Recent Trends in Opportunistic Infections at ART Initiation in the NA-ACCORD of IeDEA, 2017-2021

981

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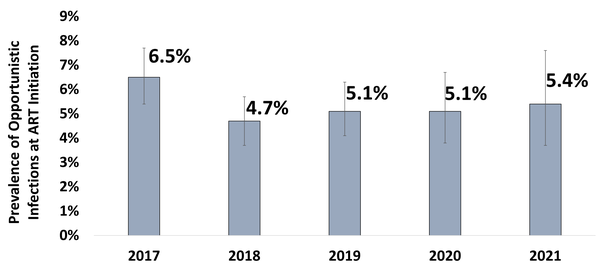
BACKGROUND

- Understanding the prevalence and consequences of opportunistic infections (OIs) at antiretroviral therapy (ART) initiation remains critical for informing HIV testing and care strategies that reduce the likelihood of late presentation for care
- **We assessed trends in OIs at ART initiation and their association with 1-year survival in the North American AIDS Cohort Collaboration on Research and Design (NA-ACCORD) from 2017 – 2021**

METHODS

- **Study population**: adults (≥18 years) with detectable viral loads (>200 copies/mL) initiating ART from 1 Jan 2017 to 31 Dec 2021 (study period)
- **Opportunistic infection (OI)** diagnoses were measured six months prior to two weeks after ART initiation
- **Death** was measured via clinical tracking and linkages to death registries
- **Covariates** (measured at ART initiation) included sex, race and ethnicity, HIV acquisition risk group, HIV viral load, CD4 count, and contributing cohort
- **Statistical Analyses**
  - Trends in the annual prevalence of OI at ART initiation were estimated and correlates identified using log binomial model to estimate crude and adjusted prevalence ratios (PR) and 95% confidence intervals
  - 1-year cumulative incidence of death by OI status was estimated using Kaplan-Meier curves and a log-rank test
  - Cox proportional hazards models were used to estimate the crude (HR) and adjusted (aHR) hazard ratios and 95% confidence intervals for death

Figure 1: Annual trends in the prevalence of opportunistic infections at ART initiation, 2017-2021



Bars indicate 95% confidence intervals.

A low but persistent proportion (≈5%) of PWH are starting ART with an opportunistic infection in the United States and Canada. Test-and-treat strategies focusing on those at highest risk for delayed ART initiation may assure optimal care and a reduction in mortality.

RESULTS

N=6,923 people with HIV starting ART from 2017-2021

- 25% >50-years-old, 15% female, 71% non-White or Hispanic, 41% men who have sex with men, 27% with CD4 <200 cells/mm^3, 91% initiated ART with integrase inhibitors

n=374 (5.4%) initiated ART with an OI from 2017-2021

- Pneumocystis pneumonia was most common (44%) followed by:
  - esophageal candidiasis (23%)
  - pulmonary tuberculosis (6%)
  - cryptococcal meningitis (5%)
  - other OIs accounted for <4%

n=94 deaths in the first year after ART initiation from 2017-2021

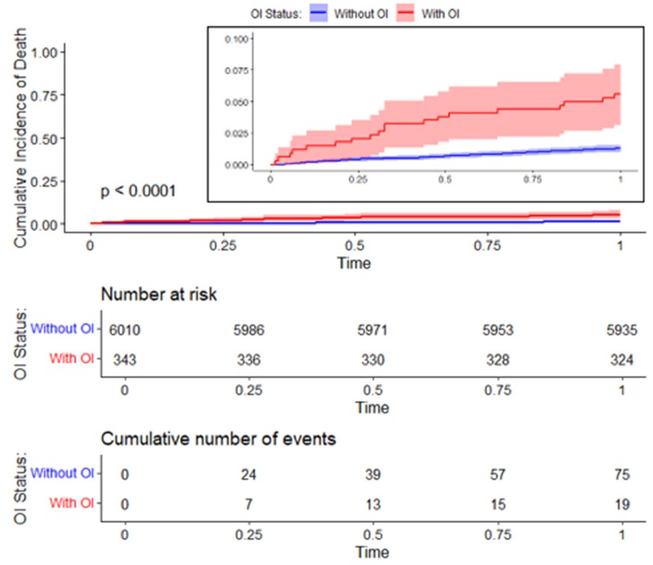
- n=75 deaths in those without an OI
- n=19 deaths in those with an OI

Table 1: Crude and adjusted prevalence ratios (PR) and 95% confidence intervals (95% CI) of OI at ART initiation

Characteristic	Crude PR (95% CI)	Adjusted PR (95% CI)
Age group (years)		
18-30	Ref	Ref
31-40	**2.02 (1.47, 2.77)**	**2.17 (1.57, 3.00)**
41-50	**2.90 (2.11, 3.99)**	**3.05 (2.19, 4.26)**
51-60	**2.03 (1.43, 2.89)**	**2.20 (1.52, 3.19)**
61-70	**2.75 (1.84, 4.12)**	**3.24 (2.11, 4.98)**
≥70	**3.95 (2.33, 6.71)**	**4.86 (2.78, 5.81)**
Sex		
Male	Ref	Ref
Female	1.14 (0.87, 1.47)	0.91 (0.67, 1.24)
Race and ethnicity		
Non-Hispanic White	Ref	Ref
Non-Hispanic Black	0.88 (0.70, 1.11)	0.97 (0.76, 1.25)
Hispanic	1.18 (0.88, 1.60)	1.27 (0.93, 1.73)
Non-Hispanic Other	0.99 (0.66, 1.43)	1.08 (0.73, 1.59)
HIV acquisition risk		
MSM	Ref	Ref
Heterosexual	**1.55 (1.20, 1.99)**	**1.36 (1.00, 1.83)**
IDU	1.45 (0.83, 2.35)	1.16 (0.68, 1.97)
Other/missing	1.22 (0.96, 1.54)	1.19 (0.81, 1.74)

Bold indicates p<0.05. Adjusted model 1 includes all the variables in the table and contributing cohort.

Figure 2: Cumulative incidence (and shaded 95% confidence interval) of death in the first year after ART initiation



There was a 4.5-fold increase in the risk of death among those with vs. without an OI at ART initiation (HR=4.55 [95% CI 3.09, 7.10]). The risk was nearly 2-fold after adjustment for age, sex, race and ethnicity, HIV acquisition risk group, viral load, CD4 and cohort (aHR=1.85 [95% CI 1.03, 3.34]).

CONCLUSIONS

- From 2017-2021, ≈5% of people started ART with an OI, reflecting delayed ART initiation
- There is substantial mortality among those with (vs. without) an OI at ART initiation
- Targeting individuals at risk for delayed ART may reduce OIs and subsequent mortality
- Primary limitation: A high sensitivity and low specificity of OI measurement using diagnoses codes (vs. validation)

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