

## Oral Communications

### Changing HIV epidemiology

**N. prog:** OC 68

**Title:** Change of prevalence and factors associated with the risk of AIDS presentation in Italy over last decade (2009-2018)

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#### Abstract body

**Background:** Despite universal recommendations about early ART initiation, a consistent proportion of newly diagnosed HIV people continue to be diagnosed and to enter care late. In Europe, the annual proportion of patients presenting with AIDS between 2010 and 2013, accounted for 8-19% of all new HIV diagnoses, with a slight prevalence decline in the same period. Prevalence and factors associated with the risk of AIDS presentation over the last decade (2009-2018) in people seen for care at the main infectious disease clinical sites in Italy were investigated.

**Material and methods:** All consecutive individuals in the Icona Foundation Study cohort firstly HIV diagnosed from January 2009 to December 2018 with chronic infection over three months preceding their enrolment were selected and divided in three groups: a) ART-naïve patients with an AIDS defining event (AIDS presenters); b) ART-naïve asymptomatic patients with chronic HIV infection and a CD4 count  $\leq 200$  cells/mm<sup>3</sup> (asympt CD4 $\leq 200$ ); c) ART-naïve asymptomatic patients with chronic HIV infection and a CD4 count  $> 200$  cells/mm<sup>3</sup> (asympt CD4 $> 200$ ). Comparisons of categorical and continuous variables among groups were made using Chi-square and Kruskal Wallis test respectively. Multivariable logistic regression was fitted to identify factors associated with the risk of presentation with AIDS.

**Results:** A total of 7,001 naïve individuals were analyzed, 959 AIDS presenters (13.7%), 1,565 asympt CD4 $< 200$  (22.4%) and 4,477 asympt CD4 $> 200$  (64.0%). The main characteristics of the study population are reported in Table 1. AIDS presenters were more frequently older aged (44 yrs), not-Italian (27%), acquiring HIV by heterosexual transmission (55%), with primary education (8.7%), lower CD4 cell count (42 cells/mm<sup>3</sup>) and higher plasma VL (66% with  $> 100.000$  c/mL) (Table 1). Prevalence of AIDS presentation over time was 16.4% in the 2009-2010 period, 14.7% in 2011-2012, 13.4% in 2013-2014, 13.8% in 2015-2016 and 11.8% in 2017-2018 (chi-square for trend=0.003). From fitting a multivariable logistic regression, older age, heterosexual transmission, not-Italian origin, HBV coinfection, baseline HIV-RNA  $> 100.000$  copies/mL, lower educational level and occasional job (compared to employed) were all associated with a higher risk of AIDS presentation, whereas smoke habit, and more recent calendar years (2017-2018 vs 2009-2010) were associated with a lower risk (Table 2).

**Conclusions:** AIDS presentation still occurs in approximately 14% of newly HIV diagnosed individuals in Italy in the last decade, even though a slight reduction trend in the last years was observed. Older age, heterosexual route, non-Italian origin, low educational level and casual employment seems to identify a

socio-demographic profile of HIV people who presents for care very late (at time of AIDS diagnosis). These are key informations for planning focused interventions to discover unknown infections.

**Table 1. Main characteristics of 7,001 HIV-infected naïve patients enrolled, according with grouped definitions at HIV diagnosis (AIDS presenter, asymptomatic with low CD4 count, and asymptomatic with high CD4 count).**

