



2009 Estimates for the HIV/AIDS Epidemic in China

Ministry of Health, People's Republic of China
Joint United Nations Programme on HIV/AIDS
World Health Organization

Beijing, China
May 31, 2010

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Table of Contents

List of Abbreviations	3
Executive Summary	4
A. 2009 Estimates for the HIV/AIDS Epidemic in China	6
1. MAIN RESULTS.....	6
1.1 People living with HIV and Deaths	6
1.2 Patterns of HIV transmission.....	7
1.3 Estimation of number of people living with AIDS	7
1.4 Estimation of number of new HIV infections	7
2. ESTIMATES: METHODS AND PROCESSES	7
2.1 Estimation methods	7
2.2 Data sources.....	8
2.3 Estimation process	8
3. QUALITY CONTROL.....	8
3.1 Improved data quality and quantity	9
3.2 Intensive staff training	9
3.3 Intensive support to priority provinces.....	9
3.4 Strengthened involvement of international organizations.....	9
B. Changing epidemic features in China	10
1. SLOWER RATE OF INCREASE OF THE EPIDEMIC.....	10
2. SEXUAL TRANSMISSION CONTINUES TO BE THE PRIMARY MODE OF TRANSMISSION, WITH HOMOSEXUAL TRANSMISSION INCREASING RAPIDLY	12
3. NATIONALLY PREVALENCE IS LOW, BUT THE EPIDEMIC IS SERIOUS IN SOME AREAS AND AMONG SOME MOST-AT -RISK POPULATIONS	13
4. THE NUMBER OF PEOPLE AFFECTED BY HIV/AIDS IS INCREASING AND MODES OF TRANSMISSION ARE DIVERSIFYING.....	17
Acknowledgements	18

List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-Retroviral Therapy
CDC	(Chinese) Center for Disease Control and Prevention
EPP	Estimation and Projection Package
HIV	Human Immunodeficiency Virus
IDU	Injecting Drug User(s)
MARP	Most-at-Risk Population(s)
MDG	Millennium Development Goals
MOH	(Chinese)Ministry of Health
MSM	Men who have Sex with Men
MTCT	Mother-to-Child Transmission
NCAIDS	National Center for AIDS/STD Control and Prevention
PLHIV	People Living with HIV/AIDS
STI	Sexually Transmitted Infections
UNAIDS	Joint United Nations Programme on HIV/AIDS

Executive Summary

In order to further understand the changing face of China's HIV/AIDS epidemic, and allow it to tailor its response, the Chinese Ministry of Health (MOH), together with the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO), has generated new estimates and a report for 2009.

As with the previous estimation exercises for 2005 and 2007, the Workbook model, recommended by UNAIDS and WHO, was used. To estimate new HIV infections and HIV-related deaths, direct death rate calculation, Estimation and Projection Package (EPP) and Spectrum models were used and to estimate the cumulative HIV-related deaths, Spectrum model, mortality pattern projections, unreported case projections and the death survival ratio of cumulative to current case projection were used. Four main improvements were introduced in order to strengthen the estimation exercise. Firstly, the number of sentinel surveillance sites was increased from 845 in 2007 to 1080 in 2008. A survey of men who have sex with men (MSM) was carried out in 61 cities and additional studies were undertaken to define the sizes of most at risk population groups in most cities and provinces. Secondly, training of staff at national and local levels in estimation methodology was expanded. Thirdly, support to priority provinces to develop robust estimates was intensified and fourthly, participation and contribution of international technical agencies was strengthened.

By the end of 2009, it is estimated that 740,000 (560,000–920,000) people were living with HIV/AIDS (PLHIV) in China, of whom 105,000 (97,000–112,000) were living with AIDS. Among those living with HIV/AIDS, 30.5% were female. National HIV prevalence was 0.057% (0.042%–0.071%), and the estimated number of new HIV infections in 2009 was 48,000 (41,000–55,000). The number of AIDS-related deaths in 2009 was 26,000 (22,000–30,000). An estimated 1.2% (9,000) of PLHIV were children aged less than 15. Among 740,000 PLHIV in China 44.3% contracted HIV through heterosexual contact and 14.7% through homosexual contact. An estimated 32.2% of PLHIV were infected through injecting drug use. Of these infections, 84.2% occurred in six provinces /autonomous regions (Yunnan, Xinjiang, Guangxi, Guangdong, Guizhou and Sichuan). Blood transmission of HIV (mainly former plasma donors) accounted for 7.8% of estimated cases. Of these infections, 91.4% occurred in four provinces (Henan, Anhui, Hubei and Shanxi). Mother-to-child transmission accounted for 1.0% of the total estimated PLHIV population.

