



HIV Epidemiology and Control in Guangxi (1986–2017)

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Abstract

Guangxi Zhuang Autonomous Region is one of the least economically developed regions in China and has been granted the status of autonomous region due to the high share of Zhuang minority population in the region. HIV was initially spread mainly among drug users, later to be transmitted further to the general population. The epidemic also shows some specific patterns that are not as prevalent in other parts of the country. For instance, the region has the highest rate of heterosexual transmission in China, and the prevalence among senior citizens has become alarmingly high in later years (the share of reported cases age 50 and above, makes up almost 60%). In addition to this, Guangxi faces issues with a large number of late diagnosed cases; around 50% of those diagnosed are already in an advanced clinical stage. Also related to this, the region exhibits the highest HIV-related mortality rates in China. In comparison with other Chinese regions, the HIV epidemic is relatively evenly distributed throughout the region, making it difficult to target the response. In response to these issues, there have been a large number of programs implemented to increase testing and facilitate treatment.

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31.1 Introduction

Guangxi Zhuang Autonomous Region (provincial level, hereafter known as Guangxi) is located in a mountainous region of southern China that is known for its natural beauty. It encompasses an area of 236,700 km² and is divided into 14 prefecture-level cities, with 113 urban districts and rural counties. Twelve different ethnic groups (Han, Zhuang, Yao, Miao, Dong, Mulao, Maonan, Hui, Jing, Yi, Shui, and Gelao) reside in the region. As of the 2017 census, Han Chinese accounted for 62.8% of the total population of Guangxi (48.9 million), Zhuang accounted for 31.4%, and Yao for 3%.

Guangxi has also become known for its position along one of the oldest and most well-developed drug trafficking routes in the world. Until the early 2000s, the so-called “Golden Triangle” region of Myanmar, Lao People’s Democratic Republic, and Vietnam, was the source of the vast majority of the world’s opium and heroin, and still is a major contributor today. Heroin produced in the Golden Triangle has largely supplied markets in China, East and Southeast Asia, and Oceania. It is moved across the remote, mountainous border between Vietnam and China’s Yunnan and Guangxi provinces. The ubiquitous availability of very inexpensive heroin in the region has been a major driver of the drug use epidemic in Guangxi and across China.

Drug use among the peoples of Guangxi, specifically heroin use via unsafe injection practices (i.e., sharing contaminated needles and syringes), directly led to the first HIV outbreak in the province. Although the first domestic cases of HIV infection in the region were identified among drug users in neighboring Yunnan province in 1989, HIV infection was not diagnosed among the people of Guangxi until 1996—several cases each among people who inject drugs (PWID) and former plasma donors (FPD). As of 2011, Guangxi ranked second among China’s 31 provinces in terms of both the number of reported HIV cases and the estimated total number of people living with HIV (PLWH) (China MOH, UNAIDS, and WHO 2011). And by 2012, all of Guangxi’s 113 urban districts and rural counties had reported HIV cases.

Despite being decades into its HIV response efforts, HIV prevalence in Guangxi remains among the highest in the nation. Challenges to HIV control and prevention in the region include a flourishing commercial sex industry, a shift in the predominant transmission route, and a unique cultural context for each of the different ethnic minorities in the region. In this chapter, we focus on Guangxi, and the unique course the HIV epidemic has taken in this southern Chinese province, as well as response efforts and future challenges.

31.2 HIV Epidemiology in Guangxi

31.2.1 Overview of the HIV/AIDS Epidemic

The initial cases of HIV in Guangxi were sporadic and amounted to no more than ten in total from 1989 to 1995. All were among either foreign nationals studying in the province or Chinese business travelers who had returned from abroad. The first locally-transmitted HIV cases, detected in 1996, were among those who sold their blood or plasma in neighboring provinces and PWID residing in Pingxiang City on

the border with Vietnam. Thus, 1996 is said to mark the beginning of the HIV epidemic in Guangxi.

From 1996 to 1997, surveillance efforts had identified HIV/AIDS cases in 25 Guangxi counties. In 1998, the number of reported cases exceeded 200. This upward trend continued in the following years with the number of reported cases exceeding 500 in 2001, reaching over 4500 cases in 2005, and surpassed 10,000 in 2010 (Fig. 31.1). By the end of 2017, the total cumulative number of HIV/AIDS cases reached 124,282, 44,472 of whom were deceased. Among the 79,810 people living with HIV, 43,750 (54.8%) were clinical AIDS cases (National Center for AIDS/STD Control and Prevention, China CDC 2017). Between 2006 and 2015, there were more clinical AIDS cases than non-clinical HIV infection cases among newly diagnosed HIV/AIDS cases, suggesting many PLWH were being diagnosed at a very late stage (Fig. 31.1).

From 1997 to 2005, unsafe injection drug use behavior was the main mode of HIV transmission. In 1997, PWID accounted for 95.5% of all newly diagnosed HIV/AIDS cases. Every year thereafter, the proportion of PWID among all newly diagnosed HIV/AIDS cases in Guangxi gradually decreased to less than 50% by 2005 (Fig. 31.2). Heterosexual contact surpassed unsafe drug injecting practices as the primary mode of transmission in 2006. PLWH infected via heterosexual contact accounted for 56.3% of all newly diagnosed HIV/AIDS cases in 2007, and this proportion gradually increased to over 90% in 2011. The proportion of newly diagnosed HIV/AIDS cases infected through heterosexual contact accounted for 90.4–92.6% in Guangxi between 2011 and 2017, the highest such rate reported in China at that time. The first case of HIV transmission via male-male contact in Guangxi was reported in 2006, but by 2017, 6.5% of all PLWH in Guangxi had been infected via this transmission route.

