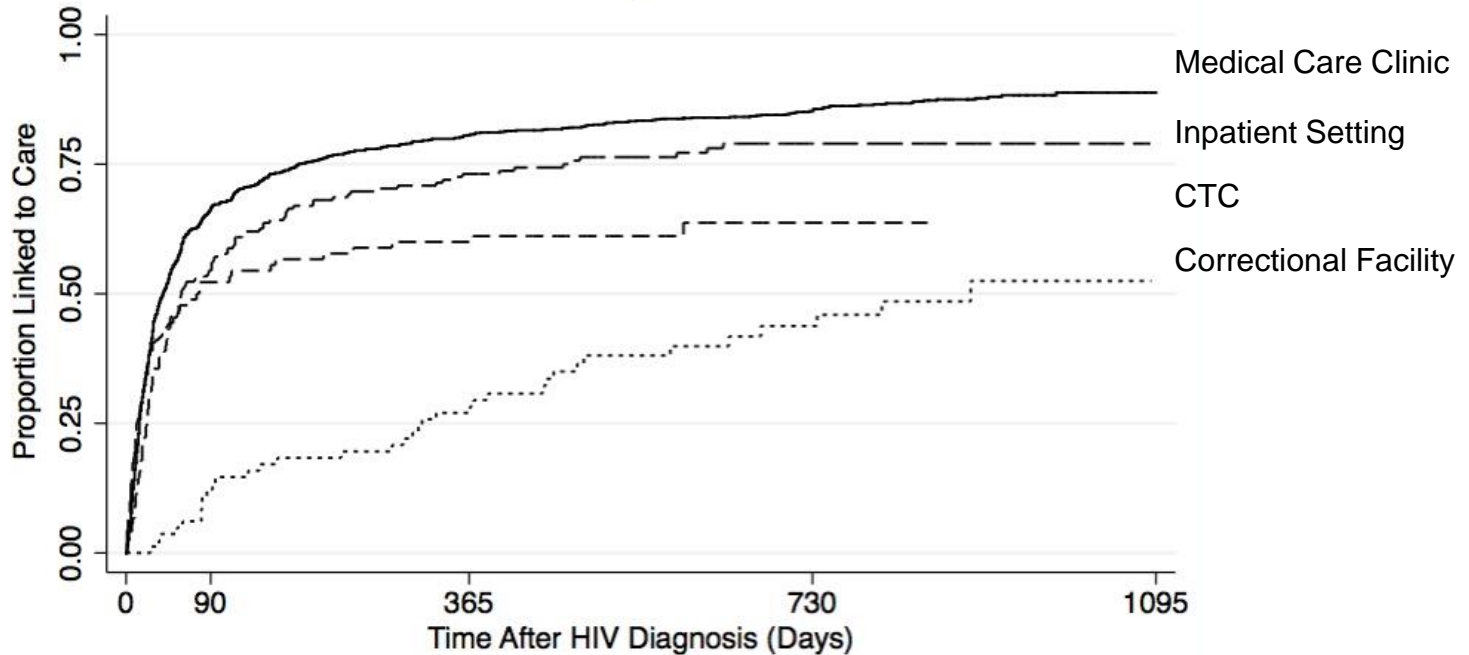| Characteristics	Medical Care Clinic N=986 (100%)	Inpatient Setting N=201 (100%)	Counseling & Testing Center N=90 (100%)	Correctional Facility N=82 (100%)
Race/Ethnicity				
White	157 (16%)	23 (11%)	11 (12%)	11 (13%)
Black	668 (68%)	142 (71%)	56 (62%)	55 (67%)
Hispanic	138 (14%)	33 (16%)	21 (23%)	16 (20%)

Sample Characteristics, Diagnosis Site

Characteristics	Medical Care Clinic N=986 (100%)	Inpatient Setting N=201 (100%)	Counseling & Testing Center N=90 (100%)	Correctional Facility N=82 (100%)
HIV Risk Factor				
HET	435 (44%)	113 (56%)	17 (19%)	57 (70%)
MSM	449 (46%)	53 (26%)	53 (59%)	8 (10%)
IDU	82 (8%)	26 (13%)	20 (22%)	14 (17%)

