

2020

# People Who Inject Drugs in the Island of Mauritius

Integrated Biological &  
Behavioral Surveillance [IBBS] Survey

Ministry of Health and Wellness

FINAL JULY 2021

## Fifth Integrated Biological and Behavioral Surveillance [IBBS] survey among People Who Inject Drugs, by the Ministry of Health and Wellness

The 2020 Integrated Biological and Behavioral Surveillance [IBBS] survey among People Who Inject Drugs [PWID], which is the fifth round of PWID studies in the country since 2009, was conducted by the National AIDS Secretariat with collaboration from staff of the Harm Reduction Unit, Non-Communicable Disease Department and the AIDS Unit.. Collaboration was also obtained from NGOs engaged in the fight against HIV. Previous IBBS studies in Mauritius among PWID have been carried out in 2009, 2011, 2013 and 2017.

It's now eleven years since Mauritius has started undertaking IBBS studies regularly among key HIV-affected populations, every 2 - 4 years. The first study started with **People Who Inject Drugs**, then among **Men who have Sex with Men** and **Female Sex Workers**. The country has studied the **Transgender** population only once so far and this was an initiative of PILS, an NGO for the prevention, information and fight against AIDS. The Ministry of Health and Wellness intends to conduct its first TG IBBS survey in June/July 2021, such that, all major HIV most-at-risk populations will be considered in the systematic evaluation of the national public HIV surveillance system. The main objectives of the IBBS Surveys are to monitor the trend of the HIV Epidemic among the Key Affected Populations and review the strategies in place.

The 2020 IBBS study among People Who Inject Drugs did not include residents of the smaller outer islands, but covered geographically, exclusively residents of the main Island of Mauritius, which accounted for 97% of the population of the Republic of Mauritius.

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## Acronyms

<b>ANC</b>	Antenatal Clinic
<b>FSW</b>	Female Sex Workers
<b>GDP, GVA</b>	Gross Domestic Product, Gross Value added
<b>HBV</b>	Hepatitis B Virus
<b>HCV</b>	Hepatitis C Virus
<b>IBBS</b>	Integrated Biological & Behavioral Surveillance
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MOH&amp;W</b>	Ministry of Health and Wellness
<b>NAS</b>	National AIDS Secretariat
<b>NEP</b>	Needle Exchange Program
<b>PLHIV</b>	People Living with HIV
<b>PWID</b>	People Who Inject Drugs
<b>RDS</b>	Respondent Driven Sampling
<b>STI</b>	Sexually Transmitted Infection
<b>TG</b>	Transgender
<b>VCT</b>	Voluntary Counseling & Testing

2020 IBBS survey among People Who Inject Drugs  
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## Table of Contents

		Page
	<b>Main findings</b>	<b>7</b>
	<b>Executive summary</b>	<b>8-10</b>
	<b>Conclusion</b>	<b>10</b>
	<b>1. Background</b>	<b>11-16</b>
	<b>2. Rationale and objectives</b>	<b>17</b>
	<b>3. Methodology</b>	<b>18-21</b>
	<b>4. Results</b>	<b>22-49</b>
4.1	- Recruitment diagnosis	22-25
4.2	- Network of People Who Inject Drugs	25-27
4.3	- Population size	28
4.4	- Profile of survey respondents	29-31
4.5	- Non-injecting drug use	31-32
4.6	- From non-injecting drug use to injecting practice	33
4.7	- Injecting drug use	34-36
4.8	- Behaviors towards injecting equipment	36-37
4.9	- Access to injecting equipment	37
4.10	- Utilization of Needle Exchange Program (NEP)	38-39
4.11	- Overdose	39
4.12	- Sexual history and partners	39-40
4.13	- Condom use	41
4.14	- HIV knowledge and attitude	42-43
4.15	- HIV testing, counseling and treatment	43
4.16	- Analysis of disease trend among PWIDs	43-46
4.17	- Disease prevalence among PWIDs	46-48
4.18	- Other Sexually Transmitted Diseases (STIs)	48
4.19	- Stigma	49
4.20	- Women and injecting drug practice	49
<b>5.0</b>	<b>- Observations and recommendations</b>	<b>50-53</b>

## Main Highlights

- The population size of People Who Injected Drugs (PWIDs) in 2020, in the Island of Mauritius, was estimated at **6,600** active injecting drug users (*roughly 5,500 males, 1,000 females and less than 100 Transgender*).
- Male PWIDs constituted 84% of the total PWIDs population, against 15% female PWIDs, while transgender PWIDs stood around 1%. 14% of PWIDs were aged less than 25 years, against 86% aged 25 years or more.
- 1.4% of the male population aged 15-59 years in the Island of Mauritius, were actively injecting drugs in the last six months preceding the 2020 IBBS survey. It was 0.3% among the corresponding female population.
- The mean age at first non-injecting drug use was 18 years and the mean age at the first injecting drug use was 21 years, while an average male PWID in Mauritius stayed 17 years on drug injecting practice against 12 years, correspondingly for their female counterparts.
- PWIDs were injecting essentially heroin and nearly two third were injecting on a daily basis. The 2020 study found out that non-injecting drugs were extensively used by PWIDs (90%), and were also a channel leading to injecting practice.
- 53% of PWIDs have ever shared previously-used needles and/or syringes and among them two third had two or more needle/syringe-sharing partners. The maximum number of needle/syringe-sharing partners recorded was 30 partners.
- 37% of PWIDs were currently on the Needle Exchange Program. At Port Louis survey site it was 66%, at Mahebourg survey site, 34% and at Curepipe survey site, 15%.
- Among female PWIDs involved in commercial sex, 74% had used condom with their commercial sexual partners. Only 27% of male PWIDs had used condom the last time they had sex.
- Among 85% of PWIDs who had ever been tested for HIV, 90% had in fact received their HIV tests results. Roughly 76% of PWIDs knew their HIV status.
- In 2020, HIV prevalence among PWIDs was 21%. It was 18% among males and 32% among females. During the last three years, from 2017 to 2020, HIV prevalence among PWIDs has decreased by 34% from a prevalence of 32% in 2017 to 21% in 2020 and in the 9-year period 2011-2020, it has decreased by 59%.
- HIV prevalence was 10% among PWIDs aged less than 25 years, against 23% among those aged 25 years and above.
- Hepatitis C prevalence among male PWIDs was 89%, against 88% among females. Prevalence of hepatitis B among PWIDs was 0.7%
- Syphilis prevalence stood at 10%, with 7% among male PWIDs and 19% among female PWIDs. During the last 9 years 2011-2020, syphilis has increased by 80% among PWIDs.
- Correct knowledge of HIV was 53% at Port Louis survey site, 29% at Curepipe site and 25% at Mahebourg site, while overall correct knowledge was, 36.0%.

## Executive Summary

As at December 2020, the population of the Island of Mauritius was estimated at 1.26 million. Based on UNAIDS Spectrum estimation, it is estimated that the total number of people living with HIV in the country, in 2021, was around 14,000. The prevalence of HIV in the population among all ages was around 1%. Antenatal sentinel surveillance of HIV in public health settings, suggests that, in 2020, HIV infection rate was around 1% among pregnant women in the country. The number of newly detected HIV/AIDS cases among Mauritians, by the Ministry of Health and Wellness, was 318 (201 males and 117 females). The Mauritian HIV epidemic is concentrated among HIV high risk key populations. HIV prevalence among people outside these key populations, that is, in the remaining low risk (general) population was less than 1%.

In November-December 2020, an Integrated Behavioral and Biological Surveillance [IBBS] survey was carried out among People Who Inject Drugs (PWID) in the Island of Mauritius. The study was the fifth of a series of IBBS studies carried out every two years since 2009 among PWIDs, except in 2015.

According to the 2020 IBBS study, the population size of PWIDs, in 2020 in the Island of Mauritius, was estimated at 6,600 active injecting drug users (*roughly 5,500 males, 1,000 females and less than 100 Transgender*). Thus, in 2020, 1.4% of the male population aged 15-59 years of the Island of Mauritius, were actively injecting drugs in the last six months preceding the survey, against 0.3% injecting drug users among the female population aged 15-59 years. These injecting drug users were injecting drugs within different networks of people who injected drugs, with an overall mean network size of 21 PWIDs. Mean network size across regions varied from 11 PWIDs in Curepipe in the centre of the Island to 34 PWIDs in Port Louis in the northern region.

In 2020, PWIDs were from all age groups, 14% were aged less than 25 years against 86% aged 25 years or above. The civil status of male PWIDs were evenly distributed among those living in common, married PWIDs and divorced/separated PWIDs, on average 21% for each civil status group. Never-married singles stood at 33% of the male PWIDs population. Among females PWIDs, singles accounted for only 6%, against 55% of females PWIDs living in common and 27% married. Despite the fact that 99% of PWIDs have ever attended school, 40% have not completed their secondary education cycle.

The mean age at first non-injecting drug use was 18 years (*Male, 18 Years, female, 20 years*). The study showed that among PWIDs, the majority (94%) had started with non-injecting drugs before practicing the injecting method. The non-injecting drugs used by PWIDs in 2020 were synthetic drugs, heroin, tranquilizers and cough syrup, by 25% - 49% of PWIDs, while cannabis stood at 59%. Other less important uses of non-injecting substances were codeine, buprenorphine, pregabalin, tramal and ecstasy, by 10% - 24% of PWIDs.

The mean age at the first injecting drug use was 21 years for PWIDs and nearly three quarter of them had started with this practice in the age group 15-24 years. An average male PWID in Mauritius can expect to stay 17 years on drug injecting practice against 12 years for their female counterparts. On the other hand, new PWIDs, that is, those who started injecting drugs within the last twelve months, accounted for 3.8% of this key HIV high-risk population. In fact, 63% of PWIDs in 2020 have been using the injecting method for 10 years or more. Among male PWIDs nearly half have been initiated to injecting drugs by friends as compared to 64% among female PWIDs. Most injecting drug users usually injected at home, 67%. In 2020, heroin continued to be the most popular injecting substance, with 99% of PWIDs having injected this drug in the last six months preceding the 2020 survey. 69% of PWIDs injected on a daily basis. 23% had injected only once in a particular day against 77% having injected two or more time in a particular day.

53% of PWIDs have ever shared previously-used needles/syringes and among them nearly one third had only one needle/syringe-sharing partner against 66% having 2 or more needle/syringe-sharing partners. The



maximum number of needle/syringe-sharing partners recorded was 30 partners. Half of injecting drugs users had not shared any paraphernalia in the last three months preceding the 2020 IBBS survey. Among those who had cleaned their previously-used needles/syringes, only 40% had used boiling water. Even if the majority of PWIDs were aware that they could obtain new needles/syringes at private pharmacies (97%) and to a lesser extent at the NEP (63%), only a proportion of them actually got these materials from these places, that is, 63% at pharmacies and 22% at NEP, showing a gap between awareness and utilization. In the same way 89% of PWIDs have heard of NEP, but only 51% have attended this program, while only 37% were currently involved in the program.

Almost 90% of PWIDs had started to be sexually active under the age of 20 years, on average at 16 years. Among three quarter of PWIDs who had sexual intercourse, the mean number of sexual partners of PWIDs in the last twelve months was 9 sexual partners. The average number of commercial sex partners was 2 for male PWIDs against 10 partners for females PWIDs.

88% were aware where to get male condom, however only 27% of male PWIDs and 29% of female PWIDs had used condom the last time they had sex, while 39% among male PWIDs and 74% among female PWIDs had used condom with their commercial sexual partners. Even if female condom use was high among female PWIDs in commercial sex, very few had used it with their non-paid regular sexual partners, 13%. The main reason why most male PWIDs did not use condoms, was that it reduces sexual pleasure and in many other cases it was just by nonchalance and not much importance was given to the risk involved in the absence of condom. Among HIV positive PWIDs, 49% had used condom at the time they had sex against 23% among HIV negative PWIDs.