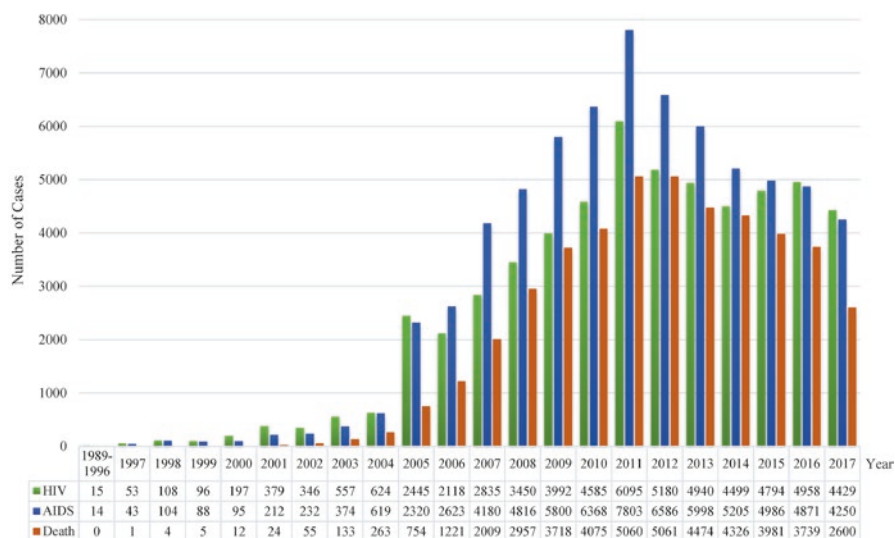


Fig. 31.1 Annual reported number of HIV infections, AIDS cases, and deaths in Guangxi, 1989–2017

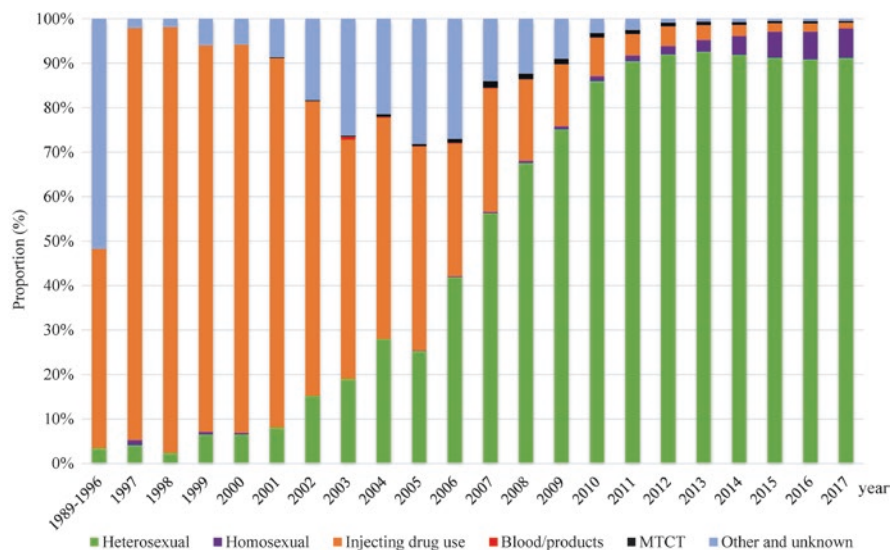


Fig. 31.2 Reported modes of transmission for HIV cases in Guangxi, 1989–2017

31.2.2 Demographics of People Living with HIV

31.2.2.1 Age

In the years when PWID accounted for a large majority of reported HIV cases, the 20–40 years age group was by far the largest. After the predominant transmission route shifted from unsafe drug injecting behavior to heterosexual contact, the age distribution of PLWH in Guangxi also made a dramatic shift. The age group 40 years or above became the largest (Fig. 31.3).

A development that has been unique for Guangxi in the Chinese context is that PLWH aged 50 years or above rose from 1.0% in 1997 to 10.2% in 2005, to 39.5% in 2010, and further 52.4% by 2017 (Fig. 31.3). By comparison, this age group on a national level accounted for a mere 1.9% in 2000 and rose to 21.1% in 2011 (China MOH 2012), and 28.7% in 2017 (National Center for AIDS/STD Control and Prevention, China CDC 2017).

31.2.2.2 Ethnicity

In the early years of the epidemic, data on ethnicity was not collected or inconsistently collected. In later years, when the reporting of ethnicity was consistent, 2008–2017, the proportion of annual newly diagnosed HIV/AIDS cases from Zhuang ethnic group was between 30% and 36% and from Han ethnic group, was between 61% and 66%. The proportion of Zhuang and Han in total population size in Guangxi are similar (Fig. 31.4).

