ABSTRACT

Introduction: Prevention of mother-to-child transmission (PMTCT) of human immunodeficiency virus (HIV) is a global health focus in most parts of the world. The World Health Organization (WHO) launched the dual Elimination of Mother-to-Child Transmission (EMTCT) of HIV and syphilis initiative and released global guidance on criteria and processes for validation of the EMTCT in 2014. The purpose of this report was to analyze the key validation indicators of EMTCT of HIV in China from 2011 to 2020 and to provide relevant basis information for the implementation of EMTCT action in China.

Methods: The report described the coverage of maternal HIV screening and antiretroviral therapy usage for HIV infected pregnant women and their infants in China using the data from the national information systems of PMTCT of HIV, syphilis, and HBV management from 2011 to 2020.

Results: The rates of maternal HIV testing during pregnancy (predelivery and at labor) and predelivery increased from 92.9% (8,730,161/9,398,781) and 53.7% (5,050,569/9,398,781) to 99.9% (11,964,026/11,982,321) and 97.5% (11,679,924/11,982,321), respectively. The MTCT rate reduced from 7.4% to 3.6% between 2011 and 2020.

Conclusions: The data from the surveillance systems revealed that there was a marked increase in the coverage of HIV screening of pregnant women and antiretrovirals drugs use for HIV infected pregnant women and their infants in China from 2011 to 2020.

The goal of EMTCT programs was to ensure that mother-to-child transmissions (MTCTs) of HIV, syphilis, and/or HBV were controlled and reduced to a low level such that it ceases to be a public health problem. Validation indicators and targets were used to monitor achievement of EMTCT over a defined period. As for EMTCT of HIV, the indicators included impact and process indicators, the former included the HIV MTCT rate, and the latter included HIV testing coverage and antiretroviral therapy (ART) coverage of HIV-positive pregnant women. The year 2021 marked not only the twentieth anniversary for the implementation of PMTCT of HIV by the Chinese government, but also the threshold of making a National EMTCT Action Plan. The purpose of this report was to analyze the key validation indicators of EMTCT of HIV in China from 2011 to 2020 and to provide relevant information for the implementation of EMTCT action in China.

METHODS

During 2011–2020, the National Health
Commission issued 3 versions of the “Protocol for Prevention of MTCT of HIV, syphilis, and hepatitis B,” which contained the government’s response strategy, intervention measures, and requirements regarding organization and management. As for HIV, in every protocol, standardized intervention services for PMTCT of HIV covered the following: HIV testing for pregnant women, free antiretroviral therapy or prophylaxis for pregnant women, antiretroviral prophylaxis for 6 or 12 weeks for children, HIV testing for children, and other interventions (6).

The report described the coverage of maternal HIV screening and antiretroviral (ARV) drugs use for HIV infected pregnant women and their infants in China using the 2011–2020 national information system of PMTCT of HIV, syphilis, and HBV management data. The national information system of PMTCT of HIV was established in 2007 by the National Center for Women and Children’s Health of China CDC. Since 2011, the system started to collect data on PMTCT of syphilis and HBV. Data on HIV screening of pregnant women and ARV drugs use for HIV infected pregnant women and their infants was collected through mandatory case-reporting and monthly work statements by health facilities, including general hospitals, maternal and children’s hospitals, and other health providers across China. SPSS software (version 23.0, IBM Corp, Armonk, NY, USA) was used for all analyses. The rates of screening and ART usage were presented as frequencies and proportions, and we also described the HIV MTCT rate.

### RESULTS

During 2011–2020, the total recorded number of pregnant women receiving antenatal care was 139,751,391; among them, 137,555,431 pregnant women received HIV testing, the total testing rate was 98.4%, and HIV test predelivery rate was 82.8%. The rates of maternal HIV testing during pregnancy (predelivery and at labor) and predelivery increased from 92.9% (8,730,161/9,398,781) and 53.7% (5,050,569/9,398,781) to 99.9% (11,964,026/11,982,321) and 97.5% (11,679,924/11,982,321), respectively (Table 1).

