Rethinking the Definition of Late HIV Diagnosis Using Florida Surveillance Data, 2015-2021

1043

Christina E. Parisi[1,2], Robert L. Cook[1,2], Zhigang Li[2,3], Shantrel S. Canidate[1,2], Awewura Kwara[1,4], Zhi Zhou[2], Colby Cohen[5], Natalie Chichetto[1,2]

1 Department of Epidemiology, University of Florida; **2** Southern HIV and Alcohol Research Consortium, Emerging Pathogens Institute, University of Florida; **3** Department of Biostatistics, University of Florida; **4** Department of Medicine, Division of Infectious Diseases & Global Medicine, University of Florida; **5** HIV/AIDS Section, Bureau of Communicable Diseases, Florida Department of Health

Background

- **Late HIV diagnosis** is associated with transmission risk and worse HIV-related outcomes.
- The Centers for Disease Control and Prevention defines late HIV diagnosis as a CD4+ T-cell count<200 cells/mm^3 at diagnosis.
- It is unclear if an **expanded, clinically relevant definition of "delayed" diagnosis (CD4<350) would better represent those in need of resources to prevent poor outcomes.**
- **Our aims were to examine:**

1. Trends in the annual proportion of late and delayed HIV diagnosis between 2015-2021 in Florida.
2. Patient characteristics by diagnosis status.
3. The association between diagnosis status and mortality.