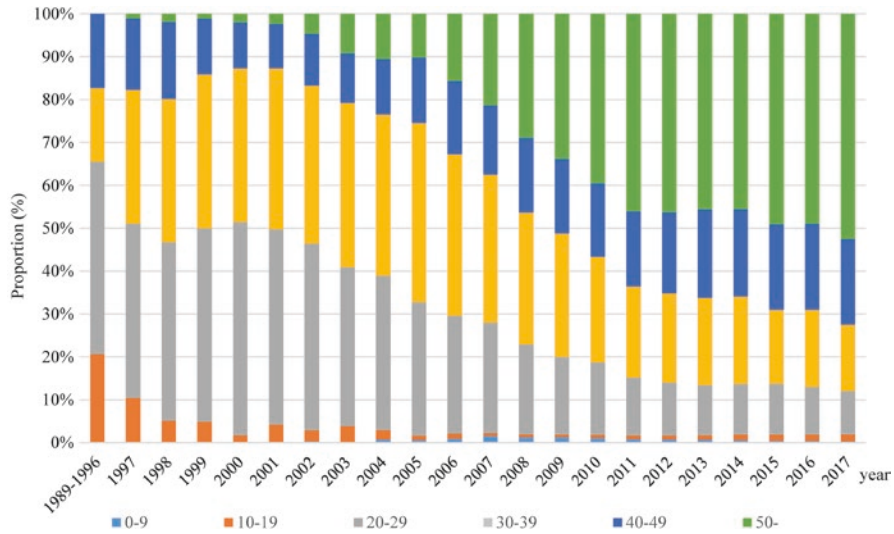


Fig. 31.3 Age distribution of reported HIV cases in Guangxi, 1989–2017

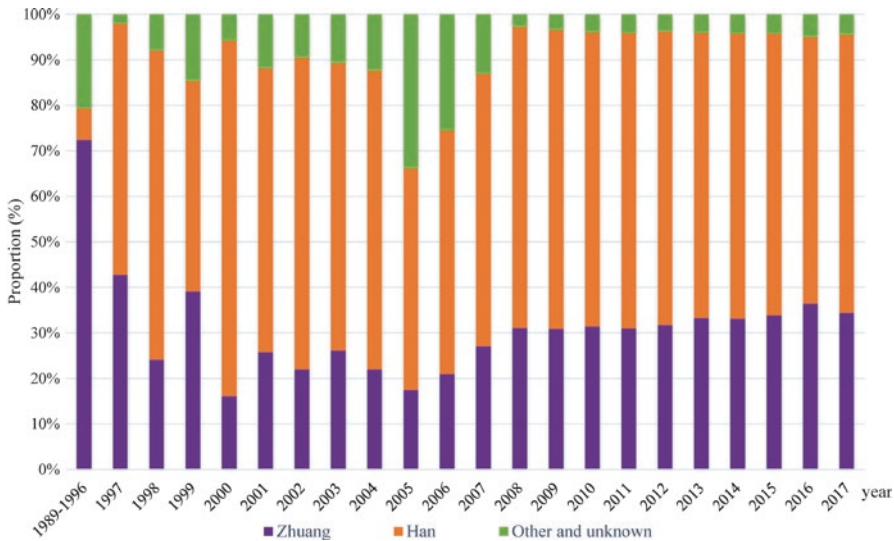


Fig. 31.4 Ethnic distribution of reported HIV cases from 1989 to 2017 in Guangxi

31.2.2.3 Other Characteristics

The male to female ratio among diagnosed PLWH was almost 10:1 in 1996. However, after the main mode of transmission shifted to heterosexual contact, the number of cases among females grew and then stabilized somewhat, such that between 2006 and 2012, the male to female ratio fluctuated between 2.8:1 and 2.1:1.

Most PLWH in Guangxi had a low level of educational attainment, and the majority were manual laborers. In 2012, 89.4% of newly diagnosed PLWH had 6 years of schooling or less and 66.8% were farmers. The proportion of PLWH who were unmarried fell from nearly 50% in 1998 to 20% in 2012, while the proportion of PLWH who were married rose from 23% to 62% in the same period.

31.2.2.4 Geography

Initially, the HIV cases in Guangxi were not uniformly distributed. Rather, they were clustered around Nanning, Liuzhou, and Qinzhou. These three cities have large populations, a significant proportion of which are migrant workers. Furthermore, Nanning and Liuzhou are located along a major drug trafficking route. Nanning had the highest estimated number of PWID in Guangxi, followed by Yulin, Liuzhou, and Qinzhou. However, Yulin has comparatively low HIV infection rate among this group (Fig. 31.5). These characteristics have promoted the rapid spread of HIV in Guangxi's major urban areas. Cumulative HIV cases in these three cities exceeded 33,000 by 2017, accounting for 41.5% of all cases in the region (Table 31.1). Compared with other cities in Guangxi, these three had much higher proportions of cases where the transmission mode was unsafe drug injecting

