

Perspectives

A Secure Supply of Antiretroviral Medicines for People Living with HIV During the COVID-19 Pandemic — China's Experience

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The occurrence of acute infectious diseases or severe natural disasters has a negative impact on the medical system (1). A survey of 105 countries by the World Health Organization (WHO) from March to June 2020 found that health services were disrupted in 90% of countries due to the coronavirus disease 2019 (COVID-19) pandemic, with low- and middle-income countries being the most affected. Human immunodeficiency virus (HIV) treatment continuity and healthcare service delivery were also affected by the COVID-19 pandemic (2–3).

In public health emergencies where social distancing and isolation regulations prevent people living with human immunodeficiency virus (PLHIV) from going to their regular clinics and hospitals for treatment, they may not receive timely medical services, leading to an increased risk of disruption of antiretroviral therapy (ART) (4–6). China has taken rigorous measures to contain the COVID-19 pandemic outbreak since early 2020. Lockdowns in cities have resulted in PLHIV who had travelled away from their hometowns being unable to return home and access HIV services from their usual healthcare providers (7).

In China, more than 95% of PLHIV have taken free medication provided by government programs from clinics they have chosen themselves. The emergency measures have been summarized to maintain essential health services and continuous ART during the COVID-19 pandemic. We hope to share the experience of minimizing the antiretroviral supply risk and improve service in the future.

RAPID JUDGMENT AND RESPONSE IN EMERGENCY PERIOD

Since the outbreak of COVID-19 in China, the Chinese government has taken the strictest measures to prevent the spread of COVID-19. Wuhan, one of the cities most affected by the outbreak, was quarantined starting on January 23, 2020 (8). This coincided with the Chinese Spring Festival, which saw increased travel

nationwide. PLHIV were stranded in different cities from where their regular clinics were located and were at risk of having access to antiretroviral (ARV) drugs interrupted.

The National Center for AIDS/STD Control and Prevention (NCAIDS) immediately recognized the negative impact of COVID-19 control measures such as quarantine on PLHIV's access to ARV medicines. On January 26, 2020, NCAIDS issued an official notice ensuring that all ART clinics across the country could provide ARV to PLHIV stranded in other cities. Regardless of where they were, they could always obtain their medication from local clinics and be provided with a month's dose immediately. This information was released to the public through official websites and social media. Subsequently, the addresses and telephone numbers of more than 5,000 clinics were published to assist PLHIV in seeking help nearby. In addition, NCAIDS developed an app to collect PLHIV's requests. PLHIV who needed help could input their location and contact information into the system then local staff would provide assistance. This system helped roughly 1,100 PLHIV within a month of its launch. PLHIV's request for help came mainly from Hubei, Jiangsu, Sichuan, and Hebei provinces. A survey launched by UNAIDS and the BaiHuaLin Alliance of PLHIV in February 2020 assessed community needs for ARV medicines (9). In addition to those stranded in other cities, PLHIV who had stayed onsite also had difficulties accessing HIV services due to COVID-19 control measures such as road or community closures. In response, healthcare workers, including local CDC staff and nurses, helped deliver life-saving medicines during these difficult times. In places where hospitals and healthcare workers were overwhelmed with COVID-19 patients, resulting in insufficient supply at ART clinics, CDC staff, volunteers, and community-based organizations (CBO) supported reaching PLHIV at risk of running out of their medications through offering home deliveries.

In the Joint United Nations Programme on HIV

and AIDS (UNAIDS) press release on February 6, 2020, UNAIDS commended NCAIDS for acting quickly to ensure that PLHIV who were not in their hometowns during lockdown could receive their monthly refills of ART. “China has made extraordinary efforts to contain the outbreak, and I have full confidence in China’s ability to bring the epidemic under control,” said Winnie Byanyima, Executive Director of UNAIDS (10). “I applaud the efforts of NCAIDS to support people living with HIV and affected by the lockdowns to get their medicines — we must ensure that everyone who needs HIV treatment gets it, no matter where they are,” said Winnie Byanyima, on February 19, 2020 (9).

MULTIPLE MEASURES IN REGULAR EPIDEMIC PREVENTION AND CONTROL PERIOD

By the end of March 2020, the COVID-19 situation in China was essentially under control, while other countries were still experiencing the continued impact of COVID-19. For China, guarding against inbound cases and domestic resurgences of the epidemic at home was the most important issue for national COVID-19 epidemic prevention and control (8,11). Stable guarantee measures had to be formulated for the safe supply of ARV drugs.

Sustained Production, Procurement, and Distribution of ARV Medicine

From early 2020, COVID-19 complicated the supply of ARV medicines in many forms, including the supply of active pharmaceutical ingredients (API), pharmaceutical production and transportation, and other aspects. Under the guidance of the Bureau of Disease Control and Prevention of the National Health Commission, NCAIDS combed the entire chain of medicine production and supply. We found that domestic production of API and foreign import of API, such as tenofovir and efavirenz, were blocked during the COVID-19 control period. Through the State Council’s Joint COVID-19 Prevention and Control Mechanism, the National Health Commission worked with the Ministry of Industry and Information Technology and local authorities, where pharmaceutical enterprises were located, to solve various problems in production.