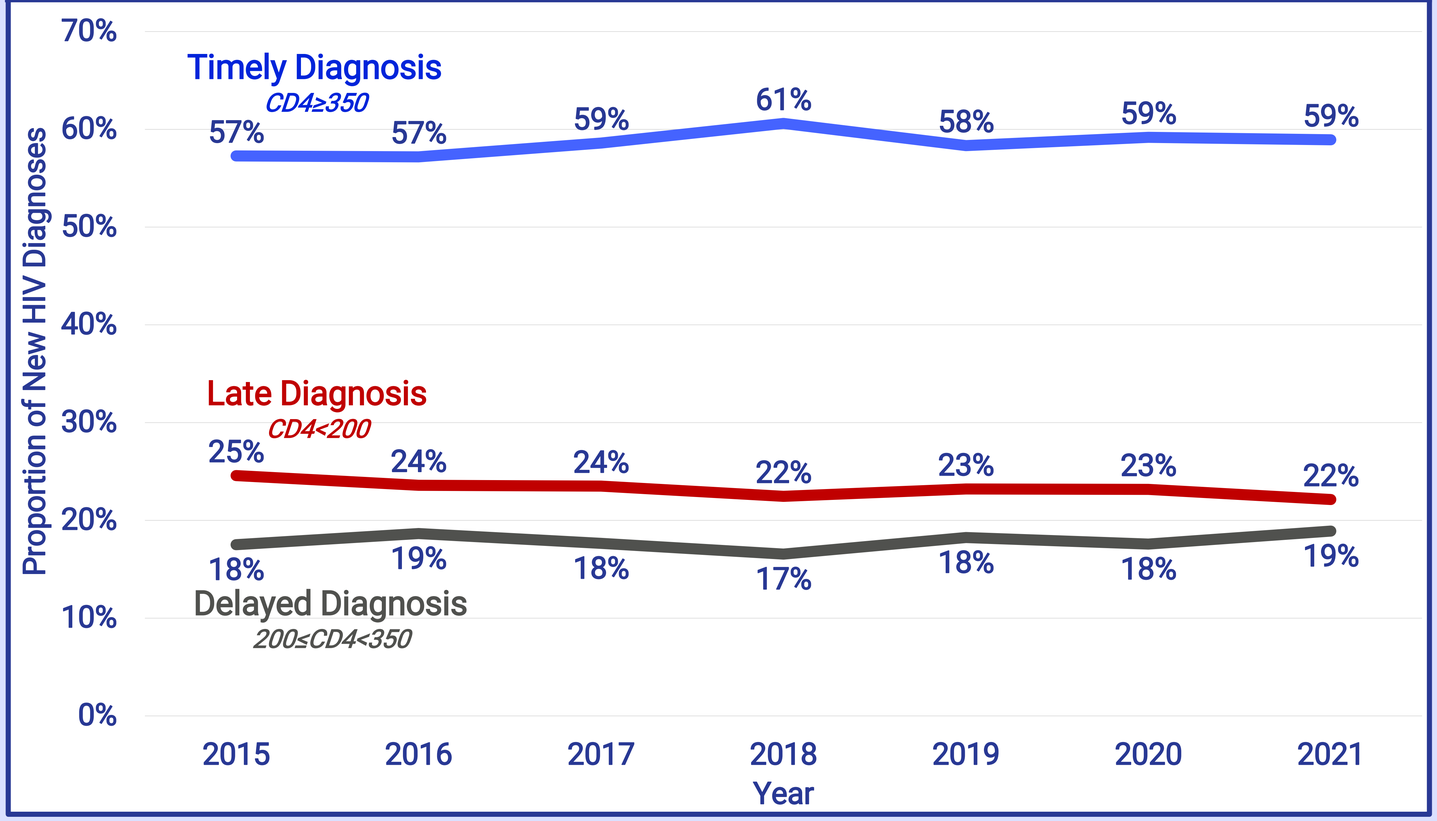
Methods

- **Participants (N=27,460)**
  - 21% female
  - 39% non-Hispanic [NH] Black, 35% Hispanic, 2% NH Other
  - Mean age 38.3 years (SD=12.9)
  - Diagnosed with HIV in Florida between 2015-2021
  - Laboratory data in the Enhanced HIV/AIDS Reporting System
- **Analysis**
  - **Multivariable multinomial logistic regression** models examined characteristics by diagnosis status.
  - **Logistic regression**, adjusting for characteristics, estimated risk of death.
- **Variables of Interest**
  - **Diagnosis status** was categorized as:
    - Late (CD4<200 cells/mm^3)
    - Delayed (200 cells/mm^3 ≤CD4<350 cells/mm^3)
    - Timely (CD4≥350 cells/mm^3)
  - **Other variables included:**
    - Age at diagnosis
    - Sex
    - Race/ethnicity
    - Birth region
    - Diagnosis facility type

Table 1. Sample Characteristics (N=27,460)

	Late Diagnosis (n=6,404, 23%)	Delayed Diagnosis (n=4,919, 18%)	Timely Diagnosis (n=16,066, 59%)
Age at Diagnosis			
18-24	450 (7%)	737 (15%)	2,308 (14%)
25-34	1,763 (28%)	1,782 (36%)	5,967 (37%)
35-49	2,328 (36%)	1,404 (29%)	4,784 (30%)
50+	1,863 (29%)	996 (20%)	3,078 (19%)
Sex			
Male	4,984 (78%)	3,942 (80%)	12,870 (80%)
Female	1,420 (22%)	977 (20%)	3,267 (20%)
Race/Ethnicity			
Non-Hispanic White	1,471 (23%)	974 (20%)	4,110 (25%)
Non-Hispanic Black	2,840 (44%)	2,106 (43%)	5,769 (36%)
Hispanic	1,912 (30%)	1,716 (35%)	5,956 (37%)
Non-Hispanic Other	181 (3%)	123 (3%)	302 (2%)
Birth Region			
North America	4,029 (66%)	3,088 (66%)	9,852 (64%)
Caribbean	1,281 (21%)	946 (20%)	2,797 (18%)
Central/South America	566 (9%)	496 (11%)	2,065 (14%)
Other Region	225 (4%)	158 (3%)	643 (4%)
Diagnosis Facility Type			
Outpatient/Emergency Room	2,370 (40%)	2,358 (52%)	8,308 (55%)
Inpatient	2,499 (43%)	700 (15%)	1,538 (10%)
Screening/Laboratory Facility	852 (15%)	1,303 (29%)	4,524 (30%)
Other Facility	172 (3%)	207 (5%)	690 (5%)

Annual Proportion of Late, Delayed, and Timely Diagnoses in Florida, 2015-2021



Results

- From 2015-2021, **23% of new HIV diagnoses were late** and **18% were delayed**; this was consistent annually.
- Compared with a timely diagnosis, **late diagnosis was associated with older age** (ref=18-24; 25-34 [OR 1.6, 95% CI 1.4-1.8], 35-49 [2.4, 2.1-2.7], 50+ [2.7, 2.3-3.0]) **and Caribbean birth region** (ref=North America; 1.1, 1.0-1.3).
- **Late and delayed diagnosis were similarly associated with:**
  - **Female sex** (ref=male; delayed: 0.9, 0.8-0.96, late: 0.8, 0.7-0.9)
  - **NH Black race** (ref=NH White; delayed: 1.6, 1.4-1.7, late: 1.5, 1.4-1.6)
  - **Hispanic ethnicity** (delayed: 1.4, 1.2-1.5, late: 1.1, 1.0-1.2)
  - **Diagnosis at an inpatient facility** (ref=outpatient; delayed: 1.6, 1.4-1.7, late: 5.4, 5.0-5.9)
- There were 1,176 deaths; **death was associated with delayed (1.3, 1.04-1.5) and late (1.9, 1.6-2.2) diagnosis.**

Conclusions

- **Expanding the definition of late diagnosis captured an additional 18% of HIV diagnoses that may be at greater risk of poor outcomes including death in Florida between 2015-2021.**
- Characteristics associated with late and delayed diagnoses were consistent.
- Late and delayed diagnosis were associated with greater mortality risk.
- Those with late and delayed diagnosis could benefit from enhanced intervention.
- **Future research could use an expanded definition of late diagnosis (CD4<350 cells/mm^3) as individuals in this group might need targeted interventions to address missed HIV testing opportunities for early diagnosis.**

Funding: #F31AA030733 (CEP); #K01DA057881 (SSC). **Contact:** Christina E. Parisi, christina.parisi@ufl.edu **Visit:** https://sharc-research.org/