The estimation exercise and a review of national case reporting data have confirmed that China's HIV/AIDS epidemic is complex and evolving, with four main features. Firstly, the rate of increase in the growth of the epidemic has slowed further. Secondly, sexual transmission continues to be the primary mode of HIV transmission, with homosexual transmission increasing rapidly. Thirdly, national prevalence levels remain low, but the epidemic is serious in some areas and among some most-at-risk populations (MARPs). Fourthly, the number of people affected by HIV/AIDS is increasing and modes of transmission are diversifying. The results also confirm that more work is needed to further understand the epidemic and what is driving it in order to scale up prevention, treatment, care, and support programs with particular focus on MARPs.

Continued government leadership, investment in surveillance to guide response planning and action, strengthened delivery of services, partnerships and active engagement of communities are all major ingredients to China's future success. In this way, China's MDG commitment to halt and reverse the epidemic and its goal of reducing the harm caused by HIV/AIDS to PLHIV and their families and to protect the general public from HIV/AIDS will be achieved.

A. 2009 Estimates for the HIV/AIDS Epidemic in China

The Chinese government has continued to strengthen its efforts to curb the national HIV/AIDS epidemic by implementing comprehensive strategies for prevention, treatment, care and support. It has launched and increased the coverage of targeted interventions for most-at-risk populations (MARPs) and scaled up treatment, care and support programs for people living with HIV/AIDS (PLHIV) and their affected families and communities. In order to further understand the changing face of China's HIV/AIDS epidemic, and tailor its response, the Chinese Ministry of Health (MOH), together with the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO), has generated new estimates for 2009.

1. MAIN RESULTS

1.1 People living with HIV and Deaths

By the end 2009, it is estimated that 740,000 (560,000–920,000) people were living with HIV in China, of whom 105,000 (97,000–112,000) had AIDS. Some 30.5% of people living with HIV/AIDS (PLHIV) were female. The national HIV prevalence in 2009 was 0.057% (0.042%–0.071%), and the estimated number of new HIV infection was 48,000 (41,000–55,000). The number of AIDS-related deaths in 2009 was 26,000 (22,000–30,000) and the cumulative number of HIV-related deaths since the beginning of the epidemic was 220,000 (200,000–240,000). An estimated 1.2% (9,000) of PLHIV were children less than 15 years old. Table 1 below summarizes trends in the national estimates for the years 2003, 2005, 2007 and 2009.

Table 1. Key results of HIV/AIDS estimates in China, 2003-2009

	2003	2005	2007	2009
PLWHIV	840,000	650,000 (540,000 - 760,000)	700,000 (550,000 - 850,000)	740,000 (560,000 - 920,000)
AIDS	80,000	75,000 (65,000 - 85,000)	85,000 (80,000 - 90,000)	105,000 (97,000 - 112,000)
AIDS death	—	25,000 (20,000 - 30,000)	20,000 (15,000 - 25,000)	26,000 (22,000 - 30,000)
New HIV infection	—	70,000 (60,000 - 80,000)	50,000 (40,000 - 60,000)	48,000 (41,000 - 55,000)
HIV prevalence	0.064%	0.050% (0.042% - 0.058%)	0.054% (0.042% - 0.065%)	0.057% (0.043% - 0.071%)

1.2 Patterns of HIV transmission

Among the 740,000 PLHIV in China, 44.3% contracted HIV through heterosexual contact and 14.7% through homosexual contact. Heterosexual transmission mainly occurred in provinces with relatively high numbers of PLHIV. Homosexual transmission mainly occurred in large and middle-sized cities and places with large migrant populations.

An estimated 32.2% of PLHIV were infected through injecting drug use. Of these infections, 84.2% occurred in six provinces/autonomous regions (Yunnan, Xinjiang, Guangxi, Guangdong, Guizhou and Sichuan). Each of these provinces had more than 10,000 HIV infections among its injecting drug user (IDU) population in 2009.

Blood transmission of HIV (mainly among former plasma donors) accounted for 7.8% of estimated cases. Of these infections, 91.4% occurred in four provinces (Henan, Anhui, Hubei and Shanxi).

Mother-to-child transmission (MTCT) accounted for 1.0% of the total estimated number of PLHIV.

1.3 Estimation of number of people living with AIDS

It is estimated that 105,000 people were living with AIDS in China in 2009. Among these, 42,000 (40.0%) were estimated to have contracted HIV through heterosexual contact, 36,000 (34.3%) through blood transmission, 21,000 (20.0%) through injecting drug use, 4,000 (3.8%) through homosexual contact and 2,000 (1.9%) through MTCT.