HIV testing has increased by 18% in 9 years, 2011-2020. Out of 85% of PWIDs who had ever been tested for HIV, 90% had in fact received their HIV tests results. Among female PWIDs 98% have ever been tested for HIV and among them 92% had received their tests results. Pre-test and post-test counseling stood at 70% and 81% respectively among those ever tested for HIV.

HIV prevalence among PWIDs in 2020 was 21%. It was 18% among males and 32% among females. During the last three years, from 2017 to 2020, HIV prevalence decreased by 34% from a prevalence of 32% to 21%. HIV prevalence among male PWIDs has decreased by 45% from 33% in 2017 to 18% in 2020. Nevertheless, a slight setback was observed for female PWIDs HIV prevalence between 2017 and 2020, that is, a percentage increase of 10% from 29% to 32%. Furthermore, in the 9-year period 2011-2020, HIV infection among PWIDs decreased by 59%, that is, from 52% to 21%, respectively. In 2020, PWIDs HIV prevalence varied across regions, 34% in the northwestern region of the Island, 16% in the southeastern region and 13% around the centre of the Island. HIV prevalence among PWIDs aged less than 25 years was 10% against 23% among those aged 25 years and above.

In 2020, prevalence of hepatitis B among PWIDs was 0.7%. Hepatitis C prevalence among male PWIDs was 89%, against 88% among females, while syphilis prevalence stood at 10%, with 7% among male PWIDs and 19% among female PWIDs. Syphilis prevalence showed regional disparities, with respective prevalence of 20% in the northwestern region of the Island, 9% in the southeastern region and 1% in the centre of the Island. During the past 9 years 2011-2020, syphilis has increased by 80% among PWIDs.

81% of PWIDs reported they have ever been arrested by Police, out of whom, 64% have been arrested for drugs, 21% for larceny and finally 7% for violence. Out of those who have ever been arrested, 76% had ever been sent to prison. Among respondents who have ever been stigmatized because they were People Who Inject Drugs, family members and friends were the two main sources of verbal insults. Correct knowledge of HIV was 53% at Port Louis survey site, 29% at Curepipe site and 25% at Mahebourg site, while overall correct knowledge was, 36.0%.

**Conclusion:** As at December 2020, HIV prevalence among People Who Inject Drugs in Mauritius, has continued on its decreasing trend, even if comparatively more vigilance is required for female PWIDs, as there has been a changing pattern towards an increasing tendency, during the last three years 2017-2020 for this group, who is only 15% of the population of PWIDs in the country. The population size of PWIDs has decreased by one third in the last ten years to reach **6,600** PWIDs, with a yearly incidence of around **250** new PWIDs. While the majority of HIV positive PWIDs are HIV/HCV co-infected, it is also to be noted that there is an increasing trend of syphilis among the female PWIDs. With the expansion of HCV treatment as from beginning of 2020, the HCV prevalence is expected to decline. There are disparities across regions, both in the level of behavioral risk and disease. The HIV test activity among PWIDs has reached a high level of coverage, consequently known HIV negative cases should be encouraged to have their tests more regularly. Correct knowledge among young PWIDs and female PWIDs should be improved considerably, especially in some specific regions. Correct knowledge of HIV was relatively higher at Port Louis survey site (53%) as compared to other regions.

There is need to bridge gaps between awareness and utilization, especially regarding injecting equipment and harm reduction programs. Private pharmacies should be integrated in the NEP given it is the most popular place where PWIDs get their needles/syringes. Very few young PWIDs and female PWIDs are currently on NEP. NEP coverage and its utilization as a whole should be re-engineered as it actually covers just a little more than one third of PWIDs. NEP coverage was at an acceptable level in Port Louis region 66%, but was weak in other parts of the Island. Nearly fifty percent of PWIDs have ever shared previously-used needles and/or syringes, but only 9% have done so at the last time they injected. Although PWIDs are significantly sexually active, condom use in general is poor, except an acceptable level observed for female PWIDs engaged in commercial sex. Prevention programmes promoting condom use among PWIDs should be reinforced.

Most PWIDs having started non-injecting drugs had eventually moved to injecting method after two years or more. Non-injecting drugs are extensively used by PWIDs and act as the potential gateway to injecting drug practice. Synthetic drugs are gradually laying its grasp among PWIDs, apart from other non-injecting drugs like Cannabis, heroin, tranquilizers, cough syrup, codeine, buprenorphine, pregabalin, tramal and ecstasy. On the other hand, PWIDs continue to inject essentially heroin.

Given that both, the annual incidence of new PWIDs and the population sizes of PWIDs have remained almost the same from 2017 to 2020 and that HIV prevalence has decreased by 35%, in addition to identical age structure of PWIDs during the same period, a comprehensive HIV-related mortality study is vital to enlighten the trend observed during the past years. The aim of such study is to complement the IBBS findings and also to help discriminating between the direct impact of the national HIV response and the impact of HIV-related and non-HIV-related deaths among the PWIDs population. Examining the antiretroviral treatment (ARV) impact as well is important as it extends life of HIV patients and reduces the transmission rate of HIV infection. Finally, it is to be noted that in Respondent-Driven Sampling surveys in concentrated HIV epidemics, discrepancies observed for prevalence at different points of time, can also be attributed to the influence caused by the choice of survey sites' location, although this can be minimized by appropriate long chains of recruitment of survey respondents which usually ensure randomness and unbiasedness of the sample under study.

## 1. Background information

## 1.1 Country profile

### 1.1.1 Demographic and socio-economic profile

The Republic of Mauritius is made up of a group islands in the South West of the Indian Ocean, namely; the main island of Mauritius, island of Rodrigues and several outer islands at around 350 km from the main island. The main Island of Mauritius which covers an area of 1,968.8 square kilometers, accounts, for 97% of the total population against 3% for other Islands. Population density in the Island of Mauritius was 654 *inhabitants per Km<sup>2</sup>*, ranging from the minimum of 277 *inhabitants per Km<sup>2</sup>* to 2,924 *inhabitants per Km<sup>2</sup>* for the nine districts. The 2020 IBBS study has been carried out in the main Island of Mauritius.

The country has a Westminster type of Parliamentary government and free election is compulsory every five years by the constitution. The official language is English, but French is widely spoken. The Mauritian population comprises Indo-Mauritians, people from mixed European and African origin and people from Chinese origin. Based on the most recent national census data, 92% of residential buildings were made of concrete walls and roof. 89% households were owners against 8% tenant. The average household size was around 4 persons per household. Piped water as well as electricity was available at almost 100% of households. From an essentially sugar-cane monocrop economy, Mauritius has now a diversified economy comprising also textiles & garments, tourism, offshore and freeport activities. In 2019, the economy grew by 3.2% and the GDP per capita at current market prices reached around 11, 099 us dollars. Unemployment rate was estimated at about 7% (4% among males and 10% among females). In 2012, the relative poverty line was Rs 5,652 for a 1-adult member household and Rs 13,310 for a household comprising 2 adults and 2 children. Around 33,600 households (9%) comprising 122,700 persons (10%) were in relative poverty. Recently, government has come up with a minimum wage scheme and it is now compulsory by law, with effect as from 1 January 2020, for any worker to be paid a monthly minimum wage between Rs 9,000 and Rs 9,700, roughly US\$225-US\$243

In 2020, as at 1<sup>st</sup> July, the population of the Island of Mauritius (*excluding Rodrigues and outer islands*) was estimated at 1,221,921. The population grew at a rate of -0.03% over the last year. The total fertility rate went from 1.6 in 2010 to 1.4 in 2019 with a net reproduction rate of 0.7, indicating that the country is still experiencing demographic trend of below replacement level. The median age of the population of the Mauritius has nearly doubled in 47 years, from 19 years to 37 years, from 1972 to 2019 respectively, indicating that the ageing process is maintaining its upward trend. Female aged 15-49 years represented 49.7% of the total female population and they stood at 25.1% of the whole population both sexes and all ages. In 2019, the population of children aged less than one year accounted for 1% and children under 15 years represented 17% of the total population, while the elderly population 60 years and above was 18% and is projected to reach a figure of 29% by the year 2040.

In Mauritius the year 2020 has been marked by uncharacteristic socio-economic events. Thus, in 2020 on 1st July, the World Bank has classified Mauritius as a high-income country for the first time, joining the Seychelles as the second high-income economy in Africa. Mauritius' Gross National Income (GNI) per capita for 2019 was US\$ 12,740. In the meantime, as all other states, Mauritius had to contain its locally transmitted covid-19 epidemic from March to April 2020. The national borders of Mauritius were totally closed down as from 20 March 2020 and as a result Covid-19 started affecting the country's economy. The tourist industry, for example, has experienced a sizable decline in tourist arrivals. As an illustration, there was a first-semester passenger traffic of 887,787 arrivals in 2019, against 424,127 arrivals correspondingly in 2020, that is, a percentage decrease of 54.6% - *Statistics Mauritius*. The country effectively regained control in April with no new domestic cases as of July 2020. Latest available information indicates that both GDP at market prices and GVA at basic prices would contract by 15.2% in 2020 due to the impact of COVID-19 pandemic, which would mark the country's worse contraction since 1980 - *Statisticsmauritius-23<sup>rd</sup> December 2020*. Finally, the year 2020 has been a demographic landmark for Mauritius, in the sense that it was the first time that the main Island of Mauritius (*97% of the population*) had experienced a negative population growth, namely, -0.03%.

### 1.1.2 Health, education and human development in Mauritius

In 2019, life expectancy for male was 71 years as compared to 70 years in 2011 while for female it was 78 years in 2019 and 77 years in 2011, indicating the continuous national gain in health improvement observed over several past decades. The human development index was 0.80 (*Very high*) in 2019 as compared to 0.76 in 2010 and 0.67 in 2000. In 2019, globally Mauritius ranked 66th in terms of human development. (*Human development report 2019*). In 2019, the gross enrolment ratio in secondary education stood at 69% for boys against 76% for girls.

In Mauritius, the Government health services, which account for 70% of the national health care delivery against 30% for the private sector, cover a wide range of health fields through a well-established primary, secondary and tertiary health care system. Covering a land area of 2,040 km<sup>2</sup>, the Republic of Mauritius, in 2019, had a primary health care infrastructure which consisted of 130 Community Health Centers, 21 Area Health centers, and 5 Medi clinics. Maternal and Child Health (MCH) services which were delivered within these abovementioned primary health care facilities consisted of 159 MCH health points. Similarly, immunization activities consisted of 174 vaccination points while Family planning services were provided in 166 such facilities. There were 17 private clinics/Hospitals with in-patient services. There were 26 doctors per 10,000 population and 36 nurses per 10,000 population. Considering both public and private services, in 2019 there were 272 inhabitants for one hospital/clinic bed.

In 2019, there were 12,056 live births, giving a crude birth rate of 9.9 per 1,000 mid-year population. 70% of births occurred in public health facilities against 30% in private. The percentage of births attended by qualified health personnel was 99.8%. Infant mortality rate was 14.3 per 1,000 live births. The coverage of public immunization among children, based on the Hexavalent vaccine (*Immunization against Diphtheria, Pertussis, Hemophilus-B, Polio(Inactivated), Tetanus and Hepatitis B*), was 86.5%.

The leading causes of deaths were attributed to cardiovascular diseases, 31.5%, followed by diabetes mellitus, 22.8% and neoplasm (*cancer*) 13.2%. Regarding infectious diseases, major communicable infections including indigenous malaria, have been either eradicated or eliminated from the country. Apart from the ongoing COVID-19 pandemic, surveillance concern is now additionally about emerging infectious diseases like chikungunya and dengue, for instance. The national incidence of Tuberculosis was 10.0 per 100,000 population and the incidence of HIV was 0.57 per 1,000 (UNAIDS Spectrum) with a prevalence of less than 1.2% in the population aged 15-49 years.

