AUTHOR CONTACT INFORMATION
Xianming (Joshua) Zhu, MHS.
Email: joshuazhu@jhu.edu

Trends in Hospital Readmissions Among Adults With and Without HIV in the US, 2010-2020

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Xianming Zhu[1], Eshan U. Patel[1], Mary K. Grabowski[1], Thomas C. Quinn[1,2], Stephen A. Berry[1], Kelly A. Gebo[1], Aaron A.R. Tobian[1]
[1]Johns Hopkins University, Baltimore, Maryland, USA; [2]Division of Intramural Research, National Institute on Allergy and Infectious Diseases, Baltimore, Maryland, USA

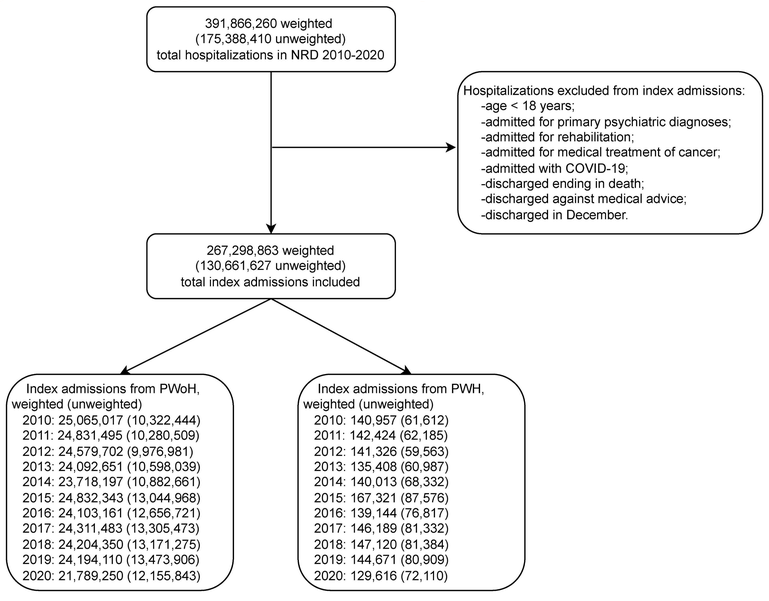
BACKGROUND

- Hospital readmission is an indicator of quality-of-care and impacts health care expenditure.
- There are limited data characterizing national trends in readmission among people with HIV (PWH) in the US.
- We describe the overall and sex-specific national trends in 30-day, all-cause, unplanned readmission risk among hospitalized adults with and without HIV in the US.

METHODS

- We used the 2010-2020 Nationwide Readmission Database (NRD); weighted estimates represent all US hospitalizations (~35 million/year).
- We followed the US Center for Medicare & Medicaid Service (CMS) to define index admission and readmission, and used ICD-10 codes to define conditions (e.g., HIV status).
- The unit of analysis was an index admission. In line with the CMS, we included all admissions as index admissions after implementing the exclusion criteria in **Figure 1**.
- The primary outcome was the 30-day all-cause, unplanned readmission risk (referred to as readmission risk hereafter).
- We estimated the readmission risk by calendar year stratified by HIV status and sex. We estimated the risk difference (RD) and annual percent change of readmission risk using random-effects linear and Poisson regressions to account for repeated admissions.

Figure 1. Flow diagram of the study population.



Since 2016, hospital readmission risk among people with HIV has declined but remains nearly two-thirds higher than among people without HIV. In contrast to their counterparts without HIV, females with HIV had higher readmission risk than males with HIV.

Figure 2. Trends in readmission risk between people with and without HIV in the US, 2010-2020.

A. Overall
B. Stratified by sex
C. Stratified by sex and excluded pregnancy-related admissions

Abbreviations: PWH: people with HIV; PWoH: people without HIV.