1.4 Estimation of number of new HIV infections

In 2009, an estimated 48,000 people were newly infected with HIV. The transmission modes for infection were heterosexual (42.2%), homosexual (32.5%), IDUs (24.3%) and MTCT (1.0%).

2. ESTIMATES: METHODS AND PROCESSES

2.1 Estimation methods

As recommended by UNAIDS and WHO, the Workbook model was used for development of the estimates. In order to estimate the number of new HIV infections and number of HIV-related deaths in 2009, methods for direct death rate calculation, and the Estimation and Projection Package (EPP) and Spectrum models recommended by UNAIDS and WHO, were used after consideration of the impact of antiretroviral treatment.

Four methods: 1) the Spectrum model; 2) mortality pattern projections; 3) unreported case projections; and 4) the death survival ratio of cumulative to current case projection were used to estimate the cumulative number of HIV-related deaths by the end of 2009.

2.2 Data sources

Basic demographic information was obtained from the 2007 National Statistics Annual Report. Data for HIV infections in sub-groups were derived from the HIV/AIDS national surveillance system, specific epidemiological investigations, results from testing among high-risk populations, and literature review. The sizes of specific high-risk populations were estimated through review of available data and technical consultations with local and national experts.

2.3 Estimation process

Under the direction of the MOH, the 2009 National HIV/AIDS Epidemic Estimation Working Group (“Working Group”) was established. This Working Group comprised both national and international HIV experts from the MOH, Chinese Center for Disease Control and Prevention (China CDC), National Center for AIDS/STD Control and Prevention (NCAIDS), Peking University Health Science Center, Peking Union Medical College, Tsinghua University, People’s University of China, UNAIDS, WHO and the US Centers for Disease Control and Prevention (US CDC). After reviewing the process, results, and lessons learnt from the 2007 epidemic estimates exercises, the Working Group developed the “2009 National HIV/AIDS Estimation Technical Guidance on Data Collection and Utilization”. The estimation exercise was carried out in close cooperation with the Working Group, provincial/autonomous region municipal health departments, local CDCs and community representatives.

In 2009, the Working Group visited nine provinces, and worked closely with provincial working groups on data analysis and estimation. In addition, the Working Group held three consultative workshops, with participation from UNAIDS, WHO, US-CDC and other international partners, to review and advise on the estimation process and results.

3. Quality Control

In order to strengthen the 2009 estimation exercise four main improvements were introduced. Firstly, the quality and quantity of data used was expanded and improved; secondly, more intensive staff training was undertaken at national and local levels in estimates methodology; thirdly, priority provinces received intensive support to develop robust estimates; and fourthly, the participation and contribution of international technical agencies was strengthened.

3.1 Improved data quality and quantity

Data availability and quality was strengthened in a number of ways: Firstly, the number of sentinel surveillance sites was increased from 845 in 2007 to 1080 in 2008; secondly a survey on men who have sex with men (MSM) was conducted in 61 cities to provide improved information on HIV prevalence and transmission patterns; thirdly, most cities and provinces conducted further investigations to define population sizes of high risk groups.

3.2 Intensive staff training

In order to ensure a successful estimation exercise, key NCAIDS staff participated in regional and international training courses. Three people attended a course on estimation methods for the Asia-Pacific region (held in Bangkok, April 2009); two people received training on the application of the Asian Epidemic Model (Hawaii, June 2009); and one person received training on high-risk population size estimation (Bangkok, July 2009).

A national training course on HIV/AIDS epidemic estimation methodology was held in May, 2009. Selected technical personnel from each provincial CDC received hands-on training and experience. Information on methods and requirements for the estimation exercise were passed on to local staff through additional training sessions.

Of the staff who worked on the 2009 epidemic estimation, 75% had had prior experience through involvement in the 2005 and 2007 estimates. As a result, they were familiar with estimation methods and requirements and had experience in data collection and application.

3.3 Intensive support to priority provinces

The Working Group conducted field visits to Yunnan, Henan, Guangxi, Guangdong, Sichuan, Xinjiang, Hunan, Beijing, and Zhejiang provinces/autonomous regions to support the provincial estimation process. Provincial working groups worked closely with the national Working Group to conduct and discuss the epidemic analysis. A consensus was reached for each provincial estimate.

3.4 Strengthened involvement of international organizations

Several international organizations supported the estimation exercise. Experts from UNAIDS, WHO, and US-CDC were actively involved in the process of protocol development, staff training, support for the development of provincial and national estimates, and finalization of the report.