## 1.2 The HIV epidemic situation in Mauritius

In 2020, the number of newly detected HIV/AIDS cases among Mauritians, by the Ministry of Health and Wellness, was 318 (201 males and 117 females). Based on UNAIDS Spectrum estimation and projection tools, it is estimated that the total number of people living with HIV in Mauritius, in 2021 is 14,000. The prevalence of HIV in the population among all ages was around 1%.

The HIV epidemic in Mauritius, being a concentrated one (*highly prevalent among high risk populations*), consists of a significant proportion of People Who Inject Drugs (PWID), around 60% of people living with HIV in the country. At the beginning of the epidemic in the late 1980s, the mode of transmission of the HIV virus was predominantly heterosexual. As from year 2000, the HIV epidemic was driven by PWID. The gradual shift in mode of transmission from heterosexual to PWID became evident in 2003 when 68% of the new cases were

detected among the PWID as compared to only 14% in 2002. The shift reached its peak in 2005, 92% and dropped to 84% in 2006. In 2019, it stood at 29.9%.

HIV prevalence is relatively high among key affected populations in Mauritius. High HIV prevalence were found in previous rounds of Integrated Biological & Behavioral Surveillance (IBBS) surveys conducted among People Who Inject Drugs, Female Sex Workers and among Men who have Sex with Men. Latest IBBS surveys indicate that HIV prevalence among People Who Inject Drugs was 32% in 2017, among Men Having Sex with Men it was 17.2% in 2015 and among Female Sex Workers it was 15% in 2015.

Public antenatal sentinel surveillance of HIV among pregnant women, suggests that, in 2020 HIV infection rate was around 1.1% among pregnant women in the country.

### **1.3 Brief outline of the national response to HIV epidemic in Mauritius**

Through its current HIV National Action Plan 2017-2021 with the main objectives – Zero Stigma and Discrimination against those infected with and affected by HIV, Zero new HIV infections and Zero AIDS-related death, Mauritius shows its determination to get to its vision, eliminate AIDS by 2030. As a result, Mauritius has committed itself to come forward with international recommendations for prophylactic measures, universal easy-reachable treatment and care services, with particular attention to the most-at-risk of HIV infection groups. The strategy has been worked out by keeping in mind the UNAIDS 90.90.90 targets that 90% of people living with HIV know their status by 2020. 90% of those diagnosed with HIV initiated on treatment and 90% of those on treatment be virally suppressed.

Mauritius has a long-standing dynamic HIV Testing Service (HTS). In 2015, based on the IBBS study, 86% of female sex workers knew where to get an HIV test and 63% have ever had such test. Based on service statistics, 72% of people living with HIV have been initiated on treatment and 45% virally suppressed.

While the national HIV program includes all citizens, in Mauritius the centre of attention regarding HIV prevention is on the most-at-risk of HIV infection group, given that the national HIV epidemic is key-population driven with HIV infection rates ranging from 15% to 30% across HIV high-risk populations.

A technical working group on behavior change communication has been set up. Tools for Information Education and Communication are fully effective. Psychologists have the counseling role for people living with HIV (PLHIV) and adolescents in rehabilitation centers. Operational condom and lubricant programming are in place to encourage correct and consistent use of condoms. In fact, condom use has a preponderating position in the HIV/STIs prevention package, even if there is room for improvement given that coverage still stands at 67% among female sex workers, according to 2015 IBBS survey.

The PrEP protocol in line with the 2015 WHO recommendation has been developed and implemented in Mauritius since end 2018. It is available and accessible to all in need including serodiscordant couple.

To show its high-level commitment for having a strong National HIV Response and ensuring universal health coverage, Mauritius recently set up the National Drug and HIV Council in 2019 under the Prime Minister's Office. One of its crucial roles is to provide a space for promoting equity and human rights, thus, inviting enhancement of human-right-friendly policies and a protective legal environment. Another determinant step regarding stigma and discrimination is the introduction of a HIV management protocol adopted in 2017 and this is believed to play a key role in the eradication of stigma and discrimination towards HIV patients. On the other hand, many gender and human rights capacity-building activities have been organized by the country, namely workshops held between 2018 and 2019 among a thousand of participants from the public and private sectors and civil society organizations.

The national HIV epidemic has long been driven essentially by People Who Inject Drugs reaching above 90% of all HIV new cases in the year 2005, but nowadays only 30% of new cases are from people who injects drugs. This is the result of a strong and sustained harm reduction program since 2006. Presently, a Needle Exchange Program (NEP) is fully effective together with the national Methadone Substitution Therapy (MST). People who injected drugs (PWID) and were on NEP, represented was 53% of all PWID in 2017 (IBBS survey). All fundamental services for PWID are delivered through the NEP and MST channels, namely, syringes & needles, condoms, informational materials, counseling and testing for HIV/STI/Hepatitis C, explanation of methadone program and referral for MST, Pre-Exposure Prophylaxis (PrEP) and Post-Exposure Prophylaxis (PEP), psychological support, and social aid. PWIDs HIV prevalence has decreased from a rate of 50% in 2009 to a rate of 32% in 2017, while the corresponding rate for FSW has decreased from a rate of 28% in 2010 to a rate of 15% in 2015.

Mauritius has set the objective of eliminating Mother-To-Child Transmission (MTCT). Option B+ for preventing mother to child HIV transmission was taken on board in 2015. The PMTCT has provision for tracking of the lost to follow up cases. Retention of HIV positive pregnant women in care is done through a multi-disciplinary approach. There is provision of free formula milk for babies born to HIV positive mothers. Antenatal clinic attendance is very high (>90%), while, coverage of ART for HIV+ pregnant woman, is almost total. Recent service statistics showed that HIV infection among ANC cases is 1.1%. In Mauritius, the question of poor adherence to management protocols by HIV positive mothers is a matter of concern for program managers as it contributes to HIV infected babies.

Since 2017, the Mauritian HIV Treatment, Care, and Support Services Policies, is steered by the World Health Organization (WHO) "Treat All" Guideline which stipulates that ARVs should be made accessible to all persons living with HIV including provision of viral load testing services. With antiretroviral treatment totally funded by the government, a Differentiated Delivery of Services (DSD) method is in place to deliver ART services

#### **1.4 The community of People Who Inject Drugs in Mauritius**

Based on previous IBBS studies, in Mauritius, PWIDs are predominantly active injectors with long-standing drug injecting practices. Two-third of active PWIDs in Mauritius has a history of 10 years or more of drug injection. They can expect to stay on drug injecting practices on average for 18 years and the maximum duration of 48 years has ever been reported. On the other hand, male PWIDs stand at 85% of all PWIDs against 15% female PWIDs. Most PWIDs in this country have not completed the secondary education cycle. Although most of them were initiated to injecting practices by someone else, most would inject at home, against a few who will do so on unoccupied lands or similar settings.

The prevalence of HIV among PWIDs, which was 52% in 2011, has maintained its downward trend to reach a figure of 32% in 2017, that is, a decrease of 37% during that period. HIV intervention programs have brought positive results among PWIDs, while HIV or non-HIV related mortality is also expected to be a factor impacting on prevalence, as well as treatment. For instance, while a decrease of 33% in HIV prevalence was noted among male PWIDs, from 49% in 2011 to 33% in 2017, a spectacular percentage decline of 67% was observed in HIV prevalence among female PWIDs for the same period, that is, from HIV prevalence of 85% in 2011 to 28% in 2017. Furthermore, IBBS studies have shown that a very effective HIV prevalence reduction has been observed after the 2006 harm reduction program implementation, that is, a decrease of 77% between two cohorts, one before the harm reduction program implementation and the second after the set up in 2006, and here again even if mortality in general has been a contributing factor.

Although there are sporadic spread of injecting drug users around the whole Island, PWIDs in Mauritius are concentrated in three regions, namely, the district of Port Louis in the northwest of the Island, followed by two



other areas substantially affected, namely the district of Plaines Wilhems in the centre, and the district of Grand Port in the southeastern region. Black River in the Southwest, like a few others is also a cause for concern.

The prevalence of hepatitis C among PWIDs has remained above 95% between 2009 and 2013 and a slight improvement was observed in the 2017 study that is, from a prevalence of 96% in 2013 to 89% in 2017, giving a percentage decline of 9% during that period. In 2017, hepatitis C among male PWIDs was more prevalent, 92%, as compared to female PWIDs, 73%. As in preceding IBBS studies, hepatitis B among PWIDs is very rare, while syphilis stood at 8% in 2017

Regarding injecting practices and risky behaviors among PWIDs, the majority of PWIDs had started with non-injecting practices before using the injecting method. Most PWIDs had started to use both non-injecting and/or injecting drugs when they were still aged less than 20 years.

More than ten different substances were used as non-injecting drugs by PWIDs with tranquilizers, synthetic drug, cough syrup and codeine tablets being among the most popular non-injecting substances used. Three-quarter of PWIDs usually inject on a daily basis and nearly half inject twice in a typical day. Most PWIDs, inject drugs by themselves without the help of another person. In 2017, PWIDs were injecting essentially heroin. The percentage of PWIDs who had used non-sterile needles and/or syringes at their most recent drug injection, was low, 10% and only 7% had shared previously-used needles and/or syringes at the most recent drug injection.

Most PWIDs who had shared previously-used needles and/or syringes, did so with more than one injecting partners. In addition, among PWIDs who had shared previously-used needles and/or syringes in, 80% had used cold water to clean the needles and syringes.

For those who were not on NEP, the three significant main reasons were; buying injecting equipment from private pharmacies, the NEP sites were too far and finally they were too busy to attend the NEP service points.

Eighty five percent of PWIDs start to be sexually active while they were still aged less than 20 years. Among those who have sex with non-regular partners, half do not use condoms. Three quarter of male PWIDs know they can obtain their condom at private pharmacies, half of them know they can obtain condoms from NEP caravans and one quarter at health facility, while shops and NGOs are also places significantly known to PWIDs for obtaining male condoms.

A high number of PWIDs has ever been tested for HIV, 82%, even if among them 40% had not been tested for HIV for a period one year back. Among PWIDs ever tested for HIV, three-quarter have received pre-test counseling. Access to HIV test results was high, 82% among those ever tested. Post-test counseling stood at 89% among those ever tested for HIV.

Around two-third of the population of PWIDs have ever been sent to prison and the two main reasons for imprisonment were, firstly, problems associated with illegal drugs and secondly, for larceny. Very few PWIDs have been sent to prison for physical violence. PWIDs were predominantly stigmatized within the family and by friends. A significant proportion of PWIDs particularly suffered from access to employment, even if, to a much lesser extent, access was difficult in some other sectors as well.

# 1. Rationale and objectives

## Importance of studying key HIV-affected populations in national HIV epidemics

HIV most-at-risk populations, such as, People Who Inject Drugs, Female Sex Workers, Men Having Sex with Men and Transgender people, contribute to a generalized HIV epidemic through sexual and drug-using partners who create a route for HIV transmission to the less-at-risk general population. As a result of the illegal nature of their HIV-risk behaviors, Key populations are by and large stigmatized, criminalized, and to some extent their sexually transmitted infections and HIV risks go undetected. Furthermore, People Who Inject Drugs, Female Sex Workers and Men Having Sex with Men, are likely to have specific needs for HIV prevention, care, and treatment.

