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Now we care to cure HIV

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The time when HIV came to its full bloom, it was realized and accepted that we cannot cure the disease as no sterilizing drug was available. In other words drugs were able to kill the viruses which were circulating in the body fluids, but not the ones which were hiding inside the cells and showing no signal of their presence. Neither the immune system nor the drugs were able to reach and kill these viruses. In such scenario, the attention was focused to somehow restrict the progress of disease in the infected ones using various drug regimens and to prevent new infections by extensive interventions for prevention in susceptible populations and awareness programs in general population. The strategy worked well and gave the anticipated results. There has been a decline in new infection in last few years [1]. New HIV infections in 2013 were estimated to be 38% lower than in 2001 whereas people dying of AIDS-related causes in 2013 were found to be down by 35% as compared to 2005.

The programs going on globally are well settled and spearheading to take care of the major populations at risk. This is the time when we came out of the worries for managing the epidemic and started thinking of 'cure'. This word effectively may not have a literal meaning but scientific development in past years and a few attempts to cure individual patients using different strategies has provided great hope and an assurance for trying hard. It is understood that highly active anti-retroviral therapy (HAART) allows an HIV infected individual to live a life with almost no threat of progression to AIDS. This has provided with a new key word: 'cure research' in the field of HIV research. The global scientific efforts are now looking forward to get a workable strategy or combined strategies to see if we can get closer to at least functional cure if not an eradication of the last viral particle from the body. The functional cure essentially means that the viral replication would be at halt or at lower rate after the treatment has stopped. There are some evidences wherein the treatment was started very soon after the infection and the treatment could be stopped with lower viral load for 7 years after the treatment [2]. Similar strategy was tested in newborns also however we have seen a failure on this last year [3]. It was thought that the latent reservoir of viruses which remains safe from the drug must be playing a big role in resurgence of the virus once the treatment stops. The suggested strategy for this is to excite the resting $CD4^+$ cells with latent virus so that they start producing viral particle and get identified by either the immune system and get destroyed or become the target of treatment strategies. There are many challenges in this strategy but efforts are promising [4]. The other options being tested include bone marrow transplant, gene therapy and use of antibodies etc.

A long awaited approach that works well in many other infections is having a therapeutic vaccine that can take care of viral particle whenever they are found in the circulation. However, despite many efforts we could only see the partial success with this. A very recent report on broadly neutralizing antibodies has again given high hopes and a boost to vaccine research. This work reported that a single dose of a broadly neutralizing HIV-1 antibody (bNAb) succeeded in keeping the viral load low up to 8 weeks in a small phase 1 clinical trial [5]. The workers are confident that this antibody known as 3BNC117, is safe and effective in reducing HIV-1 viraemia, as a single agent. Further work in this area may provide us with what we have been waiting to see cure for HIV. Hopes are high.

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