

FACTORS ASSOCIATED WITH VIRAL LOAD COMPLETION IN A SUBSET OF EUROPEAN COUNTRIES

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Background

- The World Health Organization (WHO) recommends HIV viral load (VL) testing as the preferred method for monitoring responses to antiretroviral therapy (ART). Identifying factors associated with VL completion amongst people on ART may lead to public health and ART programme improvements.
- The aim of this study was to determine factors associated with VL load testing amongst HIV patients whose last clinic attendance was reported during the period 2014-2016 in the WHO Europe Region. In addition, the study assessed if a higher prevalence of VL completion was associated with higher prevalence estimates of population-level VL suppression.

Methods

- De-identified individual-level data reported to the joint European Centre for Disease Prevention and Control/WHO database for HIV/AIDS surveillance of The European Surveillance System (TESSy) on people diagnosed with HIV, restricted to those on ART with last clinic attendance reported during 2014-2016, were used.
- VL completion was defined as the percentage of people with a VL test reported in the year of or the year prior to the year of their last reported clinic attendance. Country, gender, age, year of diagnosis and mode of HIV transmission were assessed in a multivariate logistic model separately in three geographical areas (East, West, Centre) of the WHO European Region as well as in the total population.
- Statistical analyses were performed in Stata Version 13, College Station, TX.

Results

- 38,052 records (70.6% male) from 16 reporting countries were included in the analysis: East (N= 13,896), West (N=17,754), Centre (N=6,402) (**Table 1**).
- Heterosexual transmission predominated (41% of diagnoses); 32%, 16%, and 11% of HIV infections were due to sex between men, injection drug use (IDU), and other, respectively.
- The overall prevalence of VL completion with data reported was 84.9%, with variability observed between geographical regions (80.0%, 98.6%, 57.7% in the East, West, and Centre, respectively) (**Table 1**).
- In the Centre, people on ART aged 20-39 years were more likely to have a VL test compared to those <20 years [OR 1.31 (1.01; 1.71)]. Conversely in the East, compared to people under age 20, people over age 20 were less likely to have a VL test [OR 0.52 (0.35; 0.79)] and 0.57 [0.38; 0.87] for the age categories 20-39 and 40+ age, respectively. In addition, men were less likely to have had a VL test compared to women (OR 0.83; [0.72; 0.95]), as were IDU when compared to other risk groups [OR 0.85 (0.74; 0.99)].
- No factors were associated with VL completion in the West.

Table 2 shows that in the total population:

- Men were less likely than women to have had a VL test.
- IDU were less likely to have had a VL test compared to MSM and Other.
- People diagnosed with HIV in 2015 (compared to 2000-2004) and those with their last clinic attendance in 2015, 2016 (compared to 2014) were significantly more likely to have had a VL test.

Figure 1 shows that amongst people with clinic visits during the period 2014-2016:

- The West demonstrates the highest proportion of both VL testing completion and VL suppression (VL <1000 copies/mL) (green).
- Heterogeneity with respect to VL testing completion and VL suppression is observed in the East (Red) and Centre (blue) regions.

Conclusion

- Reported VL completion among people on ART is heterogeneous across the Region, as are associated factors.
- Although results must be interpreted with caution given possible reporting bias, findings highlight disparities in VL completion and signal the need for population-specific interventions to improve VL testing and geographic-specific interventions to strengthen surveillance systems' ability to capture VL completion to minimize reporting bias.

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Table 1. Viral load completion by country* and gender among people on ART with viral load test result reported during the period 2014-2016 (n=38,052)

	Total		Female		Male	
	N	%	N	%	N	%
East	13,896	80.0	5,532	80.0	8,364	80.0
E1	1,021	96.3	363	97.8	658	95.4
E2	2,104	89.7	721	93.2	1,383	87.9
E3	1,059	96.7	284	97.5	775	96.4
E4	6,831	92.5	2,875	93.6	3,956	91.8
E5	571	42.2	269	47.6	302	37.4
E6	436	84.6	209	83.7	227	85.5
E7	1,874	15.3	811	15.4	1,063	15.2
West	17,726	98.6	3,533	98.6	14,188	98.6
W1	3,235	97.6	774	97.8	2,459	97.6
W2	595	95.5	174	95.4	418	95.5
W3	13,896	99.1	2,585	99.1	11,311	99.1
Centre	6,402	57.7	2,122	50.5	4,280	61.3
C1	453	26	138	30.4	315	24.1
C2	174	58	35	62.9	139	56.8
C3	1,281	100	149	100	1,132	100
C4	95	91.6	13	100	82	90.2
C5	4,267	46.7	1,783	47.2	2,484	46.4
C6	132	86.4	4	100.0	128	85.9
Total	38,052	84.9	11,189	80.2	26,858	86.8