Integrated Biological and Behavioral Surveillance surveys among People Who Inject Drugs, combined with HIV program data such as, Methadone Substitution Therapy (MST), antiretroviral treatment, Needle Exchange Program (NEP) and condom distribution, amongst others, generate essential data to track down the HIV epidemic patterns trends and to measure the outcomes and impact of the national HIV response. Transforming these data into evidence-based information is essential to generate solid foundation on which effective strategies can be built up to direct HIV program responses. Integrated Biological and Behavioral Surveillance surveys among People Who Inject Drugs are being repeated also because of the need to stay in line with international goals and targets, such as, the Sustainable Development Goals (SDGs) and the UNAIDS 90.90.90 targets, amongst others.

## Objectives

The primary objective was to measure trends over time with regard to the prevalence of HIV and other infections and related risk factors among People Who Inject Drugs and to re-orientate strategies of response accordingly.

## Specific Objectives

- To monitor the trend in the prevalence of HIV, hepatitis B (HBV), hepatitis C (HCV), and syphilis among PWIDs in Mauritius.
- To assess sexual and other risk behaviours associated with HIV and Syphilis transmission among PWIDs.
- To assess health seeking behaviours, including harm reduction and HTC among PWIDs.
- To describe demographic characteristics of People Who Inject Drugs and the nature of their high risk behaviours in Mauritius



- To provide information about People Who Inject Drugs to inform public policy and services and to assist the Government of Mauritius, cooperating partners, and other local organizations in strategic planning.

## 2. Methodology

### 3.1 Respondent Driven Sampling (RDS)

The 2020 Integrated Biological and Behavioral [IBBS] study among People Who Inject Drugs used Respondent-Driven Sampling to recruit its survey participants throughout the Island of Mauritius. Respondent-Driven Sampling (RDS) is a sampling method based on a chain referral process. It has been developed to eliminate the well-known biases generally associated with chain referral methods, such as snowball sampling for example, by applying theoretical and mathematical techniques. RDS is designed especially for studies among hard-to-reach and hidden populations. People Who Inject Drugs forms part of the set of HIV high-risk populations who are hard-to-reach just like Female Sex Workers and Men Having Sex with Men.

A population is "hidden" when no sampling frame exists and public recognition of membership in the population is potentially threatening. Reaching such populations is difficult because classical probability sampling methods yield low response rates and responses that lack truthfulness. Respondent-driven sampling is the variant of chain-referral sampling that makes use of a dual system of structured incentives to overcome some of the deficiencies of traditional samples. In traditional chain-referral sampling, an incentive is given only for participation, whereas in RDS, a dual incentive includes a reward for participation and another reward for (limited) recruitment of other peers. A theoretic analysis, drawing on both Markov-chain theory and the theory of biased networks, shows that this procedure can reduce the biases generally associated with chain-referral methods.

RDS starts with an initial group of members of the key population selected purposely and are called "seeds". Each seed is provided with a fixed number (no more than three) of uniquely numbered coupons to be used for recruiting other eligible members (*peers*) of the key population into the survey. These recruited peers who join the survey are the first "wave" of participants. In the first wave, each participant who completes the survey is then provided with a fixed number of coupons to be used for recruiting in turn their peers into the survey. This gives a second wave of survey participants. This process of peer recruitment continues through further waves until the sample size is reached. Each participant is identified throughout the survey by using a unique number as the study is carried out anonymously. This unique number is determinant at the analysis stage being a key unique identifier variable in the survey database, which is processed through a especially designed RDS application software. Finally, based on the Markov Chain theory, even though sampling begins with an arbitrarily chosen set of initial subjects (Seeds), as do most chain-referral samples, the composition of the ultimate sample is wholly independent of those initial subjects.

## 3.2 Sample size calculation

The formula used for the sample size was :

$$n = [ D * Z_{1-\alpha}^2 * P (1-P) ] / d^2$$

n = The required sample size

$Z_{1-\alpha}$  =Z score for the desired confidence level, set at 1.96 for 95% confidence

P =Expected proportion (Prior information)

D =Precision (set at 5%)

D =Design effect

A prevalence of 30% was used, given the prior information obtained from the 2017 People Who Inject Drugs IBBS survey. The precision was decided at 5%. The final calculation of the required sample size was 600 giving a design effect of 1.86.

## 3.3 Data collection

### 3.3.1 Target population

The target population for the 2020 IBBS survey among People Who Inject Drugs was male, female and transgender residents of the main Island of Mauritius (study area), aged 15 years or more who have injected drugs in the last six months prior to the survey date.

### 3.3.2 Survey sites

To have a proper geographical representation of participants there was a need to increase and ease accessibility to the survey sites in terms of minimizing the distance and at the same time the travel cost required to reach these sites. Accordingly, a total of three survey sites was decided for the survey for the whole Island of Mauritius, namely; Port Louis (in the northwest), Curepipe (in the upper centre) and Mahebourg (in the southeast).

### 3.3.3 Seeds

Nine seeds (initial recruits) were identified through key contacts and were selected to reflect as far as possible diversity on a number of key characteristics, such as, geographic residence, age, sero-status etc.

### 3.3.4 Recruitment process

Seeds identified for the study population are provided each with three uniquely coded coupons to be used for recruiting their peers into the survey. Participants who present a valid recruitment coupon to one of the three survey sites are screened for eligibility and provide informed consent for a face-to-face interview. HIV pre-test counseling and a blood extraction is done for HIV, HCV, HBV and syphilis tests. Interviews are conducted in the local language by trained interviewers. The questionnaire collects data on socio-demographic characteristics, sexual and drug risk behaviors, HIV transmission and STI signs and symptoms and HIV knowledge, information on participants' social network sizes, as well as, access and

utilization of HIV and IDU related services. Following the interview, each participant is provided with a number of coupons (no more than three coupons) to be used for recruiting eligible peers.

Participants receive a primary compensation for completing the survey and an additional secondary compensation for each recruit who is eligible and consented to participate in the survey. After specimen collection, participants receive uniquely numbered voucher which they can use to return to the interview site after two weeks to receive their test results with post-test counseling. Those with positive test results for HIV, HCV, HBV and/or syphilis infection are referred for treatment and/or for further management. To ensure confidentiality, participants' questionnaires and biological tests are identified using a unique study identification number provided on the recruitment coupons.

### **3.3.5 Survey staff training**

Field staff, including interviewers, peer leaders, screeners, supervisors and voluntary counseling and testing (VCT) counselors were trained on seed selection and participant recruitment, ethical consent, coupon and participant tracking, the incentive process, administration of the behavioral questionnaire, collection of biological samples, processing and transportation, specimen testing, and provision of biological test results and referrals by the Ministry of Health and Wellness.

### **3.3.6 Laboratory procedures**

A 5cc sample of venous blood was collected from each compliant study participant after the completion of the survey questionnaire. After the blood collection on survey sites, the samples were transported to the Central Health Laboratory, Victoria Hospital where tests for HIV/AIDS, HBV, HCV and syphilis were carried out.

The HIV P24 antigen and antibodies to HIV1 and HIV2 were detected using an Enzyme Immunoassay, Genscreen Ultra HIV Ag-Ab (Manufacturer: BIORAD, France). Reactive specimens were confirmed by Western Blot Assay HIV Blot 2.2 MP Diagnostics (Singapore).

Hepatitis B surface antigen (HBs Ag) was detected using MONOLISA HBs Ag Ultra (Manufacturer: BIORAD, France) and antibodies to HCV were detected using MONOLISA Anti-HCV Plus version 3 (Manufacturer: BIORAD, France).

Syphilis infection was tested with VEDA (Manufacturer: VEDALAB, France) a hemagglutination test for Treponema Pallidum antibodies (IgG and IgM) in serum. Reactive Specimens for TPHA were also tested by Fortress carbon antigen (Manufacturer: Fortress Diagnostics Limited, UK).

## **3.4 Data management and analysis**

Data were entered into Epi Info. Data cleaning and quality control were performed. The final dataset was converted to SPSS. Further consistency checks and frequencies were performed to check validity and logics of all variables in the datasets. The final SPSS dataset was imported by the RDS Analyst 9.0 software designed for RDS analysis. The analysis settings used are: 0.95 for confidence interval with 500 bootstraps, while the weight has been set to Gile's SS and the population iteration is 1,000.

## **3.5 Ethical considerations**

Participants were informed that they were free to withdraw from the study at any time during the survey process and were provided with the consent form to read or, if necessary, the consent form was read to the participant by a staff member. Based on Respondent Driven Sampling (RDS) principles among HIV most-at-risk key population, the survey was completely anonymous, such that, no survey participants could be identified by their respective names, but only through a unique identification survey numbering system. Measures were taken by investigators to ensure confidentiality and privacy of participants and survey site officers were trained accordingly.

### **3.6 Constraint**

- The popularly used method of Multiplier Technique was initially planned to be used for estimating the population size of People Who Inject Drugs in the 2020 IBBS study. Unfortunately, because of logistics constraint, the "Unique objects" were not available for the survey in time and the multiplier method could not be carried out.
- Due to time constraint some variables have not been recorded in order to obtain adequate sample size for RDS analysis. As a result, care should be taken when interpreting results associated with small sample size.

## 4. Results and Analysis

This section presents the behavioral findings and biological results of the 2020 IBBS survey among People Who Injects Drugs [PWIDs] in Mauritius in the following order:

- 4.1 Recruitment diagnosis
- 4.2 Network of people who injected drugs in 2020
- 4.3 Population size of People who injected drugs in 2020
- 4.4 Profile of People who injected drugs in 2020
- 4.5 Non-injecting drug use
- 4.6 Non-injecting to injecting drug use
- 4.7 Injecting drug use
- 4.8 Behaviors towards injecting equipment
- 4.9 Access to injecting equipment
- 4.10 Utilization of NEP
- 4.11 Overdose
- 4.12 Sexual history and partners
- 4.13 Condom use
- 4.14 HIV knowledge and attitude
- 4.15 HIV testing, treatment and counseling
- 4.16 Analysis of disease trend among people who injected drugs
- 4.17 Disease prevalence among people who inject drugs
- 4.18 Other Sexually Transmitted Infections (STIs)
- 4.19 Stigma
- 4.20 Women and injecting drug practice
- 5.0 Observations and recommendations

### 4.1 Recruitment diagnosis

#### 4.1.1 Survey site and recruitment

Work performed for collecting data on survey sites took 12 working days on survey sites from 28<sup>th</sup> November to 11<sup>th</sup> December. Three survey sites were used to recruit respondents. These three sites were located at the following places, firstly, at cassis in the district of Port Louis in the northwest of the island, secondly in the town of Curepipe in the upper centre of the island and the third one in the southern coastal village of Mahebourg. Nine seeds, two at Mahebourg survey site, three at Curepipe survey site and four at Port Louis survey, started the initial recruitments. 93.5% of respondents admitted that the main reason they participated in the survey was to know their sexually transmitted diseases (STIs) status

with essentially HIV status, while 27.0% of survey respondents motivated mainly by the payment incentive and 6.5% for other reasons. After data cleaning and validation of the survey dataset, the 2020 PWID IBBS survey final sample size was 601 respondents.

#### 4.1.2 Recruitment performance by survey site and seeds

The recruitment distribution by survey sites was as follows; Port Louis survey site recruited 51.9% of the total survey respondents, Curepipe survey site enrolled 23.1% and Mahebourg survey site accounted for 25.0% of the total respondents. The percentage of recruits per seed ranged from the lowest performance of 3.8% of the total survey recruits from a seed at Curepipe, to the highest operation of 17.1% of recruits from a seed at Port Louis. See Table 1 below.

Each respondent was limited to a maximum number of 3 recruits, using three recruitment coupons. The minimum number of recruits per seed was 23 and the maximum was 103. The mean number of recruits per seed was 69 recruits and the median number of recruits was 68, that is, half of seeds had recruited below this number and half recruited above.

