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Oral Presentation

## **EVALUATION OF ACCEPTED BLOOD DONORS WITH A MULTIPLEX NUCLEIC ACID TEST (NAT) AT CHIANG MAI UNIVERSITY HOSPITAL, THAILAND (P-136)**

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**Background:** The Chiang Mai University Hospital receives ~ 20,000 blood donations annually, mostly from replacement donors known for a higher viral marker rate than volunteer donors. Over the past 3 years, the donor prevalence rates for human immunodeficiency virus type 1 (HIV-1), hepatitis B virus (HBV) and hepatitis C virus (HCV) have been approximately < 1%, 5%, and 1.5%, respectively. Anti-HBc screening is impractical in Thailand because of the high positivity rate.

**Aim:** To compare results from our standard serological screening tests with those of the PROCLIEX<sup>®</sup> ULTRIO<sup>™</sup> Assay (Ultrio Assay, Chiron Corporation, Emeryville, CA, U.S.A.) a multiplex NAT for the simultaneous detection of HIV-1, HBV, and HCV.

**Methods:** Between April 2005 and February 2006, 5083 donors, who passed an improved self-deferral questionnaire which authorized the use of their blood in any study, were tested for HIV with p24 antigen and anti-HIV-1 and 2 Combitec, for HBV with Ausria, the latter two tests from Abbott Laboratories, North Chicago IL, for HCV with a 3rd generation EIA, Diagnostic Biotechnology, Singapore, and for syphilis with VDRL carbon antigen, Cambridge MA, as well as individually tested with the Ultrio Assay. Samples with discrepant serology and NAT results are currently undergoing alternative NAT by the Chiron Target Capture Assay and additional serological evaluation with anti-HBc IgM, and IgG, HBsAg and /or anti-HBs.

**Results:** Of the 5083 accepted donors, ~ 58% were first time and ~ 97% replacement donors. Positive serological results were as follows: HBsAg (5.6%), anti-HCV (0.7%), anti-HIV 1 and 2 (0.3%), p24 antigen (0%) and VDRL (1.6%). Of the 5083 donors, 6.4% were NAT positive (317 positive for 1 virus and 6 positive for two viruses). Discriminatory testing revealed 282 HBV, 34 HCV, and 13 HIV infections. Ten donors had positive HBV serology and negative Ultrio results; 4 of them had HBV DNA levels ranging from 1.8 -20.6 IU/mL, quantified by the Target Capture Assay. Serology and NAT results were concordant for HIV and HCV, but there were 7 HBV NAT yield cases. Of these, 4 had HBV DNA levels ranging from 5.2 - 397.6 IU/mL by the Target Capture Assay. Of the 4 confirmed cases, 3 were anti-HBc positive, suggesting late occult infection, and 1 was anti-HBc negative, but became HBsAg positive the following month, suggesting a window period case. Of the other 3 yield cases that have yet to be tested by the Target Capture Assay, 1 was anti-HBc positive.

**Conclusions:** Despite the implementation of an improved donor deferral questionnaire, the seroprevalence of HIV, HBV, and HCV remained close to the same, with a decrease in HCV from 1.5% to 0.7%. HBV prevalence remained high. The HBV NAT was a useful tool for identification of both window period and late stage HBV infections; the confirmed window period yield was 1 in 5083 and the confirmed occult yield was 4 in 5083.