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Readmission Risk for Adults with HIV Hospitalized for Heart Failure or Acute Myocardial Infarction

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BACKGROUND

- Thirty-day hospital readmission is a key indicator of quality of care.
- People with HIV (PWH) have a higher incidence of heart failure (HF) and acute myocardial infarction (AMI) than people without HIV (PWoH).
- In the general population, 30-day readmissions following hospitalization for HF or AMI are common, and reducing these readmissions is a national quality of care priority.
- Few studies have evaluated whether readmission risk varies between PWH and PWoH hospitalized for HF or AMI using a nationally representative database.

OBJECTIVE

- To examine the US national trends in 30-day all-cause unplanned readmission risk following hospitalization for HF or AMI in 2016-2022.
- To descriptively compare the 30-day readmission risk between adults with and without HIV hospitalized for HF or AMI in 2022.

METHODS

Study Design

- A retrospective cohort study using the Nationwide Readmissions Database (NRD) from the Healthcare Cost and Utilization Project.
- The NRD is an annual database, and the 2022 NRD included all hospitalizations from 30 U.S. states with approximately 16.5 million unweighted discharges, representing 60% of all U.S. hospitalizations. Weighted, it represents all US community hospitalizations (~33 million).

Analytical Population

- Adults admitted for HF or AMI were identified using ICD-10-CM diagnosis codes.
- Following the US Centers for Medicare & Medicaid Services, we included all hospitalizations from the analytical sample that were discharged alive as the index (initial) admission.

Main Outcomes

- Thirty-day all-cause unplanned readmission.

Statistical Analysis

- Weighted mixed-effects logistic regression with average marginal estimates was used to calculate the risk ratio.

There was a decreasing trend in 30-day readmission risk among PWH and PWoH hospitalized for HF and PWH hospitalized for AMI from 2016 to 2022.
For hospitalizations due to HF or AMI, PWH had significantly higher 30-day readmission risks than PWoH, with the largest differences in younger males and older females.

Figure 1. Trends in 30-Day Readmission Risk Following Hospitalization for HF or AMI by HIV status in the US, 2016-2022

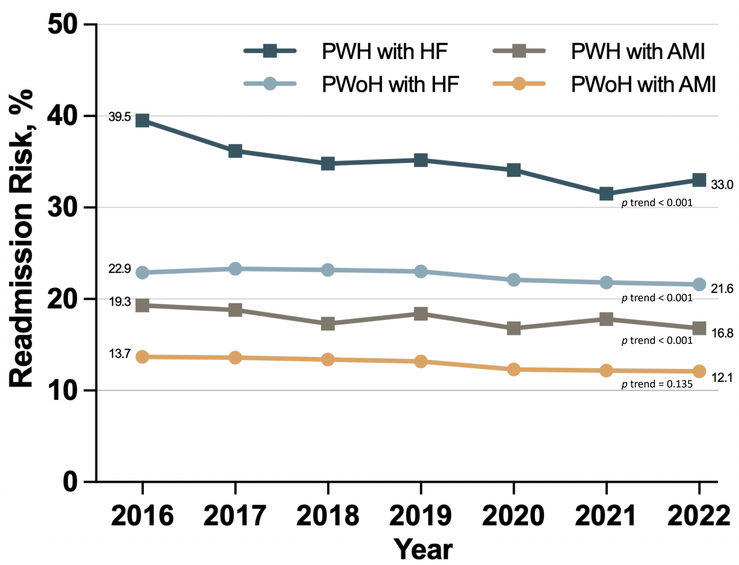


Table 1. Top 3 Principal Diagnoses for Readmissions among Adults Hospitalized for HF or AMI by HIV status in 2022 NRD