Table 1  
2020 IBBS survey among People Who Inject Drugs  
**Distribution of respondents per survey site**

SURVEY SITE	SEED ID no.	Number of recruits	% recruits by SEED	% recruits by SITE
Port Louis	1	44	7.3%	51.9%
	2	97	16.1%	
	3	103	17.1%	
	4	68	11.3%	
Curepipe	5	43	7.2%	23.1%
	6	73	12.1%	
	7	23	3.8%	
Mahebourg	8	86	14.3%	25.0%
	9	64	10.6%	

SURVEY SAMPLE	601	100.0%	100.0
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Participants in the 2020 IBBS survey had flocked to the survey sites from various regions of the Island, essentially from three districts, out of the nine districts in the country. The three districts were; Port Louis, in the northwest, Grand Port in the southeastern part and Plaines Wilhems in the centre of the Island. There was no recruitment from the districts of Rivière du Rempart.

Thus, the recruitment process in the eight districts were as follows; 45.9% of respondents were residents of the district of Port Louis, followed by residents of the district of Grand Port with 26.1%, then by the district of Plaines Wilhems, 22.5%. The remaining five other districts combined represented 5.5% of recruits in the survey.

Port Louis survey site had accommodated mostly residents of Port Louis, that is, 89.0% of this survey site recruits, followed 11.0% of its recruits who came from four other districts. Curepipe site had surveyed mainly residents of Plaines Wilhems, 96.3%, followed by residents of three other districts representing only 3.7% of this survey site recruits. Mahebourg survey site had examined essentially residents coming from the district of Grand Port and only one respondent from the district of Flacq.

Table 2  
2020 IBBS survey among People Who Inject Drugs  
**Distribution of respondents, by district and survey site**

District of residence of respondents	SITENAME			Total
	CUREPIPE	MAHEBOURG	PORT LOUIS	
Port Louis	0.7%	-	<b>89.0%</b>	<b>45.9%</b>
Pamplemousses	-	-	1.6%	0.8%
Rivière du Rempart	-	-	-	0.0
Flacq	-	0.6%	-	0.2%
Grand Port	0.7%	<b>99.4%</b>	-	<b>26.1%</b>
Savanne	2.2%	-	-	0.5%
Plaine Wilhems	<b>96.3%</b>	-	1.6%	<b>22.5%</b>
Moka	-	-	1.3%	0.7%
Black River	-	-	6.5%	3.3%
TOTAL	100.0% (n=135)	100.0% (n=157)	100.0% (n=309)	100.0% (n=601)

#### 4.1.3 Recruitment performance by survey wave

Figure 1 2020 IBBS survey among People Who Inject Drugs  
**Distribution of respondents, by recruitment wave**

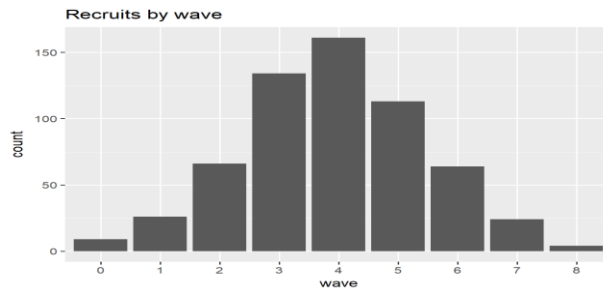
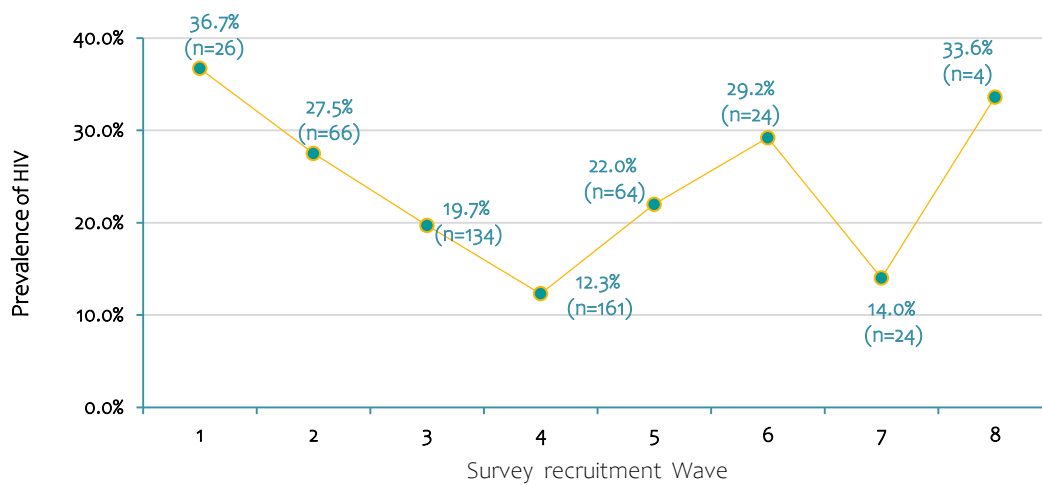


Figure 2  
2020 IBBS survey among People Who Inject Drugs  
**HIV prevalence, by recruitment wave**



#### 4.1.4 Characteristics of the survey seeds

In Respondent-Driven Sampling, although long chains of recruitment actually contribute to the unbiasedness and randomness of samples, the seeds for the 2020 IBBS among PWIDs have been chosen in attempting to optimize the representativeness of the different characteristics of people who injected drugs in the study. Thus, out of the nine seeds, four were HIV positive against five being HIV negative. Seven seeds were infected with hepatitis C, while three of them had syphilis or a history of syphilis. The age of the seeds ranged from a minimum of 22 years to a maximum of 65 years, with a mean age of 37 years and a median of 35 years.

## 4.2 Network of People Who Inject Drugs

The term “**network**” as used in the 2020 IBBS survey, can be understood as being “Injecting drug users aged 15 years or more who were living in the study area and because of the nature of their injecting



practice, they were interconnected as a group of members formed by reciprocal knowledge of members, with visual contact within members of the group in the last month preceding the 2020 IBBS survey.

Based on the above network definition, 37.5% of respondents in the survey reported they were part of different networks of less than ten injecting drug users. 27.4% were in networks of 10-29 injecting drug users, 17.2% in networks of 20-29 injectors and the rest (17.9%) in networks of 30 and more injecting drug users.

The overall, mean network size was 21 injecting drug users and the median was 10 injecting drug users. Analysis by survey site showed that the mean network size was 34 injecting drug users and the median 20 at Port Louis. Correspondingly, the mean network size and the median was 18 and 14 respectively at Mahebourg survey site. At Curepipe, the mean network size was 11 injecting drug users with a median of 8 injecting drug users.

Figure 3  
2020 IBBS survey among People Who Inject Drugs  
**Distribution of network size of PWIDs**

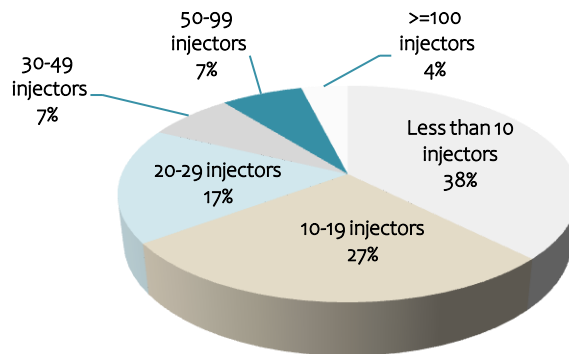


Figure 4  
2020 IBBS survey among People Who Inject Drugs  
**Mean network size of PWIDs**

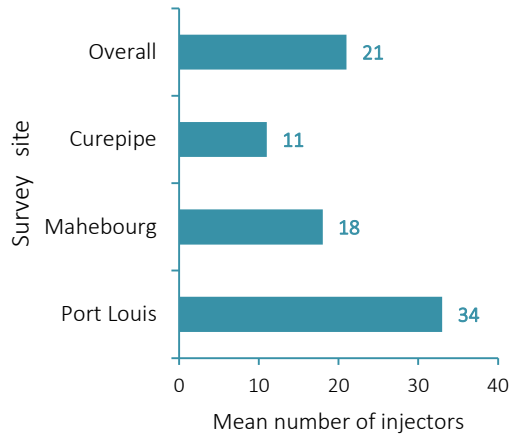
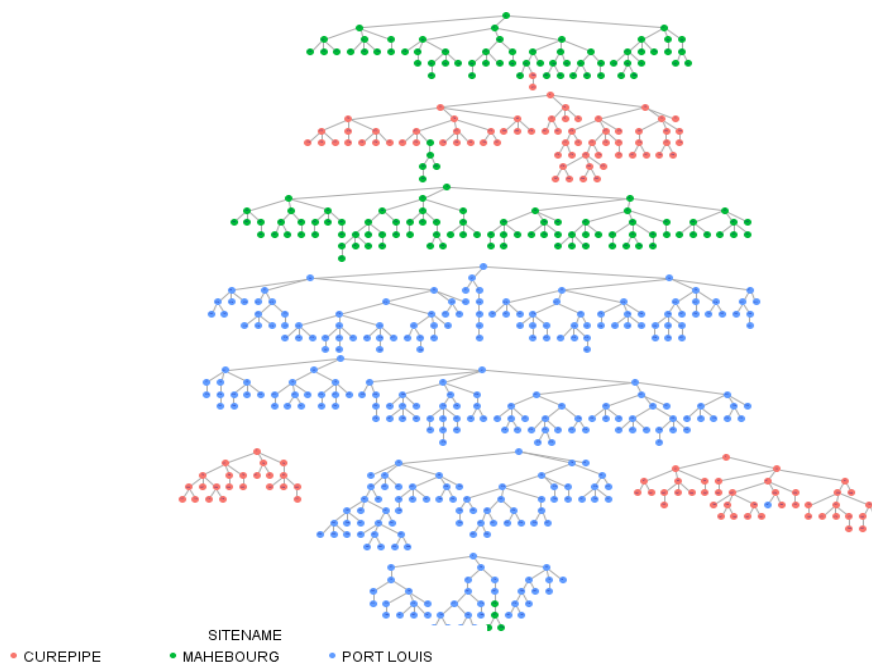


Table 3  
2020 IBBS People Who Inject Drugs  
**Network size of PWIDs, by age group**

Age group of respondents (Years)	Network size	
	Mean	Median
15-19**	33	15
20-24	16	10
25-29	21	10
30-39	20	10
40-49	22	15
50 years or more	21	10
<b>Overall</b>	<b>21</b>	<b>10</b>

\*\*Weak Sample size=7

Figure 5  
2020 IBBS survey among People Who Inject Drugs  
**Recruitment graph with nine seeds recruitment chains among 601 respondents**  
(by survey site)



Note: The seeds are the dots appearing on the top most position of each chain

## 4.3 Population size of People Who Inject Drugs

### 4.3.1 Population size in 2017 and 2020

In 2017, there were an estimated number of 6,000 people who were actively injecting drugs and an estimated 300 (new) PWIDs who started to inject drugs in a period of less than one year. In 2020, the IBBS study carried out in November/December, showed that people who were actively injecting drugs PWIDs within the six months prior to the survey date, amounted to a population size of roughly **6,600**, with corresponding 95% lower and upper bounds ranging between 5,600 – 7,900 active PWIDs. Estimate by gender gives 5,550 active male PWIDs, 977 active female PWIDs and 73 active Transgender PWIDs.

