

Detection of HIV-1 Infection in Blood Donors During Immunological Window Period Using the Nucleic Acid- Amplification Technology (SP196)

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Background: Individual Nucleic Acid-Amplification Testing (NAT) has been recently introduced in blood banks in Sao Paulo, Brazil, in attempt to reduce the transfusion transmission risk of HIV and Hepatitis C viruses. The aim of this study is to investigate the impact of this technology in our blood donors and transfusion routine.

Methods: According to Brazilian Legislation, 47,866 donations were tested from March 2004 to November 2005, using two approved enzyme immunoassays (EIA) for HIV antibodies (Abbott Murex and Biomerieux) and also individual NAT (Procleix- HIV-1/HCV assay). All NAT positive and antibody negative were confirmed using Western blot (WB-Genelabs Diagnostics), p24 antigen (Vironostika) and Amplicor Roche HIV viral load assay (detection limit of 400 copies/mL).

Results: Among the samples screened, no NAT positive/antibody negative case was detected for HCV; two of them were non-reactive in enzyme immunoassays but positive for HIV-1 RNA , as described: Donor A, male, 34 years old, married, was a repeat donor with a previous blood donation on 06/21/04. After the results of the index donation on 11/17/05 and confirmatory tests (negative p24 antigen and quantitative PCR-HIV < 400 copies/mL), he was recalled to collect a new blood sample in order to confirm the HIV-1 positivity. The sample was collected 25 days later and confirmatory tests showed quantitative PCR-HIV 16,800 cp/mL, reactive antibody detection, reactive WB and negative p24 antigen. During interview with the infectious diseases specialist, the donor admitted, between the two donations, many occasions of male homosexual intercourse without using a protective. Two weeks before the index donation, he had low grade fever, sore throat, myalgia and malaise. Donor B, male, 30 years old, single, first time donor on 10/01/05, confirmatory tests showed negative p24 antigen and quantitative PCR-HIV 450 copies/mL. Four days later, a new sample was collected remaining serological tests non-reactive, negative p24 antigen and quantitative PCR-HIV 122,000 cp/mL. The donor developed fever and diffuse body pain one week after the donation. He was recalled many times for counselling and testing. Unfortunately, he has never returned again.

Conclusions: Although serologic analysis for HIV is a primary tool for diagnostic testing, the introduction of NAT has made possible the identification and prevention of transfusion of two HIV positive blood donations in a 18 months period. Interesting to note that in this study, HIV incident cases in blood donors were more common than HCV using NAT technology. In addition, the risk of HIV transmission is not limited to the first time donors.