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A Regional Comparison of the Mode of HIV-1 Transmission in Patients Enrolled in the EuroSIDA Study

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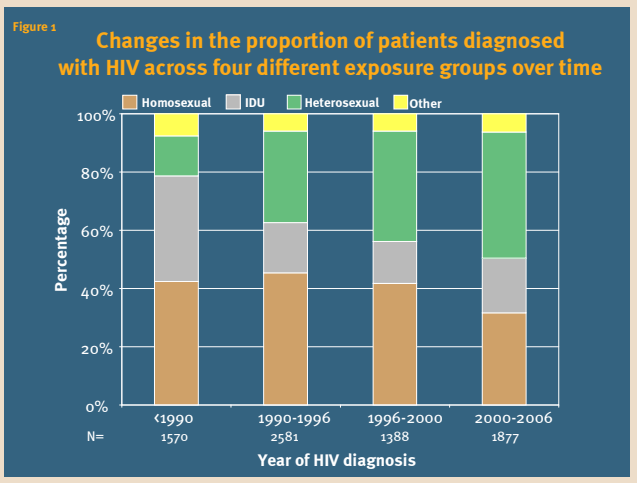
AIM

The aim of this analysis was to investigate whether the modes of transmission of the HIV-1 virus are changing over time in patients recruited to the EuroSIDA study and to describe regional differences therein.

METHODS

- The EuroSIDA study is an ongoing prospective, observational cohort with 16,505 patients in 103 centres across 32 European countries, plus Israel and Argentina. At the time of analysis, there were 14,241 patients enrolled, all receiving health care and being followed at health clinics participating in the EuroSIDA study
- We analyzed 7,416 patients (5,429 men and 1,987 women) enrolled in EuroSIDA who had a follow-up visit recorded in 2007, a documented date of HIV-1 diagnosis and a documented mode of HIV-transmission
- Patient characteristics including gender, ethnicity, age and year of diagnosis were compared across four modes of HIV-infection: homosexual transmission, intravenous drug use (IDU), heterosexual transmission, and other (including haemophilia transmission and female homosexual transmission)
- In these analysis categorical variables (i.e. ones comparing percentages) were compared using a chi square test and continuous variables (i.e. ones looking at the median and inter quartile range (IQR)) were compared using the Kruskall-Wallis test
- Bar charts were plotted to look at trends in the percentage of patients from each mode of infection category over time (**figure 1**) and in different European regions (**figure 2a-d**)

Figure 1



Figures 2a–d. Changes in the proportion of patients diagnosed with HIV across four different exposure groups in various European regions