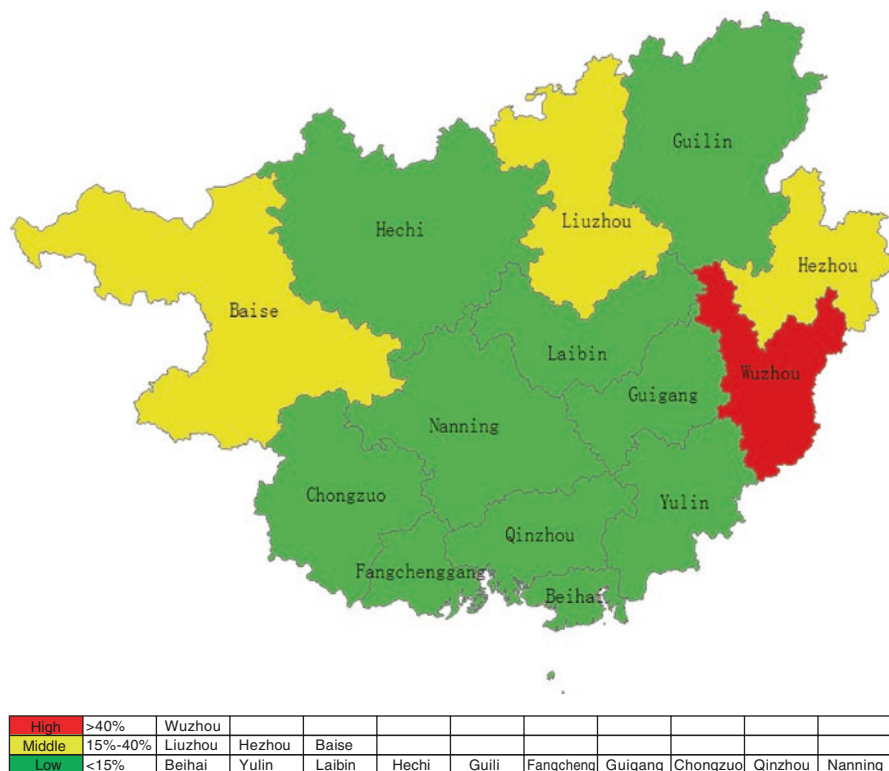


Fig. 31.5 Geographic distribution of HIV infection rates among PWID in 2017

Table 31.1 Accumulated reported HIV/AIDS cases up to 2017 in Guangxi prefectures

City	No. of PLWH	No. of deaths	Total	Proportion (%)
Nanning	12,491	5408	17,899	14.4
Liuzhou	11,689	6084	17,773	14.3
Qinzhou	8971	5025	13,996	11.3
Guigang	6414	4493	10,907	8.8
Guilin	6982	3805	10,787	8.7
Laibin	5387	2916	8303	6.7
Chongzuo	4474	3511	7985	6.4
Hezhou	4279	3556	7835	6.3
Yulin	4172	2533	6705	5.4
Hechi	4386	2257	6643	5.3
Baise	4152	1570	5722	4.6
Wuzhou	3042	1765	4807	3.9
Fangchenggang	2316	1098	3414	2.7
Beihai	995	446	1441	1.2
Unknown	60	5	65	0.1
Guangxi	79,810	44,472	124,282	100.0

behavior. In later years, the geographic distribution became more uniform compared to many other Chinese provinces with high HIV prevalence, such as Sichuan and Yunnan.

31.2.3 Key Populations

31.2.3.1 People Who Inject Drugs (PWID)

Guangxi's location, on the main route for drug trafficking from the "Golden Triangle" into Mainland China, has resulted in Guangxi becoming one of the provinces most plagued by heavy drug use in all of China. As of 2015, Guangxi had approximately 60,000 registered heroin users. Surveillance data from 1996 to 1998 indicated that more than 90% of drug users in the province were injecting on a regular basis, and that 40–60% of them had shared needles and/or syringes.

Guangxi is one of only six provincial-level entities in China where the number of HIV cases among PWID has surpassed 10,000. The estimated HIV prevalence among PWID increased steadily from 2.4% in 1997 to 15.8% in 2001. After stabilizing at roughly 10% for the next 6 years, the estimated HIV prevalence among PWID decreased from 13.9% in 2007 to 5.0% in 2013.

The China CDC at the national level and the provincial level Guangxi CDC jointly launched China's first pilot site for needle and syringe exchange in Tiandong County in 1999. Additional sites were opened in Luzhai in 2001, and in Ningming in 2002. By September 2017, 114 needle and syringe exchange sites had been established in a total of 59 Guangxi counties. This program has covered approximately 10,000 PWID each year since 2010. Self-reported rates of needle/syringe sharing in the prior 1 month among engaged PWID dropped from 20.7% in 2007 to 14.0% in 2012 and less than 10% in 2017 (See Chap. 10 for more information).

The first methadone maintenance treatment (MMT) pilot clinic in Guangxi opened in 2004. By 2017, there were 71 MMT clinics and 43 MMT service extension points in operation, spread over 14 Guangxi prefectures, covering key areas with high HIV prevalence among drug users. Approximately 38,000 drug users have been enrolled in MMT, cumulatively, as of the end of 2017. The rate of HIV seroconversion among drug users enrolled as clients in China's National MMT Program decreased from 0.64% in 2010 to 0.23% in 2012, to 0.03% in 2017 (See Chap. 9 for more information).

31.2.3.2 Female Sex Workers

The growing economy, large income disparity, significant rural-to-urban migration, and a thriving tourism industry have all contributed to a booming commercial sex industry in both urban and rural areas of Guangxi (Zhou et al. 2013a). The first HIV case identified among FSW was reported in 1997. Sentinel surveillance was initiated for this key, high-risk population, and these data indicate that HIV prevalence among FSW has remained relatively stable at 0.5–1.0% from 1997 through 2015. However, evidence indicates that not all FSW are at a similar risk for HIV—low-fee FSW, who charge as little as CNY 50 (USD \$7) for vaginal sex, have higher HIV prevalence (1.9%) compared to high-fee FSW (0.5%, see Fig. 31.6).

