TRENDS IN RESIDUAL RISK OF TRANSFUSION TRANSMITTED HIV AFTER 2000

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The monitoring of the residual risk of transfusion transmitted infections (TTI) is a vital tool for evaluating the safety of blood supply. Residual risk of ITTs is predominantly associated with the characteristic lenghth of the window period and its evaluation relies on the incidence in repeat (regular) blood donations [RBD] only (van der Poel, 2010); The relative weight of recent seroconversions, set against the actual interval between succesive donations could indicate the likelihood of an HIV-1 transmission; NAT (nucleic acid amplification techniques) testing of samples from previous serologically negative donations and considered potentially infectious, contributes more accurately to the evaluation of the residual risk of transmission. We report here the analysis of the data obtained upon the anti - HIV screening of blood donations since 2000.

METHODS: Current screening (a total of 4,512,522 – 1,034,830 FTBD and 3,477,692 RBD) uses combined, Antigen+Antibody EIAs for HIV-1/2. Repeat reactive donations are confirmed in Western Blot and/or Line-Immuno-Assay (LIA), in keeping with WHO criteria for HIV-1/2 . Where available, repository samples from previous negative donations of RBDs who have seroconverted between successive donations were tested for HIV-1 p24 antigen and for HIV-1 RNA since 2011. Prevalence and incidence are expressed for 100,000 donors/ donations, respectively.

RESULTS: During the considered period the prevalence of anti-HIV-1 in first-time blood donors (FTBD) was 30.1,increasing up to 50.0 for the last year, as compared to aprox. 6 in the western part of the EU (EuroHIV,2006). Only one case of HIV-2 was detected. In repeat blood donations (RBD) the mean incidence was 2.88 (up to 7.4 in 2012) in 100,000 donations as compared to under 1 in 100,000 donations for the western countries of EU, with 33.0% early seroconvertors (significantly more [p>0.001] than in FTBD = 5.79%), The frequency of potentially infectious RBDs was 1.44 in 100,000 RBD representing 50% of all cases detected in this category. In 2011 4/7 samples from potentially infectious donations were tested for p24 Ag and was found positive. In 2012, 6 /11 samples were tested by NAT and one was found viremic,confirming the infetivity of a previous donation. In both cases the "look-back procedure was initiated.The highest prevalence in FTBD (> 50/100,000) was observed in the area south of Bucharest and that of Constanta, which together account for 68% of all detected positives, but only for 31.7% of all blood collection from FTBD. Implying that the virus is trafficking at the same rate between first-time blood donors as between repeat blood donors, projections can be made to estimate the residual risk of HIV -1 transmission from FTBDs.

CONCLUSIONS: As compared to the moment of the introduction of specific screening, the residual risk for transfusion transmitted HIV considerably lowered due to the introduction of combination Ag-Ab screening tests, but it remains well above the levels registered in western EU. Though it appears that the virus trafficking is faster in RBDs, the changes in the weight of FTBDs, which raised from 13.1% in 2000 to about 25% after 2009, together with the clear upward trend in the prevalence, are to be taken into account when estimating the residual risk related to single donations from FTBDs.

Further reduction of risk would occur only through improving standards for donor selection and introducing the NAT testing of all donations.