### 4.3.2 Methodology used for PWIDs Population Size calculation in 2020

As already explained in paragraph 3.6, in the absence of the most preferred “Multiplier Technique” method for estimating population size, an estimation method of population size of people who injected drugs in 2020 was developed. The methodology consisted of matching the 2020 IBBS survey indicator on

current Needle Exchange Program (NEP) users to routine service data on public and private NEPs. According to official M&E data from the Ministry of Health and Wellness, in 2020, nationally there were 2,453 PWIDS currently on the NEP. Combining the figure of **2,453** PWIDS currently on the routine NEP, with the corresponding 2020 IBBS indicator of **37.4% C.I (31.9, 44.0)** PWIDS currently on NEP, this gives an estimated population size of  $2,453/0.374 = 6,559$  PWIDS. Bounds for the estimate were calculated using the Gile's estimate for 95% confidence interval of *(31.0, 44.0)*, thus giving a lower bound of  $2,453/0.44=5,575$  PWIDS and an upper bound of  $2,453/0.31= 7,913$  PWIDS.

#### 4.3.3 Annual incidence (new comers) of People Who Inject Drugs in 2020

Based on the 2020 IBBS result, there were 3.8% PWIDS who had started the injecting practice in less than one year preceding the survey date. This gives roughly an estimated 251 injecting drug users who **"newly"** joined the population of People Who Inject Drugs in 2020 as compared to 300 new PWIDS in 2017. Bounds for the estimated number new PWIDS in 2020 lie between 215 and 301 new PWIDS.

Table 4  
2020 IBBS survey among People Who Inject Drugs  
Distribution of respondents, by NEP Utilization

NEP adherence status	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
Never heard of NEP	<b>11.4%</b>	6.7%	15.8%	3.56	0.0232	52
Heard but never attended	<b>34.5%</b>	28.6%	40.6%	2.79	0.0307	163
Attended but not currently on NEP	<b>16.7%</b>	12.4%	20.9%	2.25	0.0216	103
Currently on NEP	<b>37.4%</b>	31.0%	44.0%	3.15	0.0332	283
	<b>100.0%</b>				Total	601

## 4.4 Profile of people who injected drugs in 2020

### 4.4.1 Age, civil status and level of education of PWIDS in 2020

Very few injecting drug users in the age group 15-19 years attended the 2020 IBBS survey, only seven of them (0.7%). This made analysis for this age group statistically very weak. Age group representativeness for the survey was as follows; 20-24 years, 13.5%, 25-29 years 14.4%. 30-39 years, 33.3%, 40-49 years, 22.0% and those aged 50 years or more represented 16.1%. The overall mean age of PWIDS was 37 years and the median age 36 years. The minimum age recorded in the survey was 18 years and the maximum 71 years. Those under 25 years accounted for 14.3%.

Many injecting drug users were living in common, 29.6%. Never-married singles were also a significant component of injecting drug users with 29.1%, while those married civilly or religiously and widows accounted for 20.1% and 18.3% of respondents, respectively.

Regarding the level of education attained, although 99.2% reported they have ever attended school, only 28% have attained the primary education cycle, while 39.6% have not completed their secondary education cycle. In short, only 32.5% have a completed secondary education or above.

**Table 5**  
2020 IBBS survey among People Who Inject Drugs  
**Age group of respondents**

Age group of respondents	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
15-19 years	<b>0.7%</b>	0.1%	1.4%	1.10	0.00349	7
20-24 years	<b>13.5%</b>	8.9%	18.2%	3.22	0.02377	66
25-29 years	<b>14.4%</b>	10.5%	18.3%	2.12	0.01978	89
30-39 years	<b>33.3%</b>	27.0%	39.6%	3.06	0.03192	194
40-49 years	<b>22.0%</b>	17.3%	26.7%	2.26	0.02407	143
50 years or more	<b>16.1%</b>	10.2%	21.8%	4.33	0.02957	102
	<b>100.0%</b>				Total	601

**Table 6**  
2020 IBBS survey among People Who Inject Drugs  
**Civil status of respondents**

Civil status of respondents	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
Living in common	<b>29.6%</b>	23.6%	35.6%	3.01	0.0307	148
Single/ never married	<b>29.1%</b>	23.2%	34.8%	2.82	0.0295	171
Married civilly/ religiously	<b>20.1%</b>	15.0%	25.3%	2.85	0.0262	140
Divorced/ separate	<b>18.3%</b>	12.1%	24.4%	4.38	0.0313	118
Widow/ widower	<b>3.0%</b>	1.2%	4.8%	1.97	0.0092	24
Total	<b>100.0%</b>				Total	601

**Table 7 - 2020 IBBS survey among People Who Inject Drugs**  
**Level of education of respondents**

Level of education of respondents	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
Incomplete secondary	<b>39.6%</b>	33.1%	45.8%	2.87	0.0324	234
Complete primary	<b>28.0%</b>	22.9%	33.3%	2.28	0.0265	167
Secondary School Certificate	<b>12.3%</b>	9.5%	15.2%	1.26	0.0144	73
Incomplete primary	<b>11.1%</b>	8.0%	14.3%	1.72	0.0161	75
IVTB/ Other Training Institutions	<b>3.6%</b>	1.3%	5.9%	2.58	0.0117	18
Tertiary University	<b>3.2%</b>	-3.1%	9.6%	21.85	0.0323	7
HSC / GCE A level	<b>2.2%</b>	1.0%	3.4%	1.19	0.0062	17
	<b>100.0%</b>				Total	591

## 4.4.2 Gender characteristics of respondents (Male, female and Transgender)

### 4.4.2.1 Male and female PWIDs

84.1% of respondents were males against 14.8% females and 1.1% transgender. At Curepipe survey site female respondents accounted for 22.3% of the survey site recruits, whereas at Port Louis survey site female respondents stood at 14.0% of the survey site recruits and finally at Mahebourg survey site female participants constituted 5.7% of the survey site recruits.

Table 8 - 2020 IBBS survey among People Who Inject Drugs  
Distribution of respondents, by gender and survey site

Gender	Curepipe site			Mahebourg site			Port Louis site			Overall		
	Number	% (sample)	% (RDS estimate)	Number	% (sample)	% (RDS estimate)	Number	% (sample)	% (RDS estimate)	Number	% (sample)	% (RDS estimate)
Male	118	87.4%	77.7%	150	95.5%	90.9%	269	87.6%	85.6%	537	89.6%	<b>84.1%</b>
Female	17	12.6%	22.3%	6	3.8%	5.7%	35	11.4%	14.0%	58	9.7%	<b>14.8%</b>
Transgender	-	0.0%	0.0%	1	0.6%	3.4%	3	1.0%	0.4%	4	0.7%	<b>1.1%</b>
Total	135	100.0%	100.0%	157	100.0%	100.0%	307	100.0%	100.0%	599	100.0%	<b>100.0%</b>

The 2020 IBBS survey data indicate that there were no noticeable gender disparity as regards the age distribution of respondents and the distribution of level of education. However, for civil status of respondents, it was observed that singles represented only 6.2% among females as compared to 33.4% among males. Similarly, there were only 4.5% separated/divorced among females as compared to 20.8% among males. Also, those living in common were 54.5% among females as compared to 24.4% among males.

Table 9 - 2020 IBBS survey among People Who Inject Drugs  
Distribution of respondents, by gender and civil status

Civil status	Male			Female			Transgender			Overall		
	Number	% (sample)	% (RDS estimate)	Number	% (sample)	% (RDS estimate)	Number	% (sample)	% (RDS estimate)	Number	% (sample)	% (RDS estimate)
Never- married Single	165	30.7%	<b>33.4%</b>	4	6.9%	<b>6.2%</b>	1			170	28.4%	<b>29.1%</b>
Living in common	116	21.6%	<u>24.4%</u>	29	50.0%	<b>54.5%</b>	2			147	24.5%	<b>29.6%</b>
Married	126	23.5%	19.2%	14	24.1%	27.4%	-			140	23.4%	<b>20.1%</b>
Separated /Divorced	110	20.5%	<u>20.8%</u>	7	12.1%	<u>4.5%</u>	1			118	19.7%	<b>18.2%</b>
Widow	20	3.7%	2.2%	4	6.9%	7.4%	-			24	4.0%	<b>3.0%</b>
Total	537	100.0%	100.0%	58	100.0%	100.0%	4	100.0%	0.0%	599	100.0%	<b>100.0%</b>

#### 4.4.2.2 Transgender PWIDS

Four transgender (TG) PWIDs participated in the 2020 IBBS study, constituting 1% of the survey sample of 601 PWIDs. All four TG PWIDs were in the age band 30-49 years and all had 10 or more of injecting practices. Three out them had shared previously-used needles/syringes at the last time they injected drugs, while only one had sex with a commercial sex partner in last three months. All four TG PWIDs had ever gone through HIV tests and all had received post-test counseling. Three of them were on the Needle Exchange Program. All four TG PWIDs were co-infected with HIV and hepatitis C. Two were co-infected with HIV, hepatitis C and syphilis.

### 4.5 Non-injecting drug use

The majority of respondents had ever used non-injecting drugs, 90.4%, *C.I (86.3, 94.4)*. Among male respondents, 94.4% had ever used non-injecting drugs against 66.7% among female respondents. 17.4% had started with non-injecting drug use when they were still under the age of 15 years, but most, 56.8%, had started with this practice in the age group 15-19 years. Those who had their first non-injecting drugs at the age of 20 years and above, represented 25.9%. The mean age at first non-injecting drug use was 18 years (*Male, 18 Years, female, 20 years*), with a median age of 17 years (*Male, 17 Years, female, 19 years*).

Table 10 - 2020 IBBS survey among People Who Inject Drugs  
Age group of respondents at first non-injecting drug use

Age group at first non-injecting drug use	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
Under 15 years	<b>17.4%</b>	12.3%	22.4%	2.87	0.0258	108
15-19 years	<b>56.8%</b>	50.0%	63.4%	2.92	0.0341	336
20-24 years	<b>16.8%</b>	11.5%	22.2%	3.28	0.0273	75
25 years or more	<b>9.0%</b>	4.8%	13.3%	3.53	0.0217	40
	<b>100.0%</b>				Total	559

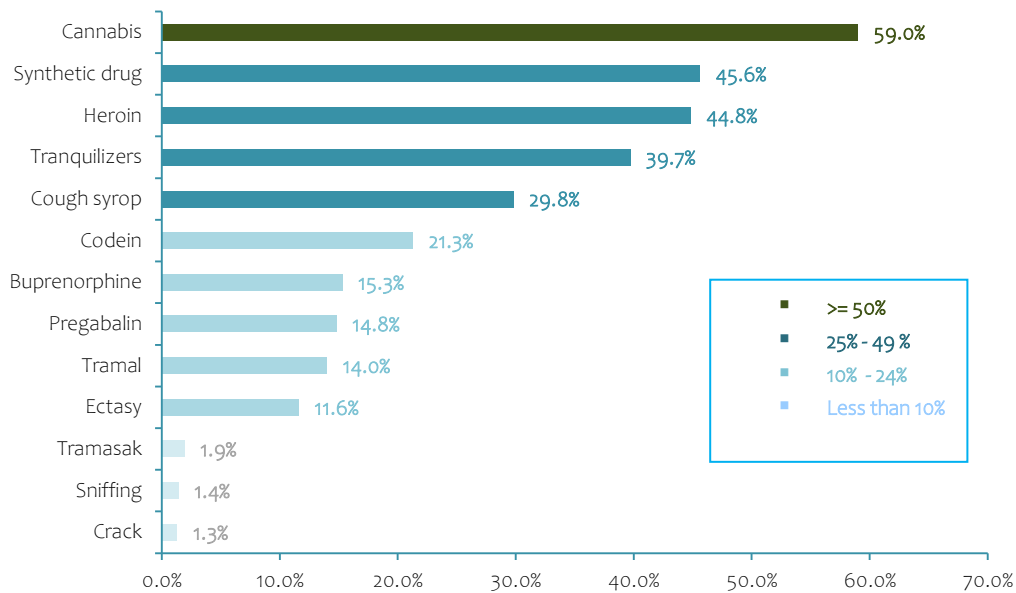
Among those who had ever used non-injecting drugs, 89.2% *C.I (84.0, 94.5)* were still taking non-injecting drugs in the last three months prior to the 2020 IBSS survey (*89.9% among males, 83.0% among females*). The most popular non-injecting drug used in the last three months before the survey, was cannabis, 59.0%. The second group of most important non-injecting drugs used consisted of, synthetic drugs, heroin, tranquilizers and cough syrup, that is, used by 25% - 49% of respondents. The third non-injecting drugs mostly consumed by 10% - 24% of respondents, were codeine, buprenorphine, pregabalin, tramal and ecstasy. Finally, less than 10% of respondents were using tramasak (1.9%), crack (1.3%) and sniffing glue (1.4%). **See Figure 6 below**

