

HOW WAR AND RISKY SEXUAL BEHAVIOURS SHAPE THE UKRAINIAN HIV EPIDEMIC: A PHYLOGEOGRAPHIC ANALYSIS

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Background

Ukraine has one of the largest HIV epidemics in Europe that was historically driven by people who inject drugs (PWID). The epidemic showed signs of stabilisation since 2012, but the recent war in the East of the country might be reinforcing the virus spread. We have studied HIV flow within Ukraine in recent years and explored factors that might explain it.

Methods

We used HIV subtype-A *pol* nucleotide sequences sampled in 2012-2015 from 427 patients of 24 regional AIDS Centres along with 40 publicly available reference sequences sampled between 1986-2010. We used phylogeographic analysis in BEAST to reconstruct viral spread among different geographic regions of Ukraine. We further used data from an Integrated Bio-Behavioural survey of PWID conducted in Ukraine in 2013. We built logistic regression model to test for an association between the virus flow and the reported risky sexual and injecting behaviours of PWID, the number of internally displaced persons, and HIV prevalence per region.

Results

Infections in the Centre, East, and Crimea were 3.9, 3.6, and 3.3 times, respectively, more likely to originate from Donetsk (the biggest city in the occupied East), suggesting that the epidemic is spreading westwards. Additionally, multivariable regression analyses showed that regions with a higher proportion of PWID practicing risky sexual behaviours were more likely to both be a source of infection to other regions and a recipient of infection from them. No such association was found for risky injecting behaviours.

Conclusions

We show that in recent years HIV has been spreading westwards in Ukraine at a higher than expected rate. This may be a consequence of the war that has led to over a million people migrating from the East to other regions of Ukraine. Risky sexual practices that involve PWID may be facilitating this spread. The estimated patterns of HIV-1 migration within Ukraine suggest that an effective prevention response should involve PWID, their sexual partners, and internally displaced people.

No conflict of interests.

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