Commentary

Towards zero transmission of HIV through blood transfusion

Medicine as a scientifically validated discipline was the contribution of the 20th century. When the Spanish influenza pandemic struck the world in 1918, the only interventions in industrialized countries were through sanitation – segregation, prohibition of spitting in public, requirement of covering mouth and nose when coughing and sneezing, wearing surgical face masks – since no reliable diagnostics or specific therapeutics had been developed. Once microbiology could isolate and identify pathogens, human mastery over infectious diseases was rapid; pharmacology could develop anti-microbial drugs and vaccines could prevent selected diseases. Towards the last quarter of the 20th century, experts believed that the war against infectious diseases was more or less won through public health and medicine. Then, in 1981 a new disease was detected – the acquired immune-deficiency syndrome, AIDS. After its cause was discovered to be a novel retrovirus it dawned on the experts that new infectious diseases had been ‘emerging’ from time to time, and that new ones will emerge at unexpected times and places. In 1984 a virus was detected from a person with AIDS and was confirmed as its cause in 1985. The same year reagents were made in the USA for screening of donor blood for transfusion-recipient’s safety. All countries with public health infrastructure adopted several control measures including blood safety.

Picture India in early 1980s: in the absence of a public health infrastructure and no trained and empowered personnel deployed in the districts and cities, no one had the mandate to detect, diagnose and control diseases even in outbreaks. For a few prioritized diseases the Government had created special vehicles to fulfill the public health function of disease prevention. Thus, stand-alone vertical control projects had been functioning against tuberculosis, malaria, leprosy, kala-azar and filariasis. On the other hand, no one seemed to be accountable to control other diseases. Many undiagnosed and/or uncontrolled outbreaks have occurred in recent years in Assam, Bihar, Uttar Pradesh, Odisha and Gujarat. There have been recurrent and widespread prevalence of cholera, enteric fevers, leptospirosis, scrub typhus, encephalitis, bacterial meningitis, anthrax, influenza and many more. We learn about outbreaks through media reports. Controlling diseases at the local level and informing the public of every outbreak are functions of the public health department, missing in India. There is much advocacy for universal healthcare in the country, but the medical profession and professional associations have been silent on the need for public health. The entry of AIDS in India must be seen against this backdrop.

The Christian Medical College (CMC) in Vellore, Tamil Nadu, a not-for-profit non-governmental organization, has a diagnostic virology laboratory functioning since 1967. In 1985, a retrovirus unit was opened and ELISA reagents were obtained for testing for HIV infection. We asked if the AIDS virus (then called HTLV III, now human immunodeficiency virus, HIV) had reached India. A systematic study was conducted with approval from the State Health Ministry and fund support from the Indian Council of Medical Research (ICMR)1,2. In February and March 1986 we detected India’s first HIV-infected women who practiced for-fee sex work, in Madras (Chennai), Madurai and Vellore1,2. This information was announced simultaneously in the State Legislative Assembly and in the Parliament in May 1986. Immediately the ICMR in partnership with the central Directorate of Health Services created an AIDS Task Force – thus was born one more vertical programme3. Fortunately the Vellore model of systematic screening for monitoring prevalence of HIV
infection every year was accepted by the Task Force and some 30 centres were opened for sentinel surveillance. By 1992 when the programme was taken over by the Directorate under the newly established National AIDS Control Organisation (NACO), a multi-pronged matrix of interventions and nation-wide sentinel surveillance had already been ongoing. Hospital infection control including safe blood transfusion was a part of the interventions.

The CMC blood bank had been conducting routine screening of all blood donors for hepatitis B virus (HBV) infection from 1972. Following the detection of one instance of transfusion-associated HIV transmission in Vellore in 1987, routine HIV testing was added in 1988. Thereafter the Task Force was instrumental in making HIV screening in blood banks in India (as well as screening for HBV) mandatory in 1989. Since then, over 2000 blood banks in India have been modernized, and a whole new branch of Transfusion Medicine has evolved. Blood Transfusion Councils have been established at national and State levels. Stringent quality control parameters have been defined. The goal is to reach nationally with zero transmission of HIV through transfusion. Long ago surgeons believed that all blood was clean and sterile; today it is mandatory to screen donors/donated blood for transmissible infections of HIV, HBV and hepatitis C in addition to malaria and syphilis. Testing for microfilariae is optional as transfusion-transmitted microfilaraemia is only transient and self-limited.