B. Changing epidemic features in China

The estimation exercise confirmed that China's HIV/AIDS epidemic continues to evolve and highlights the following four characteristics. First, the rate of increase in the growth of the epidemic has slowed further. Second, sexual transmission continues to be the primary mode of HIV transmission, with homosexual transmission increasing rapidly. Third, while national prevalence is low, prevalence rates in some areas and most-at-risk population (e.g., MSM) are high. Fourth, the number of people affected by HIV/AIDS is increasing and modes of transmission are diversifying.

1. SLOWER RATE OF INCREASE OF THE EPIDEMIC

Epidemic estimate results show that the estimated total number of PLHIV in 2009 is still increasing, but that the number of people newly infected with HIV is continuing to decrease. Compared to the epidemic estimate figures from 2007, the number of PLHIV has increased by 40,000, with the number of people living with AIDS increasing by 20,000. However, the number of people newly infected with HIV each year further fell from 50,000 in 2007 to 48,000 in 2009.

It is important to note that the national case reporting system is showing similar trends in the slowing rate of increase of newly reported cases. The growth rate of newly reported cases decreased from 9.0% in 2006 to 5.8% in 2009. The case reporting system indicates a cumulative total of 326,000 HIV/AIDS cases at the end of 2009, including 107,000 people living with AIDS (Figure 1), and a total of 54,000 reported deaths.

The significant increase in HIV/AIDS case reporting in 2004 was due to the large scale HIV testing campaign carried out among most-at-risk groups. Since 2005, the number of sub-groups targeted for HIV testing and the number of people being tested for HIV have increased substantially each year, as the results of strategic initiatives to promote HIV/AIDS prevention and treatment. In contrast, the number of newly reported HIV infections is increasing at a slower pace.

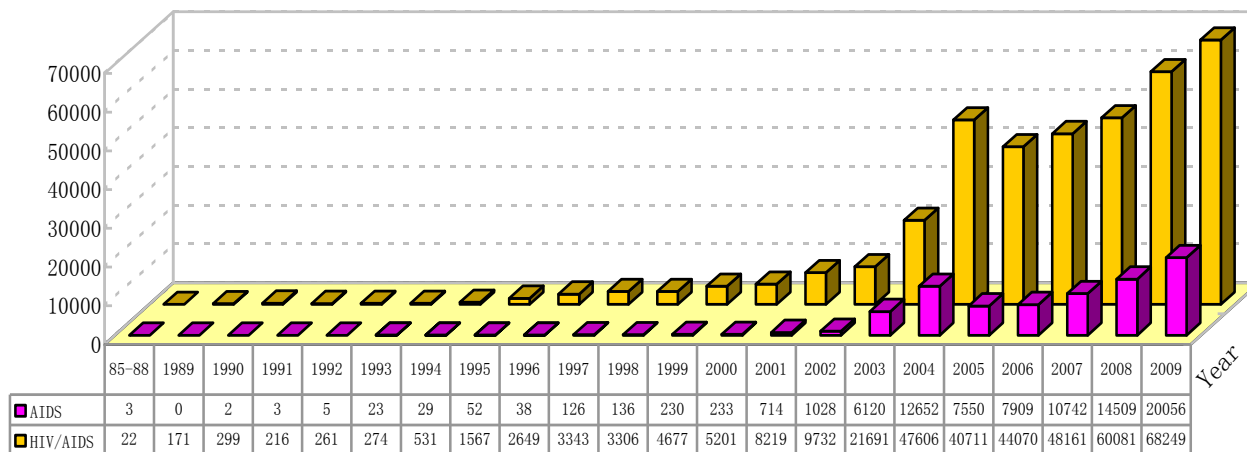


Figure 1. Annual reported HIV positives and AIDS cases in China, 1985-2009.

Data from sentinel surveillance indicate a leveling out in HIV prevalence among IDU, female sex worker, STI clinic patients and pregnant women. However, HIV prevalence among MSM has increased significantly since 2005 (Figure 2).

