Mining for pairs: shared clinic visit dates identify steady HIV-positive partnerships


OBJECTIVES
Here we examined the hypothesis that some stable HIV-infected partnerships can be found in cohort studies, as the patients frequently attend the clinic visits together.

METHODS
Using mathematical approximations and shuffling to derive the probabilities of sharing a given number of visits by chance, we identified and validated couples that may represent either transmission pairs or serosorting couples in a stable relationship.

RESULTS
We analysed 434,432 visits for 16,139 Swiss HIV Cohort Study patients from 1990 to 2014. For 89 pairs, the number of shared visits exceeded the number expected. Of these, 33 transmission pairs were confirmed on the basis of three criteria: an extensive phylogenetic tree, a self-reported steady HIV-positive partnership, and risk group affiliation. Notably, 12 of the validated transmission pairs (36%; 12 of 33) were of a mixed ethnicity with a large median age gap [17.5 years; interquartile range (IQR) 11.8-22 years] and these patients harboured HIV-1 of predominantly non-B subtypes, suggesting imported infections.

CONCLUSIONS
In the context of the surge in research interest in HIV transmission pairs, this simple method widens the horizons of research on within-pair quasi-species exchange, transmitted drug resistance and viral recombination at the biological level and targeted prevention at the public health level.

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