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Editorial

Ending AIDS: The 90–90–90 strategy

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From its beginning as a cluster of cases, the human immunodeficiency virus (HIV) epidemic revealed a startling propensity to spread between sub-populations and across geographic boundaries. Within the first decade itself, a growing realisation came such that strategies to prevent HIV infection would require a change in human behaviour, that is difficult to sustain. The discovery of antiretroviral drugs and their trials not only changed the treatment but prevention landscape as well. The results of ACTG 076 trial gave a sparkle of hope in prevention of mother-to-child transmission of HIV-1 infection¹ which was consolidated further by use of triple combination antiretroviral therapy (ART) approach. The HPTN 052 was a landmark study where ART was provided to an index case in an HIV sero-discordant couple setting when their absolute CD4 count was between 350 and 550 cells per cumm. The study revealed reduction in the risk of transmission to the HIV negative partner by 96%.² The impact was found to be sustained even at the end of a decade of observation, and the risk was found to be reduced by 93%.³ These findings led to the development of the concept of treatment as prevention (TAsP). The World Health Organisation (WHO) came up with Option B+ in 2013 that prioritised pregnant women to receive ART irrespective of their CD4 counts. In 2016, WHO guidelines recommended a 'treat all' strategy offering ART to all those who are found to be infected irrespective of their CD4 counts even among resource-limited settings as a public health tool to control HIV epidemic.⁴ Joint United Nations Programme on HIV and AIDS (UNAIDS) has set a goal to end acquired immune deficiency syndrome (AIDS) by 2030 using 90–90–90 strategy that aims at detecting 90% of all HIV-infected individuals, linking 90% of these people to ART services, and ensuring that 90% of these linked patients have suppressed plasma viral loads.⁵ It is expected that this strategy will bring down the

community viral load so much so that there will be a virtual elimination of the risk of transmission to a new person. Maintaining cost-efficiency of HIV testing would be vital while making efforts to detect more than 90% by prioritising offer among 'at risk' individuals.

The recent estimates released by the National AIDS Control Organisation (NACO) indicate that there may be about 2.1 million HIV-infected individuals in India.⁶ Of these, close to a million are currently receiving free ART. Two out of three HIV-infected individuals know that they are indeed infected by HIV. Community-based HIV testing is being prioritised by NACO to cover the gap in detection of HIV-infected individuals. It is important that 90% of those who are infected by HIV should know their HIV status. Though this holds true for adults, awareness about HIV status tends to be low among children. An interesting study undertaken by Joshi et al.⁷ in this issue among 258 HIV-infected children between 6 and 16 years of age reported that about 38% of children living with HIV infection were aware of their HIV status. About 11.2% of them had emotional and behavioural disturbances more so among those who were orphans. However, there was no association between awareness of HIV status and emotional and behavioural disturbances. Children living with their family were better off with respect to school attendance and scholastic performance emphasising the importance of family environment. This study raises the issue of HIV disclosure in Indian social milieu. At this stage, it seems relevant and important to develop a culturally appropriate national HIV disclosure guideline in India and train the counsellors to implement them.

Though rapid scale of free ART services, among people living with HIV infection and along with the targeted HIV prevention interventions among key sub-populations of sex

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workers, men having sex with men and injecting drug users and bridge populations of truckers and migrants have successfully reduced HIV incidence dramatically in India, the high patient-load in the ART centres impacts counselling support to the patients. Additionally, high loss to follow up, drug stock outs and hurdles in rolling out second-line ART to those who have failed on first line ART pose great challenges in achieving the last 90% goal of virologic suppression.^{8,9} Adoption of 'treat all' strategy may indirectly transform the 90-90-90 strategy to 90-90 only as the linkage goal becomes redundant.

The goal of virologic suppression among 90% of those on ART is particularly challenging. A study undertaken by Patrikar et al.¹⁰ on predictors of first line failure describes a low treatment failure rate of 0.21 per 100 person years in a cohort of 195 adults serving in Armed Forces who were initiated on ART between 2008 and 2009. Interestingly, the treatment failure rate at 12 months on ART was only 1.68% compared to the overall treatment failure rate of 12.6% reported from four ART centres in Pune.¹¹ Despite lower CD4 cut-off to initiate ART and lower median baseline CD4 count, the treatment failure rates are low in contrast to other study reports. These low treatment failure rates may be a reflection of differences in type study participants attending the ART clinic.

Chronic liver disease is a common cause of mortality amongst HIV-infected individuals on ART. Most often it is due to co-infection of hepatitis C and B.¹² Another study in this issue indicates a very low prevalence of Hepatitis B and C in the study population.¹³ Alcohol use disorder as well as substance abuse is also known to be associated with low levels of drug adherence.¹⁴ Strategies to overcome its impact on survival of HIV-infected individuals on ART need to be accorded primacy in India.

A dynamic approach in reducing drug-induced liver toxicity among those who have higher levels of hepatic enzymes by selecting less hepatotoxic drugs and for those who are co-infected by tuberculosis (TB), selecting less hepatotoxic anti-tubercular therapy (ATT) regimen is vital. In a study by Puri et al.¹⁵ published in this issue, of the 100 HIV-TB co-infected individuals only 15 required a choice of less hepatotoxic anti-tubercular drugs. These findings may be of importance to the Revised National Tuberculosis Control Program (RNTCP) as it currently does not allow choice of a different less hepatotoxic ATT regimen. Studies to assess the long-term impact of use of hepatotoxic ATT drugs among co-infected individuals who had raised liver enzymes at baseline need to be undertaken.

This issue has a balanced mix of original articles that throw light not only on strategies for ending AIDS but also on liver diseases that are assuming importance among those who are on ART.

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