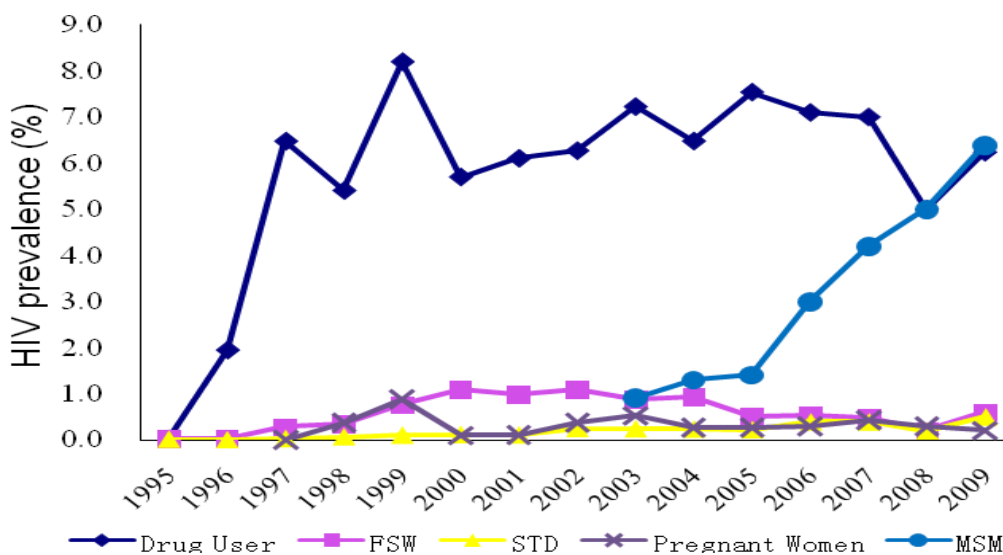


Figure 2. HIV sentinel surveillance data on IDUs, FSW, STD clinic attendants, pregnant women and MSM, 1995-2009.

2. SEXUAL TRANSMISSION CONTINUES TO BE THE PRIMARY MODE OF TRANSMISSION, WITH HOMOSEXUAL TRANSMISSION INCREASING RAPIDLY

Of the 740,000 people estimated to be living with HIV/AIDS in 2009, the percentage infected through sexual transmission reached 59.0%, including 44.3% infected through heterosexual transmission and 14.7% through homosexual transmission. Of those infected through heterosexual transmission, around one-third were infected through spousal transmission. Of the estimated 48,000 new HIV infections that took place in 2009, heterosexual transmission accounted for 42.2% and homosexual transmission 32.5%. This is a significant increase compared with the 2007 estimates, where 12.2% were infected through homosexual transmission. Homosexual transmission has, therefore, become a very significant mode of transmission for new HIV infections in 2009.

Both homosexual and heterosexual transmission of HIV increased gradually over time. The proportion of reported cases resulting from homosexual transmission increased as follows: 2.5% (2006), 3.4% (2007), 5.9% (2008) and 8.6% (2009); heterosexual transmission also increased: 30.6% (2006), 38.9% (2007), 40.3% (2008) and 47.1% (2009) (Figure 3).

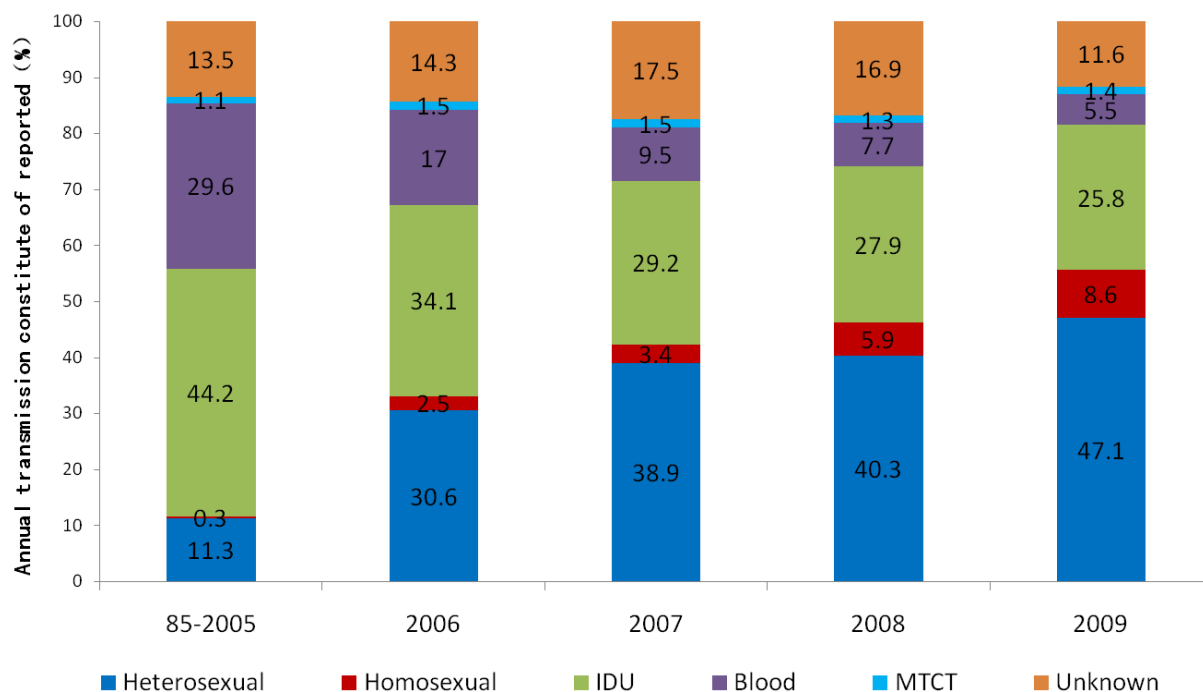


Figure 3. Annual transmission breakdowns of reported HIV/AIDS cases in China, 1985-2009

