

ORAL COMMUNICATION

The evolving tale of HIV: shifting patterns, emerging HIV care

Did the COVID-19 pandemic shift the landscape of late HIV diagnosis?

Authors

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ABSTRACT

Background: The COVID-19 pandemic profoundly reshaped healthcare services, affecting the management of chronic pathologies, including HIV. This study aimed to evaluate the interplay between COVID-19 pandemic and late HIV diagnosis (LD) in Italy. **Material and Methods:** All people with HIV (PWH) enrolled in the Icona cohort between January2016 and December2023, diagnosed with HIV within 3 months before enrolment, were included. The incidence of LD (defined as CD4 count<350 cell/mm3 at diagnosis or AIDS-defining event [ADE] regardless of CD4 within 3 months from diagnosis) and AIDS presentation (AIDS-P, ADE within 3 months from diagnosis) were compared between pre-COVID (2016-2019) and post-COVID (2021-2023) period. The difference in prevalence of LD by period and by participants' socio-demographics was compared using Poisson regression models with an interaction term. Survival analysis was used to assess the effect of LD and AIDS-P on all-cause mortality risk and its interaction with the calendar period.

Results: Overall, 5,081 newly diagnosed PWH were enrolled in the Icona cohort over the study period, of whom 2,928 (58%) were LD and 612 (12%) were AIDS-P. The proportions of LD and AIDS-P remained stable across the pre- and post-COVID period: 1,817/3,172 (57.3%; 95%CI:55.5-59%) and 1,111/1,909 (58.2%, 95CI% :5.9-60.4%) for LD and 372/3,172 (11.7%; 95%CI:10.6-12.9%) and 240/1,909 (12.6% 95%CI:11.1 – 14.1%) for AIDS-P, respectively [Fig.1]. LD were more likely to be women, elderly, migrants, and heterosexuals (compared to MSM), and to have lower educational level. Risk patterns for LD remained consistent pre- and post-COVID, although there was weak evidence that the risk of LD in heterosexuals vs. MSM weakened in post-COVID (interaction p-value=0.38, Table 1). Over the follow-up, a total of 138 deaths occurred: 114 in pre-COVID and 24 in post-COVID period (41 and 73 for ADEs; 16 and 8 for not-AIDS related events). At survival analysis, LD/AIDS-P had a significantly higher probability of all-cause mortality both in the pre-COVID (3-year risk [95%CI]: non-LD (nLD) 0.94% [0.38-1.49%], LD 4.3%[3.3-5.3%], AIDS-P 9.6% [6.8-13%], p<0.001) and post-COVID (3-year risk [95%CI]: nLD 0.18% [0.02–0.52%], LD 2.7%[1.6–3.9%], AIDS-P 7.5%[3.4–11.5%], p<0.001). After controlling for confounding, LD and particularly AIDS-P were confirmed to be at higher risk of death compared to nLD, with some modest evidence that this excess in risk was exacerbated in the post-COVID period (aHR LD vs. nLD and AIDS-P vs. nLD: 13 and 49.9 in the post-COVID vs 3.56 and 7.07 in the pre-COVID [Fig. 2, interaction p>10%]).

Conclusions: Our data shows that the frequency of LD remained stable before and after COVID-19, regardless of participants' sociodemographics. LD was confirmed to be associated with an increased mortality risk, with evidence suggesting that this risk may have been more pronounced in the post-pandemic period. Longer follow-up is needed to further validate these findings.

Figure 1: Proportion of late HIV diagnosis and AIDS presentation by period



Figure 2: Hazard ratio of all-cause mortality stratified by late diagnosis and period by univariable and multivariable Cox regression models



	Pre-COVID	Post-COVID	
	Risk ratio of LD (95%CI)		Interaction p-value*
Sex at birth			0.9814
Male	1	1	
Female	1.14 (1.02-1.28)	1.14 (0.98-1.33)	
Age			0.9029
<30	1	1	
30-39	1.34(1.15-1.55)	1.18 (0-96-1.45)	
40-49	1.58 (1.36-1.83)	1.47 (1.20-1.80)	
50-59	1.73 (1.48-2.02)	1.71 (1.39-2.10)	
60-69	1.86 (1.51-2.29)	1.69 (1.30-2.21)	
≥70	2.30 (1.67-3.17)	1.96 (1.34-2.87)	
Nationality			0.6837
Non-Italian	1	1	
Italian	0.86 (0.78-0.96)	0.89 (0.79-1.01)	
Transmission route			0.3778
MSM	1	1	
Heterosexual	1.44 (1.30-1.59)	1.35 (1-18-1.53)	
PWID	1.12 (0.87-1.43)	1.12 (0.81-1.54)	
Education			0.7063
Primary school	1	1	
Secondary school	0.77 (0.62-0.97)	0.85 (0.54-1.35)	
College University	0.59 (0.46-0.76)	0.73 (0.45-1.18)	
Employment			0.9805
Unemployed	1	1	
Employed/self-employed	0.95 (0.82-1.09)	0.90 (0.75-1.09)	
Student/occasional	0.70 (0.54-0.90)	0.69 (0.47-1.02)	
Retired/Housewife	1 31 (1 04-1 65)	1 19 (0 89-1 59)	

*interaction test socio-demographic characteristics and time-period

*p-value of the interaction test exposure group and time-period

Notes: Confounders for adjusted models are: gender, HIV-transmission risk group, age, employment status, alcohol consumption, smoking, comorbidities

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Table 1: Prevalence risk ratio of late HIV diagnosis by socio-demographic characteristics by fitting univariate Poisson regression model