A cross-sectional survey conducted from 2011 to 2012, covering 7936 low-fee FSW across Guangxi Province, found an HIV prevalence of 1.9% and a syphilis prevalence of 11.3%. The average age of participants was 32 years, and a majority had 6 years of schooling or less (49%), were married (65%), and had basic knowledge of HIV (68%), yet reported inconsistent condom use in the prior 1 month (53%). Results of this study have also led to speculation that low-fee FSW were

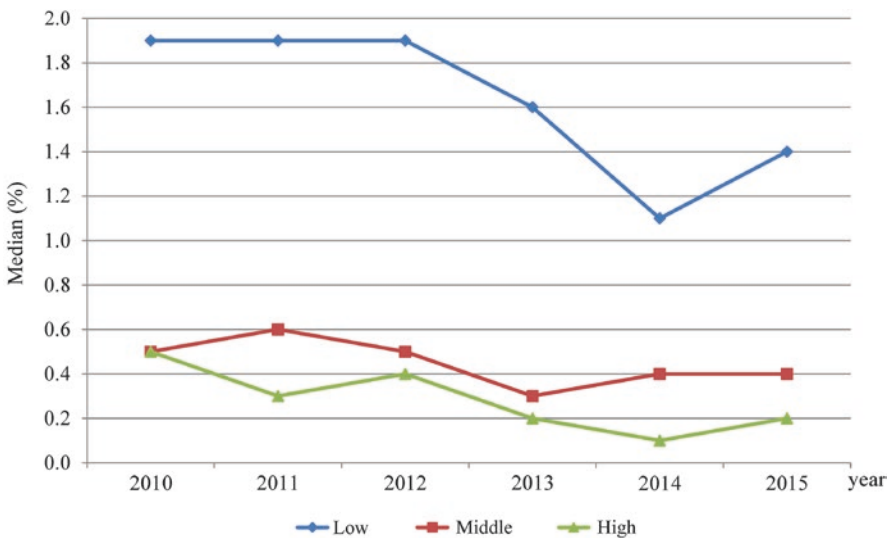


Fig. 31.6 HIV prevalence for low, middle, and high tiers of FSW in 2010–2015, median (%)

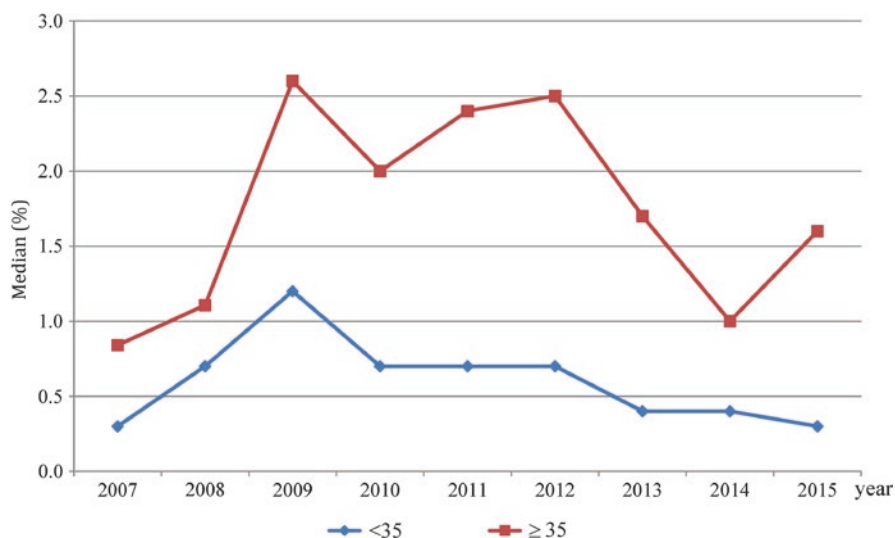


Fig. 31.7 HIV prevalence for FSW aged ≥ 35 years and < 35 years in 2007–2015

acting as a bridge, transmitting HIV infections to older males in the rural areas of Guangxi (Zhou et al. 2013b).

HIV prevalence has been shown to have a positive correlation with age among FSW in the region (Zhou et al. 2013a). Since 2007, HIV prevalence among FSW who were 35 years of age or older increased gradually, reaching 2.6% in 2009. HIV prevalence for this group has been consistently much higher compared to FSW below the age of 35 (Fig. 31.7). In 2010, HIV prevalence among illiterate FSW was as high as 4.4%, compared to 2.6% for FSW with at least some primary school-level education (Zhou et al. 2013a).

One of the first studies in China examining how to reduce transmission of HIV and other sexually transmitted infections (STIs) among FSW based in entertainment venues was conducted in Pingxiang City in 1998 (Liao et al. 2001a, b). In 1999, Beihai City was chosen as a pilot city for a program aimed at preventing HIV and other STIs for sex workers in five provincial-level regions. Since 2008, intervention targeted specifically to FSW has been available in all cities and counties in the region. There are indications that the intervention has increased the HIV awareness and rate of condom use among FSW, which effectively has reduced the spread of HIV and STIs (Zhou et al. 2008). In recent years, the intervention programs have been increasingly focused on low-tier FSW (See Chap. 7 for more information).

31.2.3.3 Senior Clients of FSW

HIV prevalence among older clients of FSW (40 years of age or older) was 1.4% in 2012 and 2013. However, at some surveillance sites, this figure was as high as 5.8% in 2013. For those who were 60 years of age or older, HIV prevalence was

even higher—2.7% in 2012 and 2.5% in 2013. Self-reported condom use rates among clients aged 40 or above were alarmingly low at 30% in both 2012 and 2013. The availability of affordable medications for erectile dysfunction, in effect prolonging the period of sexual activity for older men, access to low-fee commercial sex, and inconsistent condom use, were all important factors in increasing the rate of HIV transmission among senior men (Liu et al. 2012).