Over the past years, sentinel surveillance results have shown that the rate of positive HIV antibody test results among MSM populations has been consistently greater than 1%, and is increasing year by year, becoming one of the most important drivers of the AIDS epidemic (Figure 4). Results of a survey of MSM populations in 61 cities carried out in 2008-2009 showed that the HIV prevalence among MSM populations in large and medium cities had reached an average of 5%. In the main cities of the Southwest, such as Guiyang, Chongqing, Kunming and Chengdu, the HIV prevalence among MSM populations was greater than 10%, demonstrating the high speed of transmission among this population.

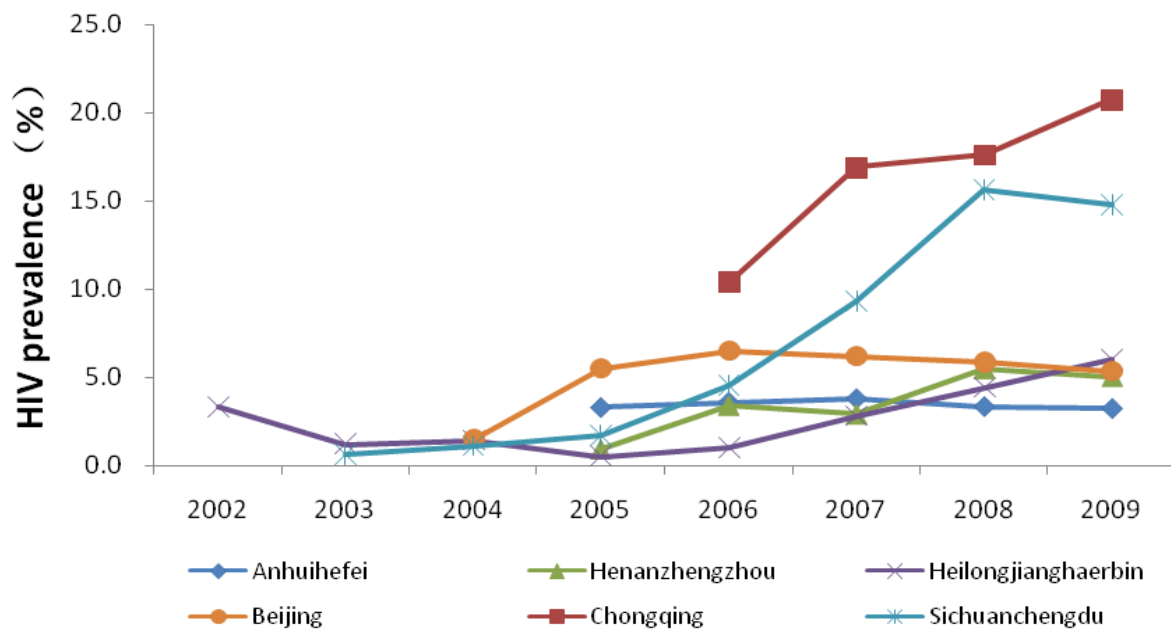


Figure 4. HIV prevalence among MSM from the national HIV sentinel surveillance program in China, 2002-2009

3. NATIONALLY PREVALENCE IS LOW, BUT THE EPIDEMIC IS SERIOUS IN SOME AREAS AND AMONG SOME MOST-AT-RISK POPULATIONS

2009 epidemic estimate results showed that 6 provinces had epidemic figures of more than 50,000 PLHIV, together accounting for 61.8% of the estimated total national figure. Nine provinces had epidemic figures of 10,000-50,000 PLHIV, and eight provinces had epidemic figures of less than 5,000 PLHIV, together accounting for 2.3% of the estimated total national figure (Figure 5).

