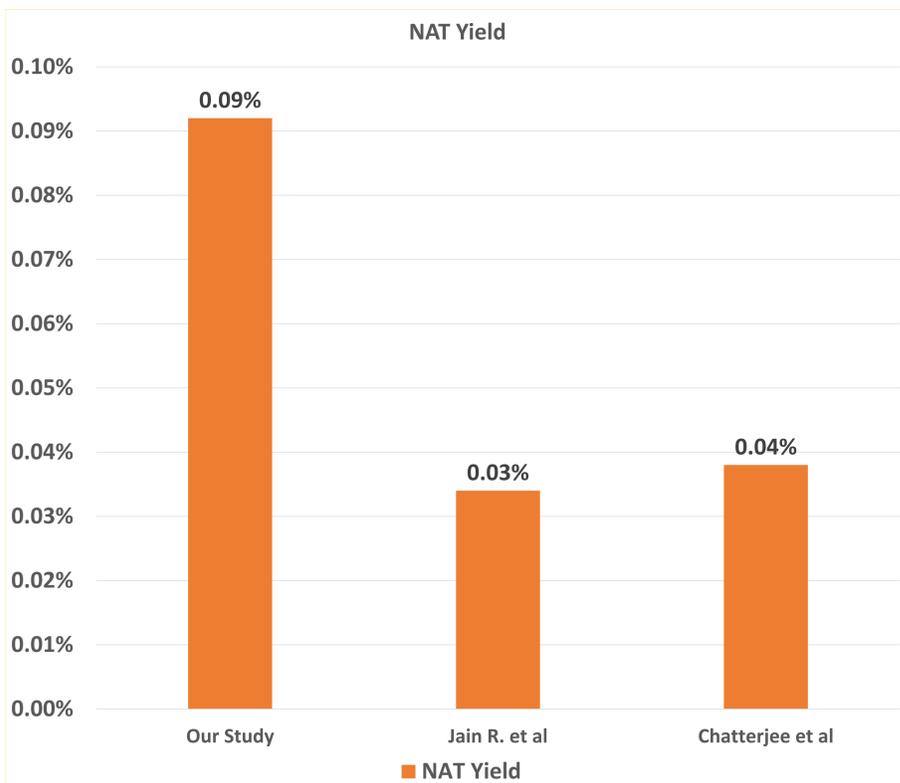


BACKGROUND:

- ◆ Many patients need transfusions and blood transfusions have never been associated with zero risk, so, the risk reduction by improving in infectious disease screening is the need of the hour.
- ◆ Blood and blood components are important sources of HIV, HBV, HCV, Syphilis, Malaria and other infectious diseases.
- ◆ Our country has HBsAg seroprevalence of 2-8% in general population and falls under category of HBV intermediate endemicity[1].
- ◆ India has a prevalence of 1.5% of HCV, which is an additional burden to Health Care Management System[2].

METHOD:

- ◆ We used fourth generation ELISA to screen the blood samples of all voluntary and replacement blood donors during the period of 01/06/2018 to 13/11/2018.
- ◆ Total 17515 donors were screened during this period by ELISA using Euphoria 4.1.
- ◆ Out of which all ELISA negative donors, 11995 were tested by MP-NAT based on the principle of POLYMERASE CHAIN REACTION using COBAS 201s with MPX v2.0.
- ◆ NAT reactive donors were retested for viral load by COBAS TAQMAN 48.



RESULTS:

- ◆ Study Period: 01/06/2018 to 13/11/2018
- ◆ Total Donors Screened: **17515**, Vol: 40%, Repl: 60%
- ◆ Donors screened using MP-NAT: **11995** (non-reactive on ELISA)
- ◆ Donor samples found Positive on MP-NAT: 11
- ◆ NAT Yield: **1 in 1090 (0.092%)**
- ◆ Out of 11 NAT reactive donor samples, 5 were tested for viral load.
- ◆ All those 5 blood units were having viral load above the detection level & 3 out of 5 donors samples were having viral load more than 6IU/ML & 2 were having < 6IU/ML .

DISCUSSION & CONCLUSION:

- ◆ Every year over 93 million donations made worldwide & blood transfusion continues to save millions of lives each year. And also improves the life expectancy and quality of life of patients suffering from life-threatening conditions [3].
- ◆ In the vast majority of blood units tested, the results of ELISA and MP-NAT for HIV-1&2, HBV and HCV were concordant. MP-NAT did detect the presence of viruses missed by ELISA in some blood units. Its widespread use in blood banks would ensure safer blood transfusion.
- ◆ In our study of 17515 cases there were 11 HBV cases and no HIV/HCV window cases were detected on NAT testing. Thus the HBV NAT yield was 1:1090 donations which is much higher than in studies done in western Europe and the USA, where the reported prevalence is around 1:600,000 to 1:350,000 donations [4]
- ◆ Chart shows comparison of our study with various other studies done in India.
- ◆ Since we supply blood components (packed red cells, fresh frozen plasma and platelet concentrate), these 11 units of blood would have yielded 33 components & hence 33 patients could have been infected with HBV viruses.
- ◆ Countries with a high incidence of infection like India there are likely to have significant number of window period donations that can be identified by NAT as in our study.
- ◆ In conclusion, near zero risk of blood transfusions cannot be achieved by routine screening of all blood bags by only ELISA as primary screening .If it is followed by NAT to all ELISA negative bags to detect window period donations, the same can be achieved.
- ◆ Therefore double or dual screening of all blood bags by two different techniques will provide 99.99% safe blood globally.

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