31.2.3.4 Men Who Have Sex with Men

Guangxi started its intervention and prevention program targeting MSM in 2006. Although MSM accounted for a very small share of reported HIV cases in Guangxi, HIV prevalence for this group rose from 0.8% in 2007 to 5.0% in 2012 (Wang et al. 2014). HIV transmission for this group, to a large extent relying on clustering of people in urban areas, has resulted in large geographical variations, with the prevalence in some individual sites reaching 12.6% in 2013. It is also worth noting that this is a stigmatized group in China so there may be significant problems with cases being miss-reported (See Chap. 8 for more information).

31.2.3.5 Spouses of PLWH

Of 36,669 newly reported HIV cases during 2009–2011, 64.5% (23,664) had spouses. Around half of the spouses were tested for HIV, and 56.0% of those tested were found also have HIV infection. A survey of 382 spouses of PWID with HIV infection gave similar results; 51.8% of the spouses had HIV infection, 77.8% reported that they had been infected through sexual contact with their spouses, the remaining 21.2% through needle sharing or extramarital sex (Zhu et al. 2013).

31.2.3.6 Pregnant Women

The first prevention of mother-to-child transmission (PMTCT) project in Guangxi was funded by the United Nations Children's Foundation and was implemented in Hezhou and Pingxiang in 2003. In 2006, Guangxi officially launched the China-US Cooperation Global AIDS Program (GAP), and immediately thereafter, Guangxi expanded its PMTCT program such that by the end of 2007, 14 prefectures and 109 counties in the province were covered.

Free premarital screening has been offered since 2010, with HIV, syphilis, and hepatitis B virus infection testing being part of the general health check-up. The number of people taking part in this program has reached nearly 900,000 annually. Post-test counseling and referrals to follow-up services and treatment were also provided to diagnosed PLWH.

More than 90% of pregnant women with HIV received ART during their pregnancy. More than 90% of infants born to mothers with HIV are tested for HIV, and over 90% received ART to prevent HIV mother-to-child transmission. Data from the National Comprehensive AIDS Response Project (China CARE Project) gathered in four Guangxi counties from 2005 to 2007, indicates that PMTCT in Guangxi has helped to keep HIV prevalence among HIV-exposed infants below 5% (See Chap. 15 for more information).

31.3 Prevention and Treatment Strategies

31.3.1 Sentinel Surveillance

The initial HIV sentinel surveillance sites in Guangxi, targeting a few key populations, including drug users, FSW, and STI clinic attendees, opened in 1996, 1 year after the initial sentinel sites in China were set up (Zhu et al. 2006; Wu et al. 2007). In 2000, Guangxi, along with five other provinces, established a surveillance pilot targeting PWID, FSW, clients of FSW, and the general female population (Zhang et al. 2012). Later, some additional sites targeting other key populations at high risk were started. For example, the first sentinel sites targeting older clients of FSW (40 years of age or older) were set up in 2005, and the first sentinel sites targeting MSM were started in 2007. In 2010, China's national HIV sentinel surveillance program standardized the sentinel groups, covering eight groups, including drug users, FSW, MSM, STI clinic attendees, long distance truck drivers, migrants, pregnant women, and students. Further, the surveillance monitors HIV, syphilis, and viral hepatitis C. Within national sentinel surveillance program, there were 264 sentinel surveillance sites in the Guangxi region, including all eight groups involving all cities and counties in the Guangxi region (See Chap. 2 for more information).

31.3.2 Testing and Counseling

HIV voluntary counseling and testing (VCT) started in 2000, although in the early stages, counseling was mainly conducted by telephone. With the implementation of the “Four Frees and One Care” policy in 2003, VCT was scaled up and clinics were gradually opened in CDCs and general and maternity/children's hospitals. The number of HIV VCT clinics in operation in Guangxi reached 305 by the end of 2017. There were 88,587 subjects attending VCT clinics and 4324 screened HIV reactive and 2726 were confirmed to have HIV infection in 2017.

Provider-initiated testing and counseling (PITC) was initiated in Guangxi in 2010 and expanded quickly throughout the Guangxi Region. The PITC and combination of other testing strategies have facilitated HIV testing. The number of HIV tests provided has increased from 2,688,616 in 2010 to 7,716,436 in 2011, to 8,976,867 in 2014, and to 9,605,663 tests in 2017 (See Chap. 12 for more information).

31.3.3 Laboratory Capacity

HIV laboratory testing first started in Guangxi in 1985, and the central HIV screening lab, as well as nine additional screening labs, were set up in 1986. The first confirmation lab was established within the Guangxi CDC in 1992. CD4 testing was

first conducted in 2002, and viral load testing in 2007. By the end of 2012, 408 HIV screening labs, 19 HIV confirmation labs, and 1051 HIV rapid test sites had been established. Rapid test sites were operating in more than 80% of Guangxi's townships. CD4 testing labs covered all of the prefecture level cities and some of the hospitals providing ART for AIDS patients. As of the end of 2017, a relatively comprehensive network of laboratories has been established in the region, conducting HIV screening and confirmation testing, qualitative tests of HIV RNA, CD4, viral loads, HIV subtype and drug resistance detection (See Chap. 5 for more information).

