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THE HIV EPIDEMIC IN TWO BALTIC STATES: A TALE OF TWO STORIES?

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Background

Latvia and Estonia experienced a major HIV outbreak among persons who injects drugs (PWID) in the early 2000's.

In 2016, Latvia and Estonia continued to have the highest rates of new HIV diagnoses in the EU/EEA (1.85 and 1.74 per 10000, respectively).

Increasing our knowledge about the current states of these two HIV epidemics is therefore essential to improve HIV prevention and care.

Objective

To estimate three key epidemiological indicators, overall and by HIV exposure group:

- Number and rates of new HIV infections
- Distribution of times from HIV infection to diagnosis
- Number and rates of undiagnosed HIV infections

Methods

We used surveillance data from 2000 to 2016 for persons newly diagnosed with HIV in Latvia and persons newly appearing with HIV in health care registries in Estonia and a back-calculation model (Ndawinz JD et al. 2011; Marty L et al. 2018) to estimate the numbers of new and undiagnosed HIV infections and the distribution of times from HIV infection to diagnosis.

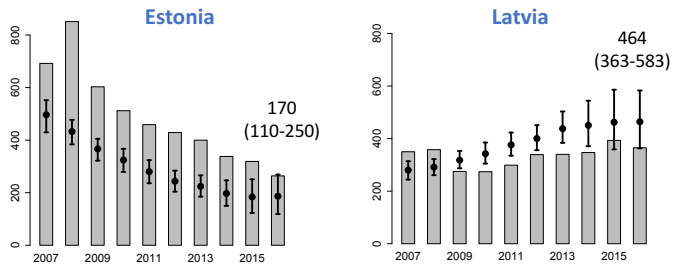
Rates were calculated using estimated population sizes. According to national statistics, there were 890,000 inhabitants aged 18-69 in Estonia and 1,340,000 in Latvia in 2016. Persons who inject drugs were defined as 0.9% of the population aged 18-69 in Estonia (Uusküla et al. 2013), and 0.93% in Latvia (Kivite et al. 2016).

Multiple imputation method was used to complete missing data. Estimates precision was assessed using a bootstrap procedure. Statistical comparisons were carried out using Mann-Whitney and two-sided Kolmogorov-Smirnov tests.

Updated since abstract submission

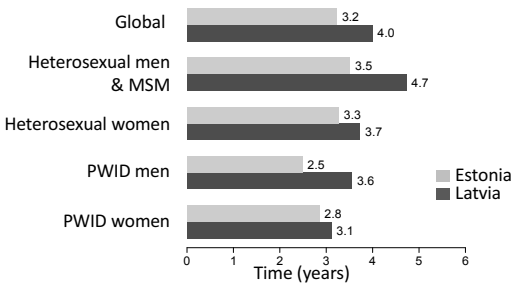
Results

Estimated HIV incidence (black dot: mean; line segment: 95% confidence interval) & observed number of new diagnoses (grey bar) over 2007-2016



Between 2010 and 2016, HIV incidence decreased in Estonia but increased in Latvia, reaching, respectively, 170 (110-250) and 464 (363-583) new infections in 2016. HIV incidence rate was more than 1.5-fold higher in Latvia than in Estonia in 2016 (3.4/1000 VS 2.1/1000 respectively, p<0.05).

Estimated median time between HIV infection & diagnosis over 2012-2016



Median time to diagnosis was longer in Latvia than in Estonia (4.0 VS 3.2 years respectively, p<0.05). In both countries, median time to diagnosis tended to be longer for heterosexual men and men who have sex with men (MSM) than for PWID and heterosexual women.

Number & rate of undiagnosed HIV infections in 2016

	Number of undiagnosed HIV infections (95% CI)		Undiagnosed prevalence rate per 10000 (95% CI)	
	Latvia	Estonia	Latvia	Estonia
Global	1850 (1538-2298)	902 (746-1107)	13.8 (11.5-17.2)	10.2 (8.4-12.5)
Male	1203 (954-1564)	564 (435-717)	18.8 (14.9-24.5)	13.0 (10.0-16.5)
Female	647 (481-975)	338 (250-486)	9.3 (6.9-14.0)	7.4 (5.5-10.7)
PWID	603 (460-801)	150 (100-222)	484.6 (369.8-644.0)	188.1 (125.2-278.0)
Male PWID	456 (341-617)	101 (66-132)	555.5 (414.5-750.9)	258.7 (167.5-336.9)
Female PWID	147 (80-251)	50 (19-112)	347.4 (188.6-592.0)	120.7 (44.6-272.8)
Sexual transmission	1247 (977-1690)	752 (606-963)	9.4 (7.4-12.8)	8.5 (6.9-11.0)
Heterosexual women	500 (362-826)	289 (213-426)	7.2 (5.2-11.9)	6.4 (4.7-9.5)
Heterosexual men & MSM	747 (533-1035)	464 (344-621)	11.8 (8.4-16.4)	10.8 (8.0-14.5)

In 2016 , the number of undiagnosed infections was two-fold higher in Latvia than in Estonia. Among undiagnosed infections:

- more than 60% were men in both countries,
- 34% were PWID in Latvia, 17% in Estonia,
- 67% were acquired through sexual transmission in Latvia, 83% in Estonia.

In 2016, undiagnosed prevalence rate was higher in Latvia than in Estonia (13.8/1000 VS 10.2/10000 respectively, p<0.05) and most affected populations in terms of rates were PWID in both countries.

Conclusions

The study shows stark differences in the epidemic dynamics of the two countries. Finding individuals acquiring HIV sexually is one of the challenges in these originally injection drug use-driven epidemics.

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