

## Immediate antiviral therapy for HIV-infected persons faces with various obstacles

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### Summary

**Human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) ranks eighth in the global burden of disease, making seriously threatens to global health. Given there is not yet a cure for HIV infection, antiretroviral therapy (ART) holds a key role not only in improving the prognosis of the patients, but also reducing the risk of HIV transmission. The immediate initiation of ART has been recommended in domestic and foreign policies and guidelines, yet the implementation of this strategy is not satisfactory. In developing countries and even in some developed countries, it still takes a long time for patients to go from the diagnosis of HIV infection to the acceptance of ART. Clarifying the obstacles to the implementation of immediate ART and finding strategies to cope with them have emerged as key problems in response to HIV/AIDS.**

**Keywords:** HIV/AIDS, antiviral therapy, health service quality

Human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) ranks eighth in the global burden of disease in 2017, making seriously threatens to global health (1-5). Due to its complexity and lethality, there are total 36.9 million people living with HIV and 1.8 million people newly infected with HIV in 2016 globally, and total 849,602 people with HIV/AIDS and 262,442 people AIDS-related deaths as of September 30, 2018 in China (6,7). Curbing the AIDS epidemic is an important part of the United Nations 2030 sustainable development goals (8,9), which still has considerable challenges.

Given there is not yet a cure for HIV infection, antiretroviral therapy (ART) holds a key role not only in improving the prognosis of the patients, but also reducing the risk of HIV transmission (10-17). The guidelines of World Health Organization (WHO), European AIDS Clinical Society (EACS), U.S.

Department of Health and Human Services (DHHS) and Chinese Medical Association (CMA) all recommended that ART should be initiated in all HIV-infected adults, regardless of CD4<sup>+</sup> cell count (18-20).

However, the implementation of this strategy is not satisfactory. In developing countries and even in some developed countries, it still takes a long time for patients to go from the diagnosis of HIV infection to the acceptance of ART. The European Centre for Disease Prevention and Control (ECDC) report showed that only 16 of the 23 countries in Europe and Central Asia was reported to start treatment within one month of diagnosis (21); Oliver Bacon's study showed median time from diagnosis to first virologic suppression in San Francisco was 134 days in 2013 (22); Zunyou Wu's study showed the time from HIV confirmation to ART initiation was 53 days without intervention (23).

Clarifying the obstacles to the implementation of immediate ART has emerged as key problems in response to HIV/AIDS. The key obstacles in current research can be summarized in the following three aspects. *i)* Demand-side. Risk factors for delayed ART initiation include the key populations of men having sex with men (MSM), injecting drug users, male, older age, unmarried or divorced, *etc.*, and the HIV-infection persons with long-term out-migrating/working,

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refusal of treatment, negative psychological emotions, treatment related costs, *etc.* (24-26). *ii*) Supply-side. Health system challenges are a barrier to getting people diagnosed with HIV onto treatment in many countries, including the insufficient knowledge and skills of health professionals, inadequate referral mechanism, weak confidentiality and availability of treatment options, *etc.* (27,28). *iii*) Intervention-side. This section includes the social and cultural issues, including the laws and policies, stigma and discrimination, tedious treatment process, *etc.* (21,26,29).

Nevertheless, due to the short emergence time of this phenomenon, few studies to provide systematic, quantitative and suitable countermeasures and suggestions for this issue. Finding the systematic and quantitative strategies to cope with these obstacles has important theoretical value and practical significance. Firstly, conduct more multi-center clinical trials to further promote the updating of guidelines. In 2017, WHO guidelines put forward the strategy of Rapid ART Initiation (30), suggesting that all HIV-infected persons must start ART rapidly (less than 7 days after HIV positive diagnosis); and for those ready to begin the treatment, ART should be initiated on the same day. But it also noted that medical resources are key constraints, so more clinical trials are needed. Secondly, except for identifying the key obstacles, revealing the underlying mechanisms of such obstacles and selecting the optimal coping strategies based on mechanism research also important for optimizing HIV prevention and control policies.

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