HIV risk associated with nucleic acid testing tested seronegative blood donation where the donor was not preassessed for the risk

Sir,

Risk assessment forms an important part of donor assessment before allowing the blood donor to donate blood. In India, blood donation camps are extremely crowded, and privacy for counseling and risk assessment is almost nonexistent. It will be interesting to know how many extra HIV donations will pass through the security checks of our system for donors being in an early phase of HIV infection and not detected by any test. This was elegantly worked out in a paper by Yang *et al*.[1] The authors showed that in the absence of risk assessment questions and counseling, only nucleic acid testing (NAT) for seronegative patients for HIV infection will still cause 49 units of blood to slip through the present window period of 9.1 days of NAT positivity and will cause transfusion of 86 infected blood components.

In India, seroprevalence in general population as well as so-called voluntary blood donor population has remained same at 0.35% in 2015–2016 (0.23%–0.6%),[2] showing that risk assessment questionnaire and counseling are largely ineffective. Several centers have conducted NATs on Indian donors and approximately 1:610–1:2972 (average 1:1500) were found to be NAT positive but seronegative.[3]

India provides us with a scenario as if no risk assessment questionnaire is being administered as evidenced by almost similar seroprevalence for HIV in normal population and blood donor populations; we did an exercise similar to Yang *et al*.[1] essentially using their model for calculation with some modifications to suit Indian requirement [Table 1].

Table 1: Calculation of blood units from infected donors within nucleic acid testing negative window period for HIV infection

Estimated annual number of individuals infected (NACO data)
Percentage of people infected within blood donation age group (assumed 92%)
Blood donation rate among age-eligible population (2.5%)
9.1/365 blood donation during window period (taking 9.1 days to be window period)
Average number of components produced from 1 unit of donation (assumed 1.75)

NACO = National AIDS Control Organization

India collects approximately 10 million units of blood per year and this is donated mainly by 400 million adult males between the age 18 and 65 (2.5%) as female donors form insignificant number of blood donors in India (<10%). National AIDS Control Organization[4] documented approximately 114,736 new HIV infection, of which 80% will be male of the donor age group, i.e., 90,000 males with HIV and could have donated blood. Considering that in India, 2.5% donates blood, i.e., 2200 HIV-positive individuals could have donated blood, and considering a window period of NAT of 9.1 days as taken in Yang *et al*.'s paper, then, out of 2200 person with new HIV infection, 2200 × 9.1/365, i.e., 54.84 or 55 donations could be in the window period and will slip through the NAT and will be used for various patients.

Considering an average of 1.75 units of concentrates /per collected bag as given in [Table 1], 55 × 1.75 or 96.25, i.e., 100 components will be produced which can transmit infection as HCV is of similar frequency as HIV in India and hepatitis B is five times more; hence, another 100 HCV and 500 hepatitis B will also be transmitted if in India we do everything right and Institute ID-NAT without adhering to the risk assessment questionnaire and donor counseling. With our 950,000[5] men who have sex with men (MSM) and 180,000 intravenous drug user (IVDU)[6] individuals having HIV seroprevalence of 2.9% and 7%, some additional risk will be added, i.e., 17 of MSM and 8 of IVDU HIV and HCV infection and 85 hepatitis B from MSM and 40 from IVDU donor may be expected, leading to a total of 175 additional infections involving 307 components than what has already been described above. Where repeat donors are concerned, the transfusion service is on a much safer ground, but human nature is unpredictable regarding what initiates risk behavior in an individual, so proper donor counseling will still be required.

Hence, the power of donor counseling should never be underestimated even if the most powerful infection detection system like an individual donation, NAT system is universally operative.

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Conflicts of interest

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