Linkage to Care

| Characteristics | Linked | | | Not Linked |
	Total 1,093 (80%)	Within 90 Days 821 (60%)	After 90 Days 272 (20%)	266 (20%)
Site of HIV Diagnosis				
Medical Care Clinic	851 (86%)	656 (67%)	195 (20%)	135 (14%)
Inpatient Setting	150 (75%)	108 (54%)	42 (21%)	51 (25%)
CTC	56 (62%)	47 (52%)	9 (10%)	34 (38%)
Correctional Facility	26 (44%)	10 (12%)	26 (32%)	46 (56%)

Linkage to Care

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Factors Associated with Linkage & Timely Linkage

Characteristics	Linkage AHR (95% CI)	Timely Linkage AOR (95% CI)
Site of HIV Diagnosis		
Medical Care Clinic	1 [Reference]	1 [Reference]
Inpatient Setting	0.77 (0.64-0.92)	0.51 (0.37-0.71)
CTC	0.56 (0.42-0.74)	0.52 (0.33-0.82)
Correctional Facility	0.25 (0.18-0.35)	0.06 (0.03-0.12)
Age (years)		
18-29	1 [Reference]	1 [Reference]
30-39	1.02 (0.86-1.21)	1.31 (0.95-1.81)
40-49	1.09 (0.92-1.29)	1.17 (0.85-1.62)
≥ 50	1.14 (0.94-1.37)	1.48 (1.02-2.13)
Sex		
Male	1 [Reference]	1 [Reference]
Female	1.04 (0.88-1.22)	1.07 (0.78-1.46)
Race/Ethnicity		
White	1 [Reference]	1 [Reference]
Black	0.76 (0.64-0.91)	0.58 (0.40-0.84)
Hispanic	0.89 (0.72-1.11)	0.80 (0.50-1.26)
HIV Risk Factor		
HET	1 [Reference]	1 [Reference]
MSM	0.89 (0.76-1.05)	0.70 (0.50-0.96)
IDU	0.65 (0.52-0.81)	0.37 (0.25-0.56)

Conclusions

1. **Higher linkage to care rates when HIV testing programs are co-located at medical care clinics.**

    - **Referral process easier within the same administration/location.**

    - **Patients may be more comfortable returning to the same locations, given their history of testing at that site.**

    - **Most patients were dx at medical care clinics, thus small improvements in linkage to care can have a large impact.**

Conclusions

2. Highlight the need to **develop interventions** to facilitate linkage for those dx in correctional facilities, CTCs, and inpatient settings.

- These sites serve vulnerable/high-risk populations.

- <u>Ex-offenders</u>: multiple obligations after release from prison and limited support during this transition.

- <u>Hospitalized patients</u>: poor understanding of discharge plan, including follow-up appointments.

- **Multifaceted approaches** to addressing barriers and improve care coordination are needed (i.e. Project Bridge, navigators).

Limitations

1. Use of laboratory data to define linkage to care, may underestimate timely linkage if labs were not ordered at 1st visit.

2. Unable to account for outmigration, may underestimate linkage.

3. LOS and rates of recidivism in PA are among the highest in U.S., may explain why linkage was low for those diagnosed in prisons.

4. Surveillance data does not capture potentially relevant factors that may impact linkage (e.g. fear of discrimination and stigma, social supports, and comorbid conditions).

5. Generalizability was limited, as we only studied HIV-infected individuals in one U.S. city.

Implications & Future Studies

1. Only **60%** of our sample linked to care within 3 months of HIV diagnosis.

2. Improving linkage to HIV care, partially for persons diagnosed at sites without co-located medical care, is critical to:

   - realizing the **treatment and prevention benefits** of ART

   - achieving the **targets set in the NHAS**

3. Future studies to evaluate length of stay while in prison and reclassify linkage as laboratory testing in a medical care site or correctional facility.

Thank You!

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