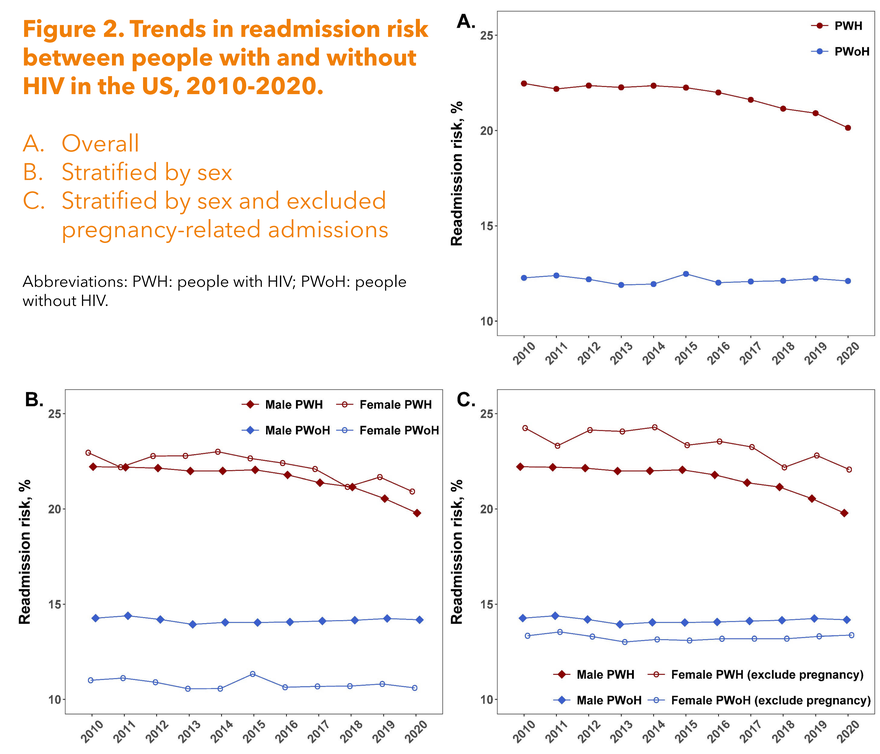


Table 1. Changes in readmission risk among people with HIV in the US, 2010-2020.

Characteristics	PWH, 2010-2015			
	No. Readmitted (%) 2010	No. Readmitted (%) 2015	RD (95% CI) 2015 vs 2010	APC (95%CI) 2015-2010
Overall	31673 (22.5)	37236 (22.3)	-0.09 (-0.83, 0.66)	-0.08 (-0.71, 0.55)
Male	20420 (22.2)	24375 (22.1)	-0.01 (-0.86, 0.85)	-0.14 (-0.86, 0.59)
Female	11253 (23.0)	12861 (22.7)	-0.24 (-1.25, 0.76)	0.02 (-0.84, 0.88)
Non-pregnant female	10872 (24.2)	12646 (23.3)	-0.86 (-1.91, 0.20)	-0.34 (-1.18, 0.51)
Pregnant female	381 (9.1)	215 (8.3)	-0.32 (-2.82, 2.18)	-3.36 (-8.47, 2.02)
Characteristics	PWH, 2016-2020			
	No. Readmitted (%) 2016	No. Readmitted (%) 2020	RD (95% CI) 2020 vs 2016	APC (95%CI) 2016-2020
Overall	30611 (22.0)	26112 (20.l)	-1.60 (-2.24, -0.95)	-1.98 (-2.70, -1.24)
Male	19814 (21.8)	17433 (19.8)	-1.76 (-2.47, -1.06)	-2.22 (-3.01, -1.41)
Female	10797 (22.4)	8678 (20.9)	-1.23 (-2.19, -0.27)	-1.45 (-2.54, -0.35)
Non-pregnant female	10521 (23.5)	8417 (22.1)	-1.24 (-2.22, -0.26)	-1.40 (-2.46, -0.32)
Pregnant female	276 (7.9)	261 (7.8)	0.04 (-1.72, 1.80)	-0.67 (-5.99, 4.95)

Abbreviations: RD: risk difference; APC: annual percent change.

RESULTS

- PWH comprised 0.6% of index admissions. The median age was 52 (IQR=40-60) years for PWH and 61 (IQR=38-74) years for people without HIV. While 68.2% of PWH were male, 39.4% of people without HIV were male.
- Among people without HIV, the annual readmission risk was stable at ~12% during 2010-2020 (**Figure 2A**).
- Among PWH, the annual readmission risk was stable at ~22% during 2010-2015, but declined from 22.0% in 2016 to 20.1% in 2020 (RD=-1.60 [95%CI: -2.24, -0.95]).
- In contrast to people without HIV, females with HIV had higher readmission risk than males with HIV (**Figure 2B**).
- The disparity in readmission risk between females and males with HIV increased after excluding pregnancy-related hospitalizations (**Figure 2C**).
- The decline in readmission risk between 2016 and 2020 among PWH was marginally greater for males with HIV (21.8% to 19.8%; RD=-1.76 [95%CI: -2.47, -1.06]) than non-pregnant females with HIV (23.5% to 22.1%; RD=-1.24 [95%CI: -2.22, -0.26]) (**Table 1**).

CONCLUSIONS AND IMPLICATIONS

- PWH continue to have nearly two-thirds higher readmission risk than people without HIV.
- The gap in readmission risk between people with and without HIV is becoming narrower since 2016, when recommendations for universal antiretroviral therapy regardless of CD4 count were widespread.
- The sex disparity in readmission risk among PWH persists. The causes need to be elucidated and females with HIV represent a target population for readmission interventions.
- As advancing health equity through improved health outcomes among PWH is a key aim of the 'Ending the HIV Epidemic' initiative, inpatient and post discharge care may need to be tailored to the special needs of PWH.

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