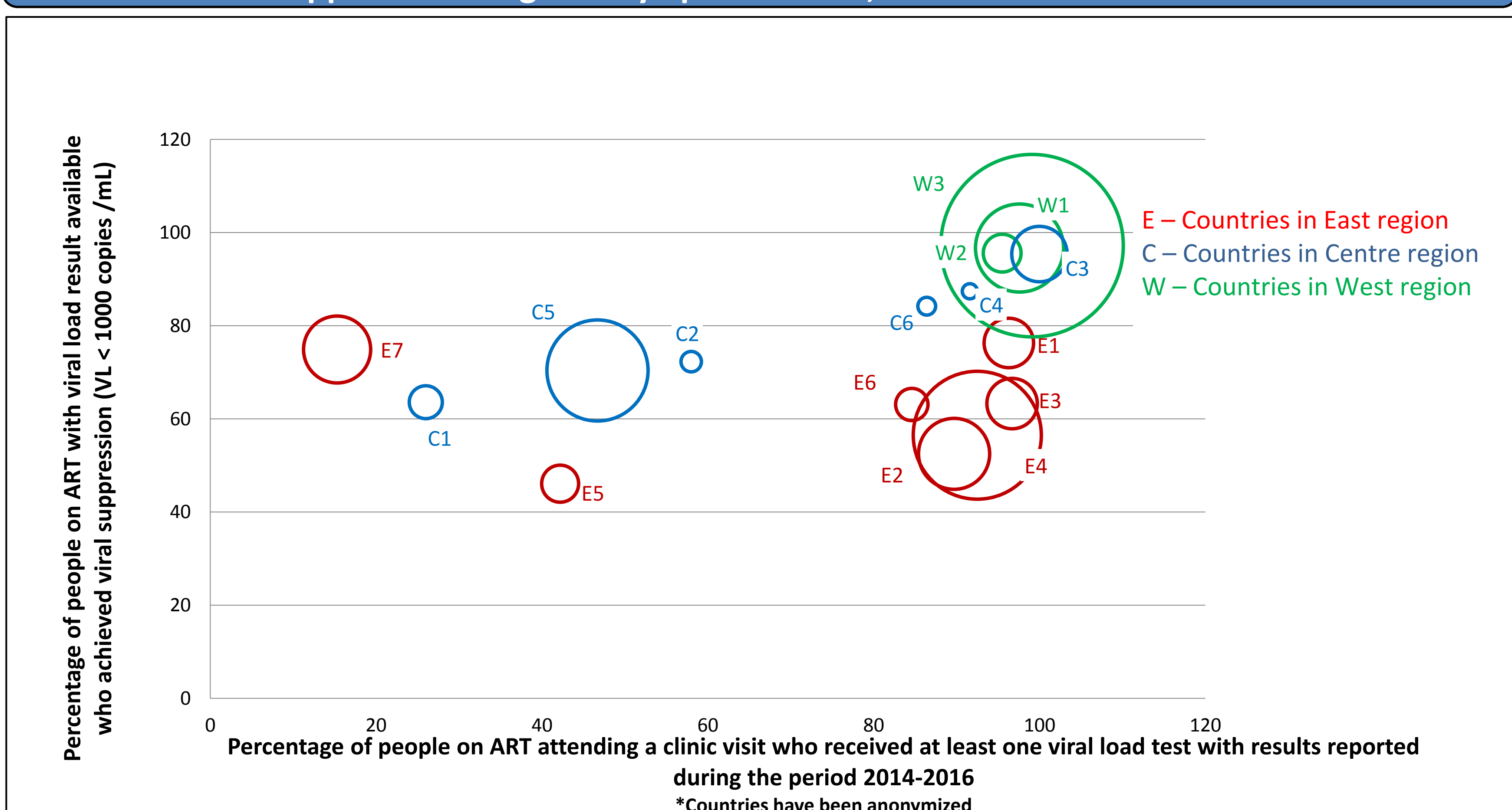
*Countries have been anonymized

Table 2. Factors associated with VL completion in the total population (n=38,052)**

	aOR	95% CI	P- value
Age, years (reference 0-20)			
20-39	0.9	[0.74; 1.09]	0.290
≥ 40	0.89	[0.72; 1.09]	0.257
Gender (reference female)			
Male	0.88	[0.81; 0.96]	0.004
Type of transmission (reference heterosexual)			
IDU	0.89	[0.79; 1.00]	0.048
MSM	1.11	[0.95; 1.31]	0.194
Other (MTCT, TRANSFU, NOSO)	0.98	[0.87; 1.11]	0.791
Year of HIV diagnosis (reference 2000-2004)			
2005-2009	1.01	[0.89; 1.14]	0.900
2010-2014	1.11	[0.98; 1.25]	0.112
2015-	0.37	[0.31; 0.44]	<0.0001
Year of last attended visit (reference 2014)			
2015	7.20	[6.17; 8.41]	<0.001
2016	4.15	[3.17; 5.45]	<0.001

IDU= injection drug user; MSM = men sex with men; MTCT= mother to child transmission; TRANSFU= transfusion; NOSO = nosocomial; ** The variable country was included in the model.

Figure 1. Viral load testing completion by country* amongst clinic attendees with data reported versus viral load suppression weighted by epidemic size, 2014-2016



*Countries have been anonymized