Among all diseases under vertical disease control programmes, HIV infection alone stands out with demonstrable decline in prevalence, thanks to the multi-pronged interventions, adequate funding and regular monitoring. No other infection is monitored based on population denominator, even if on sample basis. The sample sizes are large and annually repeated. In spite of all such progress, unlicensed blood transfusion services and through them HIV transmission, continue as shown by data from NACO. Among the estimated 120,000 new HIV infections, 1 per cent was through transfusing blood or blood products in 2009. Ensuring quality of healthcare services including that of blood transfusion facilities in every district and city can be achieved only if public health infrastructure is established in every district and State, covering the whole country. Only public health officials can be empowered to monitor the functioning of healthcare services everywhere in quality and reach.

It is hoped that the Government will create the much-needed public health arm of health management, with empoweredtrained officers in every district and city, and that every healthcare facility practicing blood transfusion will be watched for adhering to the stipulated norms of quality parameters to prevent any transfusion-related infections. Only then will we be able to reach, and also document, zero transmission of HIV via blood transfusion.

**JOHN: TOWARDS ZERO TRANSMISSION OF HIV THROUGH BLOOD TRANSFUSION**

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References

1. John TJ, Babu PG, Jayakumari H, Simoes EAF. Prevalence of HIV infection in risk groups in Tamilnadu India. *Lancet* 1987; i: 160-1.

2. Simoes EAF, Babu PG, Jayakumari HM, John TJ. The initial detection an of human immunodeficiency virus 1 and its subsequent spread in prostitutes in Tamilnadu, India. *J AIDS* 1993; 6: 1030-4.

3. Dasgupta PR, Jain MK, John TJ. Government response to HIV/AIDS in India. *AIDS* 1994; 6 (Suppl): S83-S90.

4. John TJ, Carman RH, Hill PG. Hepatitis B antigen and virus hepatitis type b in India. *Bull World Health Organ* 1974; 51: 617-20.

5. John TJ, Babu PG, Pulimood BR, Jayakumari H. Prevalence of human immunodeficiency virus infection among voluntary blood donors. *Indian J Med Res* 1989; 89: 1-3.

6. Ministry of Health and Family Welfare. Amendment of Drugs and Cosmetics Rules 1945. The Gazette of India, Extraordinary. Notification GSR 40(e), 29 January 2001.

7. Makroo RN, Chowdhry M, Bhatia A, Arora B, Rosamma NL. Prevalence of HIV among blood donors in a tertiary care centre of north India. *Indian J Med Res* 2011; 134: 950-3.

8. Jain MK, John TJ, Keusch GT. Epidemiology of HIV and AIDS in India. *AIDS* 1994; 8 (Suppl): S61-S75.

9. National AIDS Control Organisation. *HIV Sentinel Surveillance Round 2008*. Available from: [http://www.nacoonline.org/upload/Publication/M&E%20Surveillance,%20Research/National%20Action%20Plan%20for%HIV%20Sentinel%20Surveillance%202008.pdf](http://www.nacoonline.org/upload/Publication/M&E%20Surveillance,%20Research/National%20Action%20Plan%20for%HIV%20Sentinel%20Surveillance%202008.pdf), accessed on December 20, 2011.

10. National AIDS Control Organisation. *Annual Report 2010-11*. Available from: [http://nacoonline.org/upload/REPORTS/NACO%20Annual%20Report%202010-11.pdf](http://nacoonline.org/upload/REPORTS/NACO%20Annual%20Report%202010-11.pdf), accessed on December 20, 2011.

11. John TJ, Shah NK. Universal healthcare & nationwide public health: Two tales from one city. *Indian J Med Res* 2011; 134: 250-2.