Table 11 - 2020 IBBS survey among People Who Inject Drugs  
Respondents who had used non-injecting drugs, in last three months

	Point	95%	95%	Estimated	Standard	Sample
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	Estimate	Lower Bound	Upper Bound	Design Effect	Error	Size
No	10.8%	5.5%	16%	4.6	0.0267	62
Yes	89.2%	84.0%	94.5%	4.6	0.0267	499
	100.0%				Total	561

Figure 6  
 2020 IBBS survey among People Who Inject Drugs  
 Non-injecting substances used by respondents, in last three months  
 (% respondents), n=561



#### 4.6 The shift from an exclusive non-injecting drug use to injecting drug use

The 2020 IBBS study had revealed that, in their history of drug consumption, 22.5% of active injecting drug users had in fact moved from an exclusive use of non-injecting drug to injecting drug practice in a period of less than a year. 13.2% had generally taken one year to shift from non-injecting to injecting use, while 52.1% spent 2-10 years in using solely non-injecting drug use before starting with injecting drug practice. It is to be noted that only 5.8% of injecting drug users have actually started with injecting practice before using non-injecting drug method. (Table A below gives details of non-injecting to injecting for year 2020. Table B shows the consistency of this indicator throughout the three past IBBS surveys in Mauritius.



Table 12  
2020 IBBS survey among People Who Inject Drugs  
**Estimate for interval (years)  
between first non-injecting and first injecting drug use, in 2020**

Interval (years) between first non-injecting and first injecting drug use	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
Non-injecting to Injecting drug use in <u>Less than one year</u>	<b>22.5%</b>	17.1%	28.0%	2.73	0.0278	110
Non-injecting to Injecting drug use <u>after One year</u>	<b>13.2%</b>	9.9%	16.6%	1.59	0.0172	88
Non-injecting to Injecting drug use after <u>2-10 years</u>	<b>52.1%</b>	45.2%	59.0%	3.06	0.0352	295
Non-injecting to Injecting drug use after <u>more than 10 years</u>	<b>6.4%</b>	3.3%	9.5%	2.59	0.0158	33
Started with injecting drug <u>before using non-injecting drug</u>	<b>5.8%</b>	2.3%	9.3%	3.64	0.018	33
	<b>100.0%</b>				Total	559

Table 13  
2020 IBBS survey among People Who Inject Drugs  
**Distribution of respondents, by interval (years) between first Non-injecting and first Injecting drug use**

(IBBS 2013, 2017 & 2020)

Interval (years) between first non-injecting and first injecting drug use	IBBS studies		
	2013**	2017	2020
Started injecting <u>in less than one year after</u> having started non-injecting drugs	16.9%	15.3%	22.5%
Started injecting <u>one year after</u> having started non-injecting drugs	15.3%	12.2%	13.2%
Started injecting <u>2 - 10 years after</u> having started non-injecting drugs	56.3%	58.1%	52.1%
Started injecting <u>more than 10 years after</u> having started non-injecting drugs	6.8%	8.4%	6.4%
Had started with injecting drug practice before non-injecting practice	4.8%	6.0%	5.8%
Total	100.00%	100.00%	100.00%
**Unpublished			

## 4.7 Injecting drug use

### 4.7.1 Age at the first injecting drug experience

The 2020 IBBS survey showed that nearly three quarter of injecting drug users started with injecting practices in the age band of 15-24 years. In fact, the most popular age group for starting injecting drug use was 15-19 years, 46.3%. Those who started injecting when they were still under the age of 15 years, accounted for only 4.9%. In short, 79.4% started to inject drugs before reaching the age of 25 years against 20.6% starting at 25 years or above.

Table 14  
2020 IBBS survey among People Who Inject Drugs  
**Age group of respondents at first Injecting drug use**

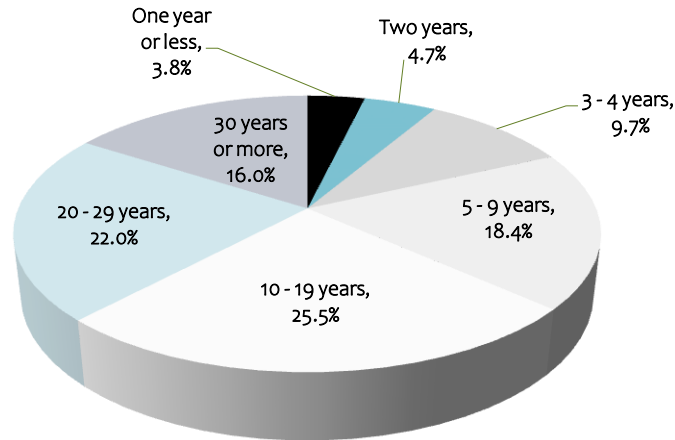
Age at first drug injecting use	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
Under 15 years	<b>4.9%</b>	2.2%	7.6%	2.7	0.0137	26
15-19 years	<b>46.3%</b>	39.9%	52.6%	2.79	0.0322	298
20-24 years	<b>28.2%</b>	22.7%	33.7%	2.6	0.0281	164
25-29 years	<b>11.6%</b>	7.2%	15.9%	3.19	0.0221	67
30-39 years	<b>7.5%</b>	4.3%	10.8%	2.68	0.0167	37
40 years or more	<b>1.5%</b>	0.4%	2.7%	1.63	0.0061	9
	<b>100.0%</b>				Total	601

#### 4.7.2 Duration on injecting drug practice

The mean age at first injecting drug experience, was 21 years with a median of 19 years. The minimum starting age recorded was 11 years, while the maximum starting age was 48 Years. Consequently, it was observed that an average injecting drug user actually stayed about 16 years on injecting drug use, with a median duration of 14 years. Male respondents stayed on injecting drug practice on average for 17 years against 12 years for female respondents. Median duration on injecting drug use was 15 years for males and 14 years for females.

Respondents who started injecting drugs since only one year ago, "new users", accounted for 3.8%. Those with two years duration on injecting drug use stood at 4.7%. Respondents with 3-9 years of drug injection represented 28.1%, while those with 10 years or more of injecting drug practice made up 63.4% of the 2020 IBS study subjects.

Figure 7  
2020 IBBS survey among People Who Inject Drugs  
**Distribution of the duration (years) of respondents on injecting drug practice**



#### 4.7.3 Other aspects of injecting drug practice [Injecting drug initiation, type of substances used, frequency, place and means of injections,]

Just around half of people who actively injected drugs in 2020 were initiated to injecting drug use by a friend against 36.4% on their own, while 12.3% were initiated by other persons. Among male respondents, 49.8% were initiated by friends against 64.1% among female respondents, whereas 37.3% male respondents started injecting drug use on their own against 27.1% among female injecting drug users. However, in 2020 IBBS survey, when respondents were asked about who usually injected their drugs, 88.8% answered they did so by themselves, 5.9% answered by friends, 1.5% by peer injectors and 3.8% by other unspecified persons.

Most injecting drug users usually injected at home, 67.4%, followed by unoccupied land and under bridges 25.8% and other places, 6.8%, such as, public toilet and other unspecified location, including multi-place.

Furthermore, in the last three months, preceding the 2020 IBBS survey, almost all, 99.2%, were injecting heroin. Most respondents had injected on a daily basis, 69.4%, while 22.5% injected once in a particular day, 42.3% injected twice in a particular day, 31.0% injected 3-4 times on a particular day and finally only 4.2% injected more than 4 times on a particular day.

The majority, 94.8%, of respondents in the 2020 IBBS survey had injected drugs one week prior to the respective dates they were interviewed. In addition, 90.8% of respondents reported they had used sterile equipment at the last time they injected drugs.

Table 15  
2020 IBBS survey among People Who Inject Drugs  
**Utilization of sterile equipment at the last time injecting drug use**

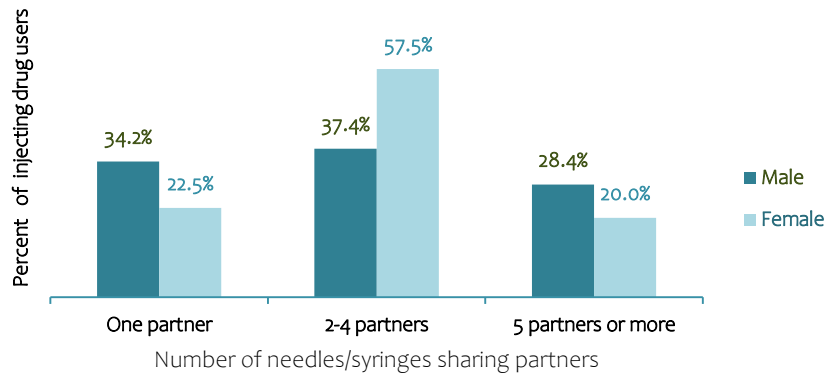
Use of sterile equipment	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
No	<b>9.2%</b>	5.7%	12.8%	2.58	0.018	48
Yes	<b>90.8%</b>	87.2%	94.3%	2.58	0.018	553
	<b>100.0%</b>				Total	601

## 4.8 Behaviors towards injecting equipment

47.3% *C.I (40.5, 53.6)* of respondents had never shared needles and/or syringes previously used by someone else, 43.5% had shared, but not during the last injection and only 9.2% had shared at the last time they injected. Among those having shared previously-used needles/syringes, nearly half had shared in less than three months prior to the 2020 IBBS survey; while 35.0% had shared more than one year ago. 16.1% had shared between 3-10 months ago.

In the last three months preceding the 2020 IBBS survey, among those who had shared previously used needles/syringes, 34.9% had done so at every time they injected or most of the time and 57.1% for half of the time they injected. The rest, 8.1%, either had shared occasionally or could not remember. During the same period, among those who had used needles/syringes, 32.2% had only one sharing partner, 41.3% had 2-4 partners and 26.5% had 5 partners or more. The mean number of sharing partners was 4 partners, with a median of 3 partners. The minimum number of sharing partners recorded was one partner against the maximum number of 30 partners. Data show that, in the last twelve months, the mean number of previously-used needles/syringes sharing partners was 12 partners with a median of 4 partners.

Figure 8  
2020 IBBS survey among People Who Inject Drugs  
**Distribution of respondents,  
by needles/syringes sharing partners and sex, in last three months**



The average number of times previously-used needles/syringes have been shared with one partner, in a year, was 22 times (22 for males and 18 for females).

In the last three months, half of injecting drugs users had not shared any paraphernalia, while 32.9% had shared at every time or most of the time they injected (*31.1% among males, 46.4% among females*), 8% had shared for half the time and 8.6% either occasionally or did not remember.

In the past three months, while injecting drugs users had cleaned their previously used needles/syringes, half had used cold water as the cleaning method, 40.4% had used hot water or boiling method and the remaining 9.4% had used either bleaching agent or vinegar or other unspecified means.