Figure 2a

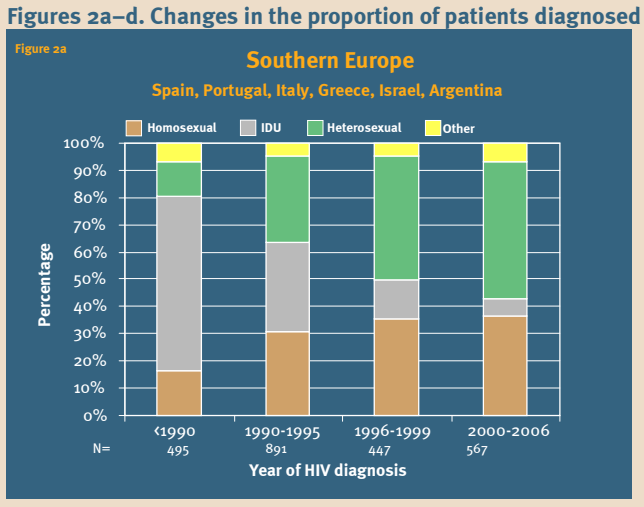


Figure 2b

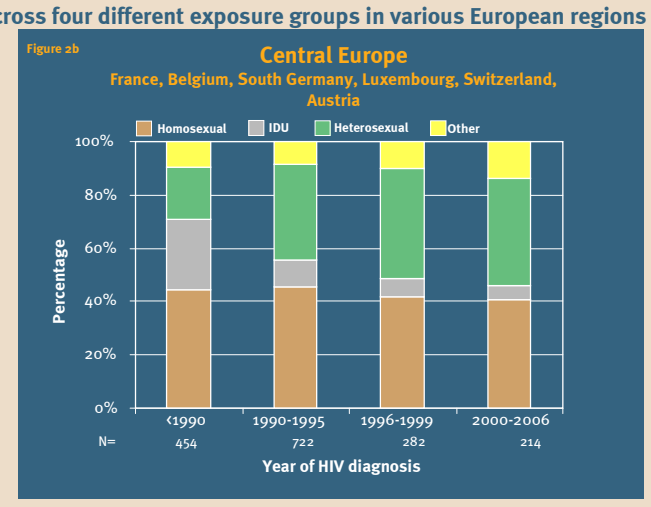


Figure 2c

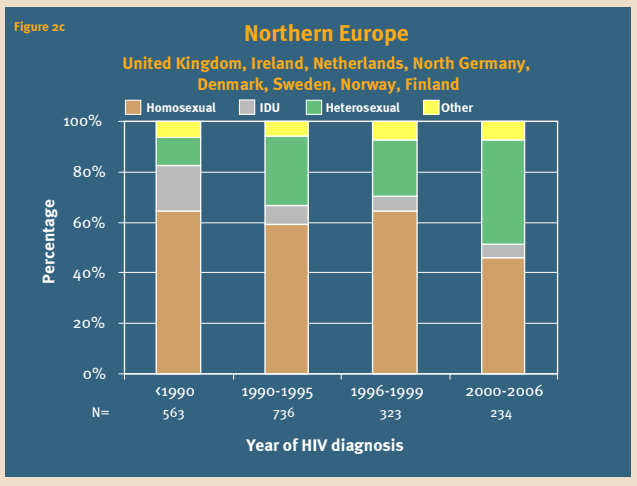
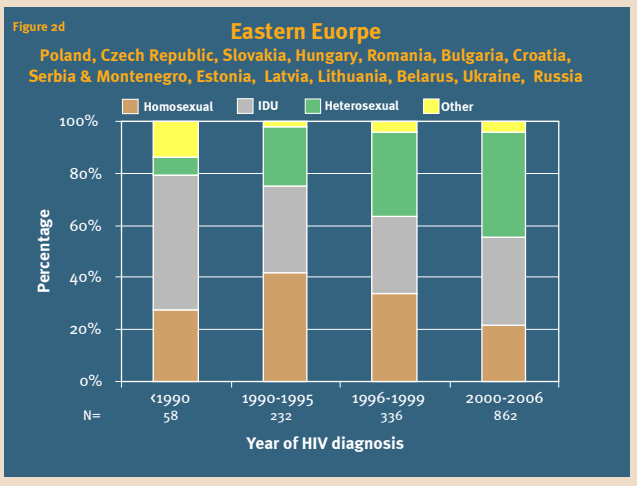


Figure 2d



RESULTS

The number of patients infected via homosexual transmission was 2,993 (40%), via IDU 1,567(21%), via heterosexual transmission 2,367 (32%) and 489 (7%) via other.

- Those who were infected via IDU were younger with a median age of 26 versus those infected via the other modes of infection, with a median age of 32 ($p<0.0001$) and had a higher CD_4 count at the time of diagnosis with a median 324 cells/mm^3 compared to the other modes of transmission with a median 223 cells/mm^3 ($p=0.0005$)
- The proportion of transmissions via heterosexual sex has increased over time in all four regions; in Southern Europe (**figure 2a**) it now accounts for 50% of all transmissions and is more likely to occur among more recently diagnosed, older, female, non-white patients. Of those infected with the HIV-1 virus from 2000 to 2006, heterosexual sex accounts for the largest mode of transmission (when comparing only mode of infection - not regional differences) with 35% of all transmissions compared to before 1990 when this mode of infection only accounted for 9% ($p<0.0001$)
- IDU transmission appears to be decreasing across all regions of Europe, specifically in Southern Europe **(figure 2a)** where the transmission via IDU has decreased from 65% prior to 1990 to less than 6% from 2000 to 2006 ($p<0.0001$). It remains high in Eastern Europe **(figure 2d)** accounting for 40% of all transmissions
- Patients infected via IDU are diagnosed earlier than other transmission groups and have a higher cells/mm^3 at the time of diagnosis, possibly attributable to belonging to a well known risk group and being offered the HIV-test at an earlier stage of their infection
- Homosexual transmission is only reported as the transmission category in about 20% of the cases in Eastern Europe (**figure 2d**) from 2000 to 2006 compared to about 40% in the other regions (**figure 2a-c**)

CONCLUSIONS

- According to this analysis, the HIV transmission within EuroSIDA has changed over time and there are regional differences in the mode of transmission. Both the changes in mode of infection of HIV-1 virus and the regional differences seen in this analysis correspond with the observations made by UNAIDS in the 2008 Report on the global AIDS epidemic

EuroSIDA has recently enrolled 2500 new patients, 1250 of whom are from Eastern Europe. This analysis will be updated when data from the new patients is available later this year.

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