Heart Failure

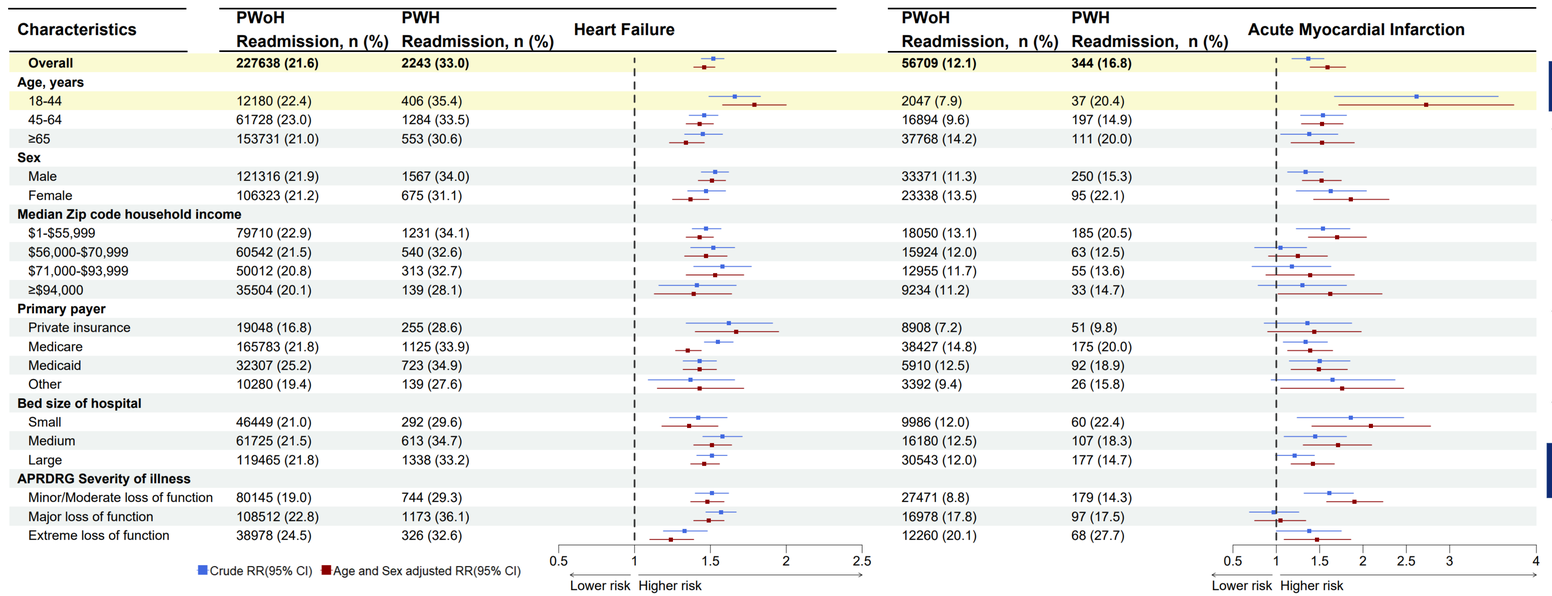
PWoH Principal diagnosis	N (%)	PWH Principal diagnosis	N (%)
Hypertensive heart and CKD with HF, including CKD stage 1-4 or unspecified	49467 (21.7)	Hypertensive heart and CKD with HF, including CKD stage 1-4 or unspecified	414 (18.5)
Hypertensive heart disease with HF	28309 (12.4)	Hypertensive heart disease with HF	351 (15.7)
Sepsis, unspecified organism	12092 (5.3)	Hypertensive heart and CKD with HF and with CKD stage 5, or end-stage renal disease	180 (8.0)

Acute Myocardial Infarction

PWoH Principal diagnosis	N (%)	PWH Principal diagnosis	N (%)
Acute myocardial infarction, unspecified	6415 (11.3)	Acute myocardial infarction, unspecified	42 (12.1)
Hypertensive heart and CKD with HF, including CKD stage 1-4 or unspecified	3905 (6.9)	Hypertensive heart disease with HF	26 (7.6)
Hypertensive heart disease with HF	3700 (6.5)	Atherosclerotic heart disease of native coronary artery with unstable angina pectoris	13 (3.8)

Abbreviation: CKD, chronic kidney disease.

Figure 2. Comparison of 30-Day Readmission Risk Following Hospitalization for Heart Failure or Acute Myocardial Infarction by HIV Status and Index Admission Characteristics in 2022 NRD



Each person may have ≥ 1 index admission in this figure. Each row represents a stratum. Crude RR and age and sex-adjusted RR (aRR) compared the readmission risk between PWH and PWoH. Sex was not adjusted when stratified by male and female.

RESULTS

- At baseline (first index admission), PWH hospitalized for HF or AMI were younger and more likely to be male, reside in lowest income areas, have Medicaid insurance, be admitted to large bed size hospitals, and had a major loss of function compared to PWoH.
- PWH hospitalized for HF had the highest readmission risk, the risk declined significantly from 39.5% in 2016 to 33.0% in 2022. PWoH hospitalized for HF and PWH hospitalized for AMI also show decreasing trends, while the readmission risk for PWoH hospitalized for AMI remains relatively stable **(Fig.1)**.
- Among HF index hospitalizations, PWH had a significantly higher readmission risk (33%) compared to PWoH (22%), (aRR= 1.46, 95%CI=1.39-1.53). Similarly, for AMI index hospitalizations, PWH had a significantly higher readmission risk (17%) than PWoH (12%), (aRR= 1.59, 95%CI=1.39-1.80) **(Fig. 2).**
- In age- and sex-stratified analysis, PWH consistently had higher readmission risks than PWoH for both HF and AMI hospitalization, with the largest differences observed in younger males and older females.
- For HF hospitalization, the most common readmission diagnosis in both PWoH and PWH was hypertensive heart and CKD with HF, including CKD stage 1-4 or unspecified (21.7% vs. 18.5%). For AMI hospitalization, the leading readmission diagnosis was AMI, unspecified (11.3% vs. 12.1%) **(Table 1).**

CONCLUSIONS

- The readmission risk declined significantly from 2016 to 2022 for PWH and PWoH hospitalized for HF and PWH hospitalized for AMI.
- For hospitalizations due to HF and AMI, PWH had significantly higher 30-day readmission risks than PWoH in 2022.
- PWH hospitalized for HF had the highest readmission risk among the analytical population in 2022.
- Targeted interventions are needed to reduce readmission risks among PWH with HF and AMI.

ACKNOWLEDGEMENTS

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