31.3.4 Antiretroviral Therapy

In 2003, the Guangxi CDC began to treat clinical AIDS cases using ART. The first clinic devoted to this cause was set up later the same year. ART for children with HIV started in 2005 and was available throughout Guangxi beginning in 2007. Meanwhile, pregnant women with HIV became eligible for ART in 2006. Other key high-risk populations have also been exempted from traditional CD4 threshold requirements for ART eligibility. For example, since 2012, ART has been provided to all FSW with HIV infection regardless of CD4 count.

ART services are now available for all 111 counties in 14 cities in Guangxi by the end of June 2016. ART coverage for diagnosed PLWH reached 87% and the rate of virus suppression for those treated with ART for more than 6 months was above 98.3% by the end of June 2016, which is considered relatively high in the Chinese context. The mortality of patients on ART decreased from 5.6 per 100 person-years (PY) in 2009 to 1.9 per 100 PY in 2013.

31.3.5 “One-Stop Shop” Service Model Pilot Study

Sadly, a common problem in Guangxi was that a large proportion of PLWH were diagnosed at late clinical stages and a considerable number died before initiating ART. In 2012, a new service model to simplify HIV testing and treatment procedures for newly diagnosed HIV cases was piloted in Guangxi. Designed by NCAIDS, China CDC and Guangxi CDC, this so-called “one-stop shop” service model, involved a redesigned and simplified cascade of care intended to reduce the time for patients to proceed from screening to treatment. Within 1 year after implementation, the time between screening and treatment was shortened to a mere 11 days, and the ART coverage increased to 90%. Moreover, mortality was reduced from 27% to less than 10% (Wu et al. 2015). Following this pilot study, the one-stop shop service model was expanded to nine other Chinese provinces, and it has been adopted as a national strategy in China's 13th 5-year action plan for controlling HIV/AIDS in China in 2016–2020.

31.3.6 Other Policy Changes

From 2004 to 2010, the Ministry of Education requested all universities and colleges to provide in-class training covering HIV/AIDS for all students. Following 2010, these efforts have been strengthened further. In early 2010, the Guangxi Communist Party Committee and the Guangxi Regional Government jointly launched a 5-year project aimed at tackling the HIV/AIDS epidemic in the whole of Guangxi. This project included ten specific action plans for the implementation of specific programs for controlling HIV. One of the important programs is the AIDS awareness raising campaign, with great focus on households located in rural areas. Communities were organized for message diffusion. Local tailored educational materials were produced, posted, and disseminated. Traditional media and new digital media have been used for the campaign.

In July 2013, “Guangxi Regulation on the Prevention and Treatment of HIV/AIDS” was promulgated, providing a legal framework to support effective HIV intervention programs. This included legal requirements for PLWH in serodiscordant relationships to inform their partners of their HIV status.

31.4 Current and Potential Future Challenges

31.4.1 Slow Economic Development and Resource Constraints

Although Guangxi’s economy has been developing at a rapid pace in more recent years, it is still one of the least developed regions in China, and a large proportion of the population depends on agriculture. HIV/AIDS prevention programs need to reach every corner of the region, particularly rural areas. Due to economic constraints, people living in rural areas often temporarily migrate to nearby cities for short-term manual labor jobs so that they can augment their income. In addition, there are issues of illiteracy among rural residents. These factors together have caused many challenges to HIV/AIDS prevention and intervention in Guangxi, making these efforts less effective than planned.

HIV prevention and control efforts also face financial constraints in Guangxi. For example, with the eligibility criteria for free ART being removed, the large number of additional patients requires additional financial support for the ART program. More medical professionals need to be trained to handle the logistics of the ART services program. Staff members working with HIV prevention have also commonly been forced to conduct a lot of routine intervention and prevention work, resulting in them having difficulties to find time to provide more communication with patients receiving ART or conduct in-depth research for improving care services. In addition, it has also proven difficult to attract or keep people working on HIV/AIDS in Guangxi, due to the relatively low level of social and economic development compared to other regions in China. As a result

of these financial constraints, the coverage of a variety of HIV interventions is still limited in many areas. For example, in Liuzhou, only 4% of entertainment venues provided condoms (Zhang et al. 2014a, b).

31.4.2 High Rates of Undiagnosed and Late-Presenting HIV Cases

In 2011, 35.5% of people newly diagnosed with HIV infection in Guangxi had already progressed to AIDS, a considerably higher proportion than the national average (27.9%). In part, this may be explained by a large proportion of PLWH in Guangxi acquiring HIV after the age of 50. This is quite unique in China. Methods for HIV detection for these groups may not be as developed and effective as for other groups. In addition to this, since people of higher age usually show signs of deteriorating health even without HIV, it may not be a clinician's first response to test them for HIV if they show mild symptoms. Hence, it may be worth considering more focused testing efforts for these groups in this particular region in order to make sure PLWH are diagnosed at an earlier stage. Among total 9,605,663 HIV tests performed in Guangxi, 5,850,613 HIV tests, 60.9% of overall tests, were conducted in hospital settings in 2017. Again, based on these HIV tests, there were 10,485 newly diagnosed with HIV/AIDS cases in Guangxi in 2017, among them 5680 (54.2%) were diagnosed in hospital settings. However, if individuals only seek or obtain HIV testing at hospitals after they are already symptomatic, then they clearly are being diagnosed late. It is important to diagnose HIV infection before they come to the hospital seeking care. Studies to understand the reasons for late diagnosis might be helpful for improving HIV testing strategies in Guangxi.

