

Recent advances in microbicide delivery

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Statement of the Problem: HIV-1 (Human immunodeficiency virus) is the virus that causes AIDS (acquired immunodeficiency syndrome) and continues to be a major global public health issue. HIV/AIDS is the leading cause of death among the women of reproductive age (15-49 years) and 62% of the new infections among adolescents occurred among adolescent girls. There were an estimated 2.1 million new HIV infections in 2013 and despite significant efforts; the rate of new HIV infections worldwide remains unacceptably high.

Findings: Therapeutic interventions could be targeted towards various steps in HIV-1 replication cycle. Highly active antiretroviral therapy (HAART) resulted in reduced viral replication/load and enabled immune system recovery, which finally led to increased life expectancy. Along with this other interventions under development involve vaccines, treatment of other sexually transmitted diseases, ARTs for HIV infected population, and development of pre-exposure prophylaxis against HIV using ARVs and microbicides for vaginal and rectal use. Prevention strategy based on

antiretroviral agents targeted as following approaches: microbicides, pre-exposure prophylaxis (PrEP), and treatment as prevention. Microbicides are topical PrEP products (such as gels, capsules, tablets, films, and intravaginal rings (IVR)) designed to be applied either around the time of coitus, used daily (gels and films), or to deliver product over a prolonged period (IVR).

Conclusion & Future Perspective: Fate and future of AIDS mainly depends on how and to what extent preventive strategies against HIV 1 infection among women are effective? Future research should focus on developing true sterilizing cure with complete eradication of the virus, and a functional cure, which is a permanent suppression of the virus without significant replication in the absence of ART. Microbicides will provide a user-friendly technology that will widen the range of protective options and, will be under the control of women.

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