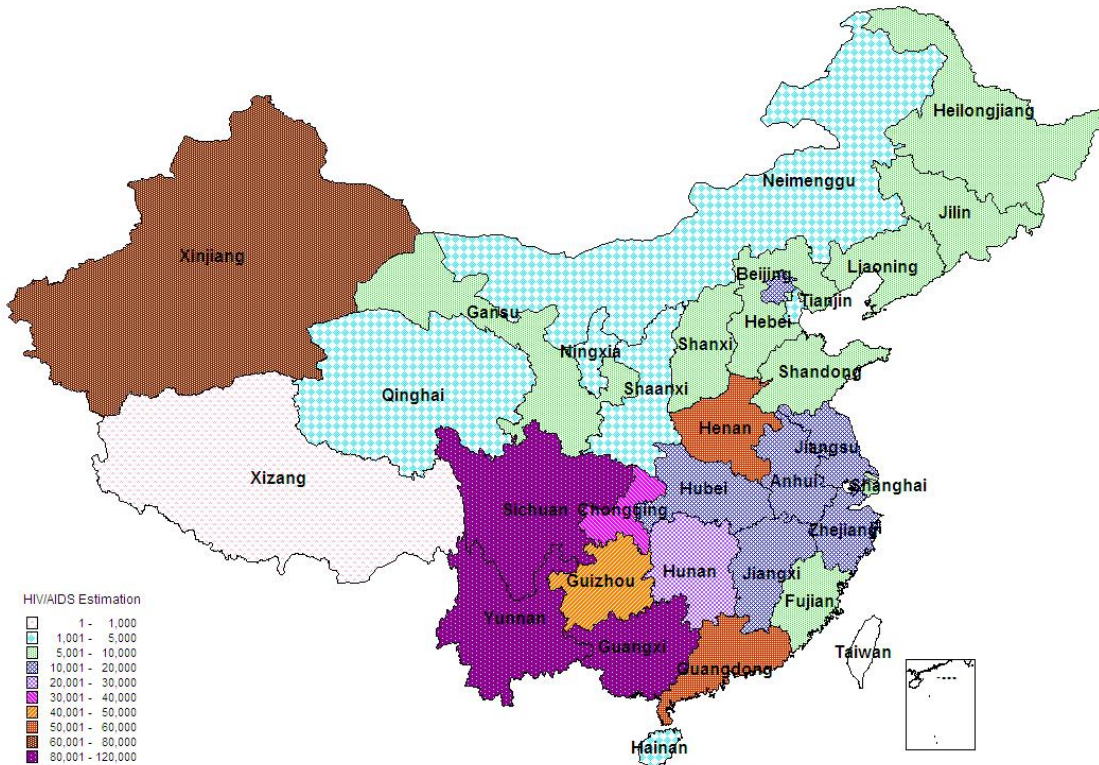


Figure 5. Geographical distribution of estimated 740,000 PLHIV in China in 2009

By 1998, all provinces (autonomous regions and municipalities) had reported cases of HIV infection and by the end of 2009, 90.5% (2787/3080) of counties (districts and cities) had reported cases of HIV/AIDS. However, there are large differences among provinces in the number of reported cases. The six provinces with the most cumulative reported cases (Yunnan, Guangxi, Henan, Sichuan, Xinjiang, and Guangdong) represent 70 ~ 80% of the national total, while the seven provinces with the lowest number of cumulative reported cases (Tibet, Qinghai, Ningxia, Inner Mongolia, Tianjin, Gansu and Hainan) accounted for less than 1% of the national total (Figure 6 and Figure 7). The top 20 counties, districts and cities with highest numbers of cumulative reported cases were mainly in Yunnan, Guangxi, Xinjiang, Henan, Sichuan, and Guangdong provinces/autonomous regions.

In Yunnan, Guangxi, Xinjiang and Sichuan provinces /autonomous regions, where the AIDS epidemic is relatively serious, prefectures, cities and counties where the increase in the rate of reported cases has been relatively rapid since 2007 include: in Sichuan Province - Butuo County, Zhaojue County, Meigu County and Yuexi County in Liangshan Prefecture; in Guangxi Autonomous Region - Luzhai County and Liujiang County of Liuzhou City and Babu District of Hezhou City; in Yunnan Province - Yingjiang County, Luxi City and Ruili City of Dehong Prefecture, Kaiyuan City

and Gejiu City of Honghe Prefecture; and in Xinjiang Autonomous Region - Yining City of Yili Prefecture and Tianshan District of Urumqi City.

Zhumadian City and Weishi County in Henan Province had experienced relatively serious epidemics in the past but have become more stable in recent years.

Variations of epidemic among different populations are also quite large. HIV prevalence among drug users (particularly injecting drug users) is the highest, and exhibits clear regional disparities. Sentinel surveillance results showed that sentinel sites with high HIV prevalence rate are also concentrated in Yunnan, Xinjiang, Sichuan, Guangxi, Guizhou and Guangdong provinces/autonomous regions. In places such as Dali Prefecture, Dehong Prefecture, Wenshan Prefecture and Lincang City of Yunnan Province, and Dazhou City of Sichuan Province, HIV prevalence rates among drug users are all in excess of 50%. HIV prevalence rates among sex workers in the majority of regions remain relatively low. Sentinel surveillance sites for sex workers where HIV prevalence rates exceed 1% concentrate in Yunnan, Xinjiang, Guangxi, Sichuan and Guizhou provinces.