31.4.3 Case-Fatality Remained High

The HIV case fatality rate in Guangxi is among the highest in China. By the end of 2017, there were a total 239,289 AIDS-related deaths reported in China, among them 44,472 were reported from Guangxi, accounting for 18.6% of the national total (National Center for AIDS/STD Control and Prevention, China CDC 2017). The highest numbers of AIDS-related death were between 2010 and 2014, some 4000–5000 reported deaths in Guangxi each year. In 2010, 83.2% (4382/5265) of the individuals who died from AIDS-related causes had not received ART. Studies found that the complicated procedures from HIV screening to ART initiation was a major cause of these PLWH never accessing ART. The one-stop shopping intervention has simplified the procedure and significantly reduced case-fatality (Wu et al. 2015). Expansion of this model of HIV care services has prevented much mortality in Guangxi. The number of reported AIDS-related deaths in Guangxi was 3981 in 2015, 3739 in 2016 and 2600 in 2017. Though the number of deaths significantly reduced, over 2500 deaths in Guangxi each year is still unacceptably high. Studies have shown that ART-associated costs not covered by the free ART program (i.e., necessary medical tests,

transportation) was a major reason why diagnosed PLWH did not initiate ART. It is clear that Guangxi needs to further address HIV care services accessibility.

31.4.4 Commercial Sex Industry

The commercial sex industry in Guangxi is different from other provinces in China. A considerable proportion of FSW are low-fee FSW. A survey conducted among 7936 low-fee FSW throughout Guangxi in 2010 showed that 74% charged 50 RMB or less, and 85% of FSW with HIV infection (127/149) charged 50 RMB or less. The low-fee FSW had a higher prevalence of HIV infection, which ranged from 1.0% to 4.0% (Zhou et al. 2013a; Deng et al. 2017; Lai et al. 2018). HIV prevention programs for low-fee FSW have proven difficult for a variety of reasons. For example, compared to the rest of China, the structure of the sex industry in Guangxi is less venue-based. Rather, low-fee FSW in Guangxi commonly conduct business in temporary places, such as stalls in connection with markets on market days, or providing door-to-door services. This is particularly true for older FSW.

Another unique feature is that clients of FSW are often senior men, many over 60 or 70 years old, occasionally sometimes a few even over 80 years. A study of male clients in rural Guangxi reported that the average age of clients was 61.8 years old. The study sample had reported a very high rate, 83.7%, of unprotected sex with FSW in the last sex episode, and a very high rate of 95.9% of inconsistent condom use in the last 6 months (Zhang et al. 2014a). Surveillance data in Guangxi has shown that, among men in the sentinel sample aged 40 or above, 72% were clients of low-fee FSW, and condom use rates were as low as 22% (Guangxi CDC 2014).

Another challenge is that considerable proportion of FSW diagnosed with HIV infection continue to engage in commercial sex that makes their clients at great risk of HIV infection. It was estimated that, in Guangxi, over 30% of HIV-positive low-fee FSWs regularly provided commercial sex for clients after their diagnosis of HIV infection (Guangxi CDC 2014). What makes this group a salient issue for HIV prevention, compared to other groups, is the high probability HIV transmission (repeated high-risk sex plus low rate of condom use), combined with the high probability of onward HIV transmission from newly infected, as yet undiagnosed older male clients to their spouses or other partners.

31.4.5 Other Sexually-Transmitted Infections

A large number of studies have found links between syphilis and an increased risk for HIV acquisition (Flemming and Wasserheit 1999). Sentinel surveillance among 51,790 FSW conducted in Guangxi in 2010–2012 reported that the overall prevalence of syphilis was 6.7%, but was 10.5% among low-tier FSWs (Chen et al. 2015). Another survey conducted in a rural county of Guangxi targeting clients of low-fee

FSW found a syphilis prevalence of 18.4% (Zhang et al. 2014a). Given this high prevalence and that syphilis is a clear risk factor for HIV acquisition for older clients of FSW in the region (Chen et al. 2013), the potential gains from reducing syphilis prevalence in the region could be immense, also in terms of reducing HIV.

31.4.6 Men Who Have Sex with Men

Though a great majority of the reported cases in Guangxi were acquired via heterosexual contact, HIV prevalence among MSM has increased too, in some areas, at alarmingly high rates. Surveillance has monitored the rapid increase of HIV transmission among MSM in Guangxi, the prevalence of HIV infection had significantly increased from 1.7% in 2008 to 3.7% in 2012, to 6.6% in 2013, to 8.4% in 2014, and further to 11.2% in 2015. Clearly, the rapid spreading of HIV among MSM continues. More innovative and effective intervention strategies are required to slow down the HIV transmission in this group.

31.5 Conclusion

Guangxi is one of the regions in China most heavily affected by HIV and AIDS, and the epidemiological situation shows some unique patterns in the Chinese context. Guangxi has the highest rate of heterosexual transmission in China, the highest proportion of older citizens being diagnosed with HIV, a very large share of new cases diagnosed in a clinical late stage and hence, HIV-related mortality rates were the highest in China. This has made Guangxi the chosen location for many programs and pilots aimed at improving HIV treatment and care, such as the “one-stop service” program, that has shown great promise in reducing mortality rates. The response still needs to address the rising HIV prevalence among MSM and the already very high prevalence among the older population. In order to do this in an efficient manner, different approaches than the general national response may have to be considered, particularly efforts to target the older population and make sure PLWH are diagnosed at an earlier stage.

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