The ARV drug supply system consists of domestic manufacturing and importation. The ARV medicine

supply system was established in 2004. Currently, all ARV medicines are bid on annually and distributed to provincial drug administration agencies. To ensure a continuous supply of drugs, drug agencies at the provincial level established a mechanism for drug demand forecasting and early stock warning. In the first half of 2020, the quarterly delivery of ARV medicines was interrupted due to supply chain disruptions, and some PLHIV were only able to receive medications for one or two months. The procurement work in 2020 was initiated in advance and successfully completed the drug procurement of all varieties.

Implementation of Multi-Month Dispensing Policy

The Chinese National Free ART Guidelines indicate that PLHIV can receive a quarterly amount of ARV medication after three months of treatment. In 2020, the pandemic caused a shortage in the ART supply chain, but normal supplies were quickly restored through multisectoral efforts.

UNAIDS called on countries to adopt multi-month dispensing (MMD), specifically indicating the follow-up time interval for PLHIV at ART. In 2020, to alleviate the risk of exclusive supply of each variety, some varieties were supplied by two companies simultaneously through bidding. The quarterly medicine supply was restored by the end of 2020 (12).

Emergency Plan and Early Warning Mechanism

Due to persistent reoccurrences of COVID-19 cases in various locations, at the beginning of 2021, the National Health Commission required ARV medicine administrations from all provincial-level administrative divisions to establish dynamic monitoring and early warning mechanisms for free ARV medicines to maintain supply and demand. All levels of ARV medicine administration were to appoint responsible persons, monitor drug consumption and stock every month, and reserve all types of drugs for at least one quarter. If the stock is insufficient to meet treatment needs for one month, the ARV medicine administrations must promptly report to NCAIDS. Provincial ARV medicine administrations should regularly update the drug supply plan to ensure that pharmaceutical factories organize production and delivery on time. A standby warehouse should be prepared to ensure continued supply during temporary outbreaks of COVID-19.

Guidance for PLHIV

To help PLHIV get the relevant information in time, all ART clinics were suggested to take measures such as online appointments and peak shifting interviews. ART clinics were asked to actively contact PLHIV with whom they had not regularly followed up. Continuous medicine supply was ensured through mailing and borrowing drugs for non-resident PLHIV when isolation and traffic control occurred. At the same time, all clinics were to publish their contact telephone numbers and provide healthcare and psychological support. Personal information and data of PLHIV were also protected. To inform PLHIV on how to prevent COVID-19, maintain hygiene habits, get vaccinated, and maintain ART, NCAIDS regularly issued patient guidance on official websites and official accounts.

ART PROGRESS UNDER COMPREHENSIVE MEASURES

Under the shelter of the above comprehensive measures, imported drugs have been stored for at least 6 months, and domestic drugs have been distributed quarterly. The provincial drug administration agencies have reported their drug reserves to NCAIDS every month, so as to timely capture the possible supply risks. In areas where the COVID-19 epidemic fluctuates, the emergency mechanism of drug supply will be launched as soon as possible, and PLHIV stranded in other cities could apply for drugs at local designated clinics.

We compared treatment data from 2019 to 2021. The treatment coverage of PLHIV in China increased from 89.7% in 2019 to 92.6% in 2021. The ART program in China has developed steadily. The numbers of PLHIV on treatment at the end of 2019, 2020, and 2021 were 863,000, 978,000, and 1,066,000, respectively (Figure 1). The rate of virological suppression (viral load $\leq 1,000$ copies/mL) has continuously remained above 95% in recent 3 years.

Although the experience described in this article may have some flaws to be further improved, we hope that it will provide some insight into the ARV supply chain to other countries or regions seeking to manage ART in accordance with the public health model. Given the changeable epidemic situation, we will continue to optimize the management process, ensuring that PLHIV still have access to essential HIV services and a

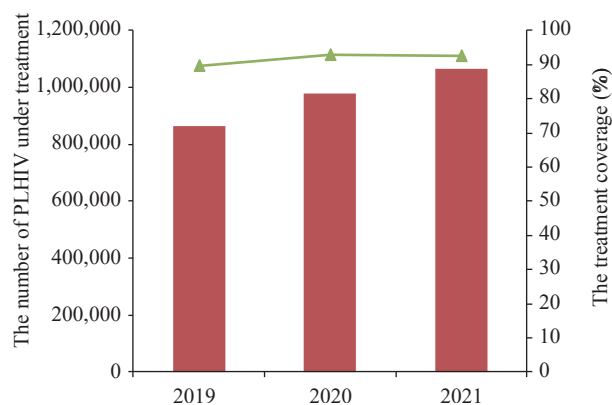


FIGURE 1. Antiretroviral therapy progress from 2019 to 2021.

Abbreviation: PLHIV=people living with human immunodeficiency virus.

stable drug supply.

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