HBV-DNA DETECTION IN HBS AG NEGATIVE, ANTI-HBC POSITIVE BLOOD DONORS AND CORRELATION OF VIREMIA WITH OTHER MARKERS- ANTI-HBS, HBE AG, ANTI-HBE AND ALT: MEASURES TO INCREASE SCREENING EFFICIENCY (P-226)

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BACKGROUND
Infectious makers screening is one of the most important aspects of safe blood transfusion. Studies of transfusion-associated hepatitis prior to anti-HBc testing indicated that hepatitis B still occurred despite the use of sensitive tests for hepatitis B surface antigen (HBsAg).

AIMS
The aim of this study was to assess the prevalence of anti-hepatitis B core (anti-HBc) positivity and presence of HBV-DNA in serum sample of healthy blood donors negative for HbsAg, HIV and anti-HCV antibody in India and to determine whether there was any correlation between the HBeAg, anti-HBe and ALT levels in HBsAg negative, anti HBc positive donors and HBV-DNA estimation by PCR. Since anti-HBc detection is not mandatory in India, we wanted to evaluate whether anti-HBc detection should be adopted as a mandatory screening assay for safety of donated blood.

METHODS
5500 serum samples negative for HbsAg, HIV and anti-HCV collected from healthy blood donors were tested for the presence of anti HBc antibody. All samples positive for anti-HBc antibody were then investigated for anti-HBs, HBeAg, anti-HBe antibody, ALT and for the presence of HBV-DNA by polymerase chain reaction (PCR).

RESULTS
Of the 5500 HBs Ag samples tested, 204 (3.70%) blood samples were found to be positive for anti-HBc. HBV DNA was detected among 50 of the 204 (24.50%) samples. 122 (59.80%) out of 204 anti-HBc antibody positive samples were found positive for anti-HBs antibody. HBV-DNA was detected in 15 (12.29%) of the 122 patients positive for both anti-HBs antibody and anti-HBc antibody. None of the 204 anti-HBc antibody positive samples were positive for HBe antigen while 153 (75%) out of the 204 anti-HBc antibody positive subjects were positive for anti-HBe antibody. Anti HBe antibody was detected in 14 (21.21%) of the 66 samples positive for both anti-HBc antibody and PCR. ALT was raised in 34 (16.66%) out of the 204 anti-HBc antibody positive samples while ALT was found to be raised in 14 (21.21%) of the 66 samples positive for both anti-HBc antibody and PCR.

SUMMARY/CONCLUSION
This study showed insufficient effectiveness of HBsAg screening for protecting blood recipients from HBV infection. 24.50% of HBsAg negative, anti HBc positive blood donors were HBV-DNA-positive by PCR. Earlier studies have claimed that Anti-HBs, is a strong marker of recovery and protective immunity from HBV infection and that it would be safe to release anti-HBc and anti-HBs-positive blood donations. However, in this study, 12.29% of anti-HBc and anti-HBs-positive donors were HBV-DNA-positive establishing that in the absence of PCR all anti HBc positive donations must be discarded irrespective of their anti HBs status. 21.21 % of the anti-HBc antibody and PCR positive blood donors were anti HBe positive while 22.72 % had raised ALT. However there was no correlation between these markers and PCR positivity. In conclusion, anti-HBc antibody testing should be mandatory on all blood donors and if the found positive the blood should be discarded regardless of anti-HBs status.

Further testing for HBV-DNA would be beneficial to follow up the blood donor for HBV infection.

ASSAY	TOTAL SAMPLES	TOTAL POSITIVE	% POSITIVITY
1. HBs Ag Positive	5500	Nil	Nil
2. Anti HBc Positive	5500	204	3.70%
3. Anti HBc & HBV DNA Positive by PCR	204	66	32.35%
4. Anti HBc + Anti HBs Positive	204	122	59.80%
5. PCR Positivity in Anti HBc & Anti HBs Positive Samples	122	15	12.29%
6. Anti HBc + Hbe Positive	204	Nil	Nil
7. Anti HBc + Anti HBe Positive	204	153	75.00%
8. Anti Hbe Positivity in Anti HBc & PCR Positive Samples	66	14	21.21%
9. Anti HBc + Raised ALT	204	34	16.66%
10. Raised ALT in Anti HBc & PCR Positive Samples	66	15	22.72%

Correlation - Hepatitis Markers and PCR Positivity