	<b>AIDS presenters</b>	<b>Asymp CD4≤200</b>	<b>Asymp CD4&gt;200</b>	<b>P - value</b>
	<b>n = 959</b>	<b>n = 1,565</b>	<b>n = 4,477</b>	
	<b>13,7%</b>	<b>22,4%</b>	<b>64,0%</b>	
<b>Female gender, N (%)</b>	246 (25.6%)	335 (21.4%)	778 (17.4%)	<0.001
<b>Age, Yrs, median (IQR)</b>	44 (36 - 53)	42 (34 - 51)	36 (28 - 45)	<0.001
<b>Nationality, N (%)</b>				
Italian	561 (58.5%)	942 (60.2%)	2882 (64.4%)	<0.001
Not Italian	255 (26.6%)	343 (21.9%)	809 (18.1%)	
Unknown	143 (14.9%)	280 (17.9%)	786 (17.6%)	
<b>Days from first HIV test to enrollment, median (IQR)</b>	9 (3-20)	12 (4 - 23)	16 (6-35)	< 0.001
<b>Mode of HIV transmission</b>				
MSM	272 (28.4%)	515 (32.9%)	2474 (55.3%)	
Heterosexual	532 (55.5%)	808 (51.6%)	1515 (33.8%)	< 0.001
IVDU	45 (4.7%)	83 (5.3%)	186 (4.2%)	
Other/Unknown	110 (11.5%)	159 (10.2%)	302 (6.8%)	
<b>HCV coinfection</b>				
Positive	46 (4.8%)	93 (5.9%)	220 (4.9%)	<0.001
Negative	732 (76.3%)	1223 (78.2%)	3717 (83.0%)	
<b>HBV coinfection</b>				
Positive	59 (6.2%)	56 (3.6%)	158 (3.5%)	<0.001
Negative	729 (76.0%)	1244 (79.5%)	3685 (82.3%)	
<b>CD4 at enrollment, median (IQR)</b>	42 (19 - 115)	94 (40 - 146)	447 (325 - 610)	< 0.001
<b>HIV-RNA, copies/mL</b>				
< 100.000 copies/mL	220 (22.9%)	524 (33.5%)	2972 (66.4%)	< 0.001
> 100.000 copies/mL	632 (65.9%)	950 (60.7%)	1254 (28.0%)	
<b>eGFR, median (IQR)</b>	96 (75-113)	93 (74 - 110)	90 (76 - 109)	0,005
<b># of comorbidities</b>				
0	776 (80.9%)	1329 (84.9%)	4051 (90.5%)	< 0.001
1	151 (15.7%)	190 (12.1%)	329 (7.4%)	
2	26 (2.7%)	43 (2.8%)	75 (1.7%)	
≥3	6 (0.6%)	3 (0.2%)	22 (0.5%)	
<b>Employment status</b>				
Unemployed	143 (14.9%)	204 (13.0%)	577 (12.9%)	<0.001
Employed	325 (33.9%)	557 (35.6%)	1660 (37.1%)	
Self Employed	110 (11.5%)	194 (12.4%)	557 (12.4%)	
Occasional	47 (4.9%)	48 (3.1%)	120 (2.7%)	
Student	9 (0.9%)	18 (1.2%)	234 (5.2%)	
Retired	45 (4.7%)	68 (4.4%)	86 (1.9%)	
Housewife	33 (3.4%)	29 (1.9%)	62 (1.4%)	
Other	38 (3.9%)	54 (3.4%)	146 (3.3%)	
<b>Level of education</b>				
Primary education	83 (8.7%)	102 (6.5%)	161 (3.6%)	< 0.001

Middle school	180 (18.8%)	273 (17.4%)	574 (12.8%)
High school/University	333 (34.7%)	574 (36.7%)	2041 (45.6%)

**Table 2. Factors associated to an AIDS defining event at HIV diagnosis (AIDS presenter) by fitting a multivariable logistic regression model.**

	AOR	95%CI	P
<b>Female gender</b>	1,04	0,84 1,27	0,733
<b>Age</b>			
<30	1,00		
30-40	1,83	1,43 2,34	<0,001
40-50	2,44	1,90 3,14	<0,001
50+	3,54	2,70 4,64	<0,001
<b>Mode of HIV infection</b>			
MSM	1,00		
Heterosexual	1,71	1,42 2,07	<0,001
IVDU	1,51	1,01 2,26	0,043
Other/unknown	1,79	1,37 2,34	<0,001
<b>Nationality</b>			
Italian	1,00		
Not Italian	1,55	1,26 1,89	<0,001
<b>HCVAb</b>			
Negative	1,00		
Positive	0,85	0,59 1,22	0,373
unknown	1,59	1,17 2,15	0,003
<b>HBsAg</b>			
Negative	1,00		
Positive	1,62	1,17 2,24	0,004
unknown	0,88	0,65 1,20	0,427
<b>HIV-RNA</b>			
<100.000	1,00		
>=100.000	4,08	3,45 4,82	<0,001
<b>Education level</b>			
High school/University	1,00		
Primary school	1,36	0,99 1,86	0,055
Secondary school	1,21	0,97 1,50	0,089
unknown	0,83	0,68 1,01	0,068
<b>Job status</b>			
Employed	1,00		
Unemployed	1,14	0,90 1,45	0,288
Self-employed	0,91	0,71 1,16	0,434
Occasional	1,59	1,07 2,35	0,021
Student	0,66	0,33 1,35	0,261
Retired	0,91	0,61 1,35	0,635
Housewife	1,38	0,86 2,22	0,185
Other	1,08	0,72 1,60	0,721
unknown	0,92	0,73 1,15	0,452

<b>Smoke habit</b>				
No	1,00			
Yes	0,74	0,62	0,88	0,001
<b>Calendar year of enrolment</b>				
2009-2010	1,00			
2011-2012	0,89	0,68	1,17	0,391
2013-2014	0,80	0,61	1,05	0,112
2015-2016	0,83	0,64	1,07	0,155
2017-2018	0,69	0,48	1,01	0,056