

PRELIMINARY REPORT OF HIGH RATES OF EXTERNAL (NON-DOMESTIC) INFECTION SOURCES FOR NEWLY HIV-1 DIAGNOSED HETEROSEXUAL MEN AND WOMEN IN SEATTLE AND KING COUNTY, USA.

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INTRODUCTION

The UNAIDS Cities initiative aims to fast-track HIV-1 prevention interventions within metropolitan areas. However, little is known how many infections have local versus external/imported sources. In order to obtain more precise estimates of local incidence, it is necessary to identify and quantify the sources of new infections in communities or populations of interest.

METHODS

We estimated HIV-1 importation rates (number of HIV diagnoses with presumed external source / total number of diagnoses) among self-reporting heterosexual men and women in Seattle and King County (SKC) through viral phylogenetic analysis. We used a viral sequence database maintained by Public Health Seattle & King County; this database contains 12606 sequences from 15932 HIV-1 infected individuals that live, were diagnosed, or started ART in King County since 1982. HIV-1 phylogenies were generated for all non-B partial *pol* sequences from Seattle and international background sequences, and the geographic location of viral lineages were estimated through maximum parsimony ancestral state reconstruction. Crude importation rates were estimated from the number and size of sub-chains of transmission occurring in SKC.

RESULTS

At least one viral sequence could be identified for 2273 (49.9%) of 4948 individuals with non-homosexual transmission risk. Of those, 496 (34.2%) were infected with a non-B subtype. Phylogenetic analysis revealed 354 distinct transmission chains, of which 343 (97%) contained at most 3 sequenced individuals. The estimated crude importation rate among heterosexual individuals was 69% [50%-76%].

CONCLUSIONS

Current estimates suggest a very high importation rate of new infections from outside Seattle and King County among heterosexual individuals. Ongoing work aims to adjust for incomplete sampling of the epidemic, and will clarify to what extent the crude estimate is an overestimate. This work will indicate to what extent local

interventions should aim to reduce within-city transmission, or identify importations more rapidly.