Nationally MTCT accounts for 1.3%-1.5% of annual reported cases of HIV/AIDS. In high HIV prevalence regions, levels of HIV infection among pregnant women are high. For example, among pregnant women in Yining City of Xinjiang Autonomous Region, the HIV infection prevalence rose continually between 1997 and 2008, and has remained above 1% since 2003. In the five provinces of Henan, Yunnan, Guangxi, Xinjiang and Anhui, the total reported cases of MTCT account for 78.1% of the national total.



Figure 6. Geographic distribution of cumulative reported HIV positives in China (at end of 2009)



Figure 7. Geographic distribution of cumulative reported AIDS cases in China (at end of 2009).

4. THE NUMBER OF PEOPLE AFFECTED BY HIV/AIDS IS INCREASING AND MODES OF TRANSMISSION ARE DIVERSIFYING

Case reporting data also indicate increasing numbers of cases of HIV infection among older men, students and migrant women seeking marriage from regions with high HIV prevalence.

There was a clear increase in reported numbers of PLHIV in the 50+ age group between 2006 and 2009. In the 50-64 age group, the reported number of cases increased from 6.1% of total cases in 2006 to 10.6% in 2009. In the 65+ age group, the reported number of cases increased from 1.7% of the total number of reported cases in 2000 to 4.3% in 2009. In this later group (65+), males accounted for the majority of cases. Since 2005, the male to female sex ratio has exceeded 4.4:1, and sexual transmission has become the primary mode of transmission in this group.

Surveys among immigrant wives in Shandong, Shanxi, Jilin, Anhui, and Jiangsu also suggested a link between “imported” HIV infections, sexual transmissions between spouses and MTCT.

In conclusion, the 2009 estimate exercise confirmed that China’s epidemic is complex, evolving and expanding though at a slower rate. The results also confirmed that more work is needed to further understand the epidemic and what is driving it, as well as to scale up prevention, treatment, care, and support programs with particular focus on MARPs. Furthermore, continued government leadership, investment in surveillance to guide response planning and action, strengthened delivery of services, partnerships and active engagement of communities are all major ingredients to China’s future success. In this way, China’s MDG commitment to halt and reverse the epidemic and its goal of reducing harm caused by HIV/AIDS to PLHIV and their families, and protecting the general public will be achieved.

Acknowledgements

The preparation, drafting and finalization of the report has been with the support and direction of the member ministries of the State Council AIDS Working Committee, the Ministry of Health, China CDC and the National Center for AIDS/STD Control and Prevention, China CDC, jointly with UNAIDS and WHO.

The working group included the following representatives of the Chinese Government and experts: Hao Yang, Sun Xinhua, Wang Weizhen, Jiao Zhenquan, Yi Lelai, Yuan Zhun, Wang Yu, Wu Zunyou, Wang Ning, Liu Kangmai, Dai Zhicheng, Zheng Xiwen, Wang Ruotao, Wu Zhenglai, Liu Min, Cao Weihua, Chen Yude, Li Dun, Pan Suiming, Jia Manhong, Zhang Linglin, Lin Peng, Ni Mingjian, Pan Xiaohong, Chen Xi, Wang Zhe, Liu Wei, Ji Guoping, Shao Yiming, Wang Lu, Liu Yufen, Jiang Yan, Wang Xiaochun, Hu Hong, Zhang Fujie, Lv Fan, Cui Yan, Rou Keming, Mao Yurong, Ma Ye, Xing Hui, Liu Hui, Shi Kai, Hu Yiyun, Wang Lan, Li Dongmin, Guo Wei, Qin Qianqian, Ding Guowei, Ding Zhengwei, Yan Ruixue, Hei Faxin, Wang Liyan, Zhang Gongbo, Shan Duo, Ge Zeng, Meng Xiaojun, Ming Shuai, Sun Lina, et al.

The working group included the following representatives of the International Organizations and experts: Bernhard Schwartlander, Mark Stirling, Marc Bulterys, Garcia Calleja Jesus Maria, Mesquita Fabio, Connie Osborne, Panakadan Salil, New New Aye, Zhou Kai, Chen Zhongdan, Zhang Lan, He Jinglin, Liu Shiliang, Wei Xiaoyu, Chin-Yih OU, Li Zhijun, Christine Korhonen, Lin Wen, Ray Shiraishi, et al.

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Beijing, May 31, 2010