The ARV drugs use rates of HIV infected pregnant women and the prophylaxis treatment rates of their newborn infants consistently increased during the study period. From 2011 to 2020, the treatment rate and the prophylaxis rate increase from 74.1% (2,525/3,407) and 85.2% (2,849/3,344) to 97.4% (4,623/4,745) and 99.2% (4,710/4,746), respectively. Along with increasing uptake of comprehensive interventions for infected mothers and their infants, the MTCT rate reduced from 7.4% to 3.6% between 2011 and 2020 (Figure 1).

### CONCLUSIONS

A better understanding of the implementation and outcomes of the program on PMTCT of HIV is needed for future strategies to achieve the WHO goal of EMTCT of HIV (7). The data from the surveillance systems revealed that there was an increase in the

### TABLE 1. Testing rates of HIV among pregnant women, China, 2011–2020.

| Year | No. of pregnant women* | HIV test during pregnancy | HIV test predelivery† |
|------|------------------------|---------------------------|-----------------------|
|      |                        | Number                  | Percentage (%)        | Number                  | Percentage (%)        |
| 2011 | 9,398,781              | 8,730,161               | 92.9                  | 5,050,569               | 53.7                  |
| 2012 | 12,077,532             | 11,641,270              | 96.4                  | 7,675,833               | 63.6                  |
| 2013 | 13,073,673             | 12,717,373              | 97.3                  | 8,986,577               | 68.7                  |
| 2014 | 13,796,766             | 13,548,485              | 98.2                  | 10,538,355              | 76.4                  |
| 2015 | 13,982,380             | 13,792,525              | 98.6                  | 11,535,100              | 82.5                  |
| 2016 | 18,325,763             | 18,179,870              | 99.2                  | 16,058,981              | 87.6                  |
| 2017 | 17,567,063             | 17,494,598              | 99.6                  | 15,960,411              | 90.9                  |
| 2018 | 15,132,557             | 15,091,448              | 99.7                  | 14,243,662              | 94.1                  |
| 2019 | 14,414,555             | 14,395,675              | 99.9                  | 13,942,700              | 96.7                  |
| 2020 | 11,982,321             | 11,964,026              | 99.9                  | 11,679,924              | 97.5                  |

* In 2011, the number of counties that PMTCT covered was 1,156; from 2015, the central finance covered all counties nationwide; and since 2017, with the decreasing of birth rate, the number of pregnant women decreased.

† Predelivery means before the time of labor start.
coverage of HIV screening of pregnant women and ARV drugs use for HIV infected pregnant women and their infants in China from 2011 to 2020. Before the antiretroviral therapy era, the MTCT rate of China was estimated to be 34.8% (8), this finding showed that the MTCT rate decreased from 7.4% to 3.6% between 2011 and 2020. Reviewing the latest 10 years, the national PMTCT program has covered almost every pregnant woman in China. The PMTCT services were integrated with antenatal care, perinatal care, and child healthcare in China. The work of the maternal and child health network guarantees the implementation of PMTCT services to a high level.

However, when compared with the criteria of validation of EMTCT of HIV, the main impact indicators have not met the standards; for instance, MTCT rate was <2% in non-breastfeeding populations. Furthermore, on the plan and road to push forward the EMTCT Action plan from 2021 to the national level, there are still some gaps in indicators compared with the validation criteria of EMTCT of HIV and the data quality needs to be improved. Hence, the current PMTCT intervention strategies need to be strengthened continuously under the background of the EMTCT. We will carry out relevant analysis and research work in the next step to uncover the reasons and influencing factors on these gaps with the aim of using the detailed indicators in the 31 PLADs of the mainland of China.

This study was subject to some limitations. First, we only analyzed data on HIV testing pre-delivery but did not do further research on the differences among the three trimesters. Second, we only analyzed the total rate of ARV drugs use, but finding the proportion of different ARV drugs regimens is a better data point to reflect the achievements of PMTCT.

In conclusion, the expansion of the integrated PMTCT program both in content and coverage can significantly contribute towards achieving the goal of EMTCT, as well as addressing the ongoing burden of maternal health care. However, we still need to find and solve the problems, and to increase the pace of achieving EMTCT in China.

Conflicts of Interest: No conflicts of interest.
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