## 4.9 Access to injecting equipment

All respondents in the 2020 IBBS survey knew persons or places where they can obtain new needles/syringes and almost all, 99.0% reported they can obtain the equipment whenever they needed them. Places where respondents answered they could actually obtain new needles/syringes were as follows; Pharmacies 97.2%, Needle Exchange Program (NEP), 63.3%, from other injecting drug users, 48.8%, in buying from streets, 46.4%, health workers, 45.0%, social drug workers, 41.8% , friends, 40.2%, sexual partners, 24.2%, drug dealers, 12.8% and finally from families 9.8%.

Regarding places where they **most often** get their new needles/syringes, the distribution of respondents was as follows; Pharmacies, 63.3%, NEP, 22.0%, while all other means combined constituted 14.6% of respondents, with each means respectively less than 4% each. Figure 9 below compares the known places to the places most utilized by injecting drug users to obtain new needles/syringes.

Figure 9 **Distribution of respondents, Known versus mostly utilized places to obtain new needles/syringes**



#### 4.10 Utilization of Needle Exchange Program [NEP]

In 2020, 88.8%, C.I (84.3, 93.2) of PWIDs had ever heard of the Needle Exchange Program (NEP) and among those, 61.1% had ever attended the NEP. Among PWIDs who had ever attended NEP only 69.2% were currently on the program, which gave an overall prevalence of 37.4% C.I (31.9, 43.0) of PWIDs that were currently on the NEP (38.9% among male respondents, 24.9% among female respondents). NEP coverage by survey site, showed that Port Louis has the highest coverage of 65.7%, followed by Mahebourg, 34.2% and finally Curepipe with 14.9%.

In short, overall, 11.3% of PWIDs never heard of NEP, 34.5% had heard of NEP but never attended the program, 16.8% attended NEP but was not currently on the program and finally 37.4% were currently on NEP.

Figure 10  
2020 IBBS survey among People Who Inject Drugs  
Distribution of respondents, by NEP utilization

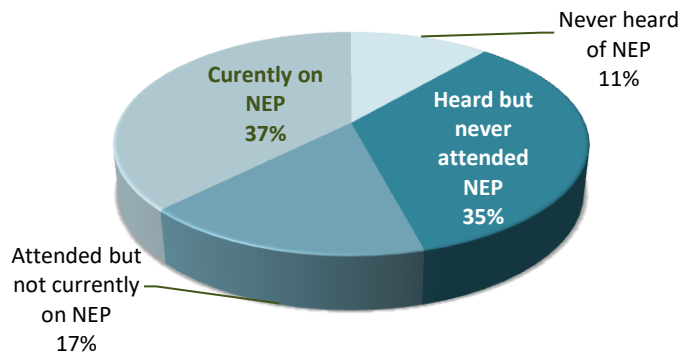


Figure 11  
2020 IBBS survey among People Who Inject Drugs

### Distribution of respondents, by NEP utilization and sex

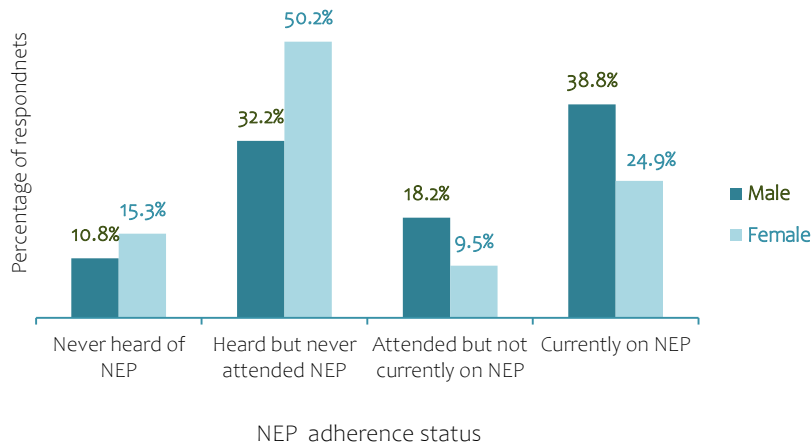


Table 16  
2020 IBBS survey among People Who Inject Drugs  
Distribution of respondents, by NEP Utilization

NEP adherence status	Point Estimate	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
Never heard of NEP	11.4%	6.7%	15.8%	3.56	0.0232	52
Heard but never attended	34.5%	28.6%	40.6%	2.79	0.0307	163
Attended but not currently on NEP	16.7%	12.4%	20.9%	2.25	0.0216	103
Currently on NEP	37.4%	31.0%	44.0%	3.15	0.0332	283
	100.0%				Total	601

51.2% of PWIDs either had heard of NEP but never attended the program or had attended NEP but was not currently using it (See Table 16 above). Among this group, most, 37.7% were buying their own injecting equipment from pharmacies. 32.2% of PWIDs were too busy to follow NEP, while, 28.6% were simply not interested and 22.6% found the NEP site too far. On the other hand, 7.9% were obtaining injecting equipment from friends or peers. Other reasons that were stated for not using the NEP were, stigmatization, 4.6%, still on methadone, 4.0% and Police in the vicinity, 3.3%.

## 4.11 Overdose

15.1% *C.I* (11.1, 19.1) of respondents reported they ever had an overdose (16.2% among males and 10.1% among females). However, the most popular sign or symptom of overdose experienced by injecting drug users, was reported to be dizziness (63.4%) which is not specific *C.I* (56.8, 70.3) with almost the same prevalence observed for both sexes. The second overdose sign or symptom stated was seizures/fits, 54.8% (53.1% among males and 36.7% among females). Other signs and symptoms were as follows; nausea,

26.1%, abdominal pain, 24.3%, stroke, 24.3%, sweating, 13.3%, diarrhea, 3.8% and violent or erratic behaviors, 3.1%.

## **4.12 Sexual history and sexual partners**

### **4.12.1 Number sexual partners and frequency of sexual acts**

98.7% of respondents have ever had sexual intercourse. Most of them 65.5% had their first sexual experience in the age group 15-19 years even if nearly one quarter already had first sex when they were still under 15 years of age. 10.2% had this first experience at the age of 20 years or more. The mean age at first sexual intercourse for PWID was 16 years (Male,16 and female,15) with a median of 16 years as well. The minimum age at first sex was 8 years and the maximum 36 years.

60.7% of respondents had sexual intercourse in the last three months preceding the survey and another 14.6% had sexual intercourse between 3 to 11 months preceding the survey. 24.8% did not have any sexual intercourse in the last 12 months. In short around three quarter (75.2%) of respondents had sexual intercourse in the last 12 months.

The mean number of sexual partners in the last three months was 4 partners with median one partner. In fact, 68.3% had one sexual partner, 23.6% had 2-4 partners and 8.2% had 5 partners or more. In the last three months, the average sexual acts, was 28 sexual acts per partner. The mean number of sexual partners in the last twelve months was 9 sexual partners.

### **4.12.2 Male sexual partners among male injecting drug users**

12.9% (n=77) of people who injected drugs in 2020 ever had male sexual partners and among them 17.9% had anal sex in the last 12 months. Among the 17.9% (n=13) who had anal sex in the last 12 months, 58.3% (n=8) had anal sex with only one male partner against 41.7% (n=5) who had anal sex with two male partners.

### **4.12.3 Non-paid (regular) sexual partners**

In the last three months, among injecting drug users who had sex, on average they had one non-paid sex partner, (median= 1). Male injectors had an average of one non-paid sex partner and female injectors also had the same number. In fact, among 60.7% who had sex in the last three months, 83.1% had only one non-paid sex partner (80.6% among males, 92.8% among females).



#### **4.12.4 Commercial sexual partners**

In the last three months, injecting drug users who had sex, had 4 commercial sex partners on average, (median=2). Male injectors had an average two commercial sex partners and female injectors had ten commercial sexual partners. In fact, among 60.7% of respondents who had sex in the last three months, 30.4% had commercial sex with only one partner (30.7% among males, 29.7% among females), **25.1%** had commercial sex with two partners (27.4% among males, 11.1% among females) and 22.3% had commercial sex with three partners (24.5% among males, 10.8% among females). The remaining 21.1% had commercial sex with 4 or more partners. The minimum was one commercial sex partner and the maximum was 85 commercial sex partners.

### **4.13 Condom use**

#### **4.13.1 Condom use among regular or non-regular sex partners**

The last time respondents had sex with paid or non-paid partners, only 28.2% had used condoms, 29.1% among male respondents, 25.1% among female respondents.

#### **4.13.2 Condom use and regular (non-paid) sex**

Condom use with regular (non-paid) sex partners stood at 24.1%, 27.2% among male respondents, 13.5% among female respondents. The main reasons for not using condoms during non-paid sex were, firstly, it was not pleasurable for the injecting drug user himself/herself, 55.0%, secondly, the respondent did not think it was necessary or did not think of it at all, 44.4%, thirdly it was not pleasurable for the partner, 37.8%, fourthly the respondent trusted the partner, 23.2%, the fifth reason was that condom was not available, 20.1% and finally 2.3% found it too expensive and 1.3% were using contraceptives. *[Note that multiple answers were given and do not add up to 100.0%]*

#### **4.13.3 Condom use and non-Regular commercial sex**

Condom use with non-regular commercial sex partners stayed at 44.9%, 38.6% among male respondents, 73.9% among female respondents. The main reasons for not using condoms during commercial sex were; firstly, it was not pleasurable for the respondent, 51.2%, secondly, it was not pleasurable for the client, 37.4%, thirdly, condom was not available, 30.9%, fourthly, the respondent did not think it was necessary or did not think of it at all, 22.0%, the fifth reason was that the respondent trusted the client or believed the client was not infected, 16.9%, while 1.5% was using contraceptives and 0.02% was drunk. *[Note that multiple answers were given and do not add up to 100.0%]*

#### **4.13.4 Female condom use**

Female condom use among male respondents was very low, 6.3%, as compared to 38.8% among female respondents. Overall female condoms were 11.1%. Among those who had used condoms, the last female condom was obtained at pharmacies, 22.6%, NGOs, 25.0%, at health centers, 24.9%, with NEP caravans, 12.0%, at VCT centers, 6.6%, at rehabilitation centers, 5.6% and at NGO PILS, 2.3%.

Injecting drug users who did not use female condom mentioned that it was because it was not available, 34.4% or the sex partners did not like it, 33.2%. 20.3% never heard of it, 16.7% preferred male condom and 11.1% were not comfortable with female condom.

#### **4.13.5 Male condom use**

97.6% of injecting drug users knew places or persons in order to get male condoms. The main places to get male condoms were; at pharmacies-88.4%, NEP caravans-36.0%, NGOs-29.5%, shops-23.4%, friends-3.6%, VCT centres-12.8%, bar-1.0% and dispensing machines-0.6%.

### **4.14 HIV knowledge and attitudes**

Based on an algorithm of five questions; correct knowledge on HIV among PWIDs was estimated to be 36.0%. Correct knowledge of HIV was 53% at Port Louis survey site, 29% at Curepipe site and 25% at Mahebourg site, while overall correct knowledge was, 36.0%.

Regarding attitude towards HIV infection risk, 29.6% of respondents were convinced they had no risk about HIV infection, against 22.0% who believed they were at high risk of HIV infection, while 27.5% had expressed a low-risk attitude towards HIV infection. 20.2% believed they were at medium risk of being HIV infected.

Among PWIDs who felt at risk, the majority, 75.2% claimed that injecting drug use was the main reason of their attitude towards HIV infection risk. The reasons for feeling at risk of HIV infection among the remaining 24.8% PWIDs, were; "multiple sex partners", 11.8%, "not always using condoms", 4.9%, "sexual relationship with PWIDs, 4.3% and finally 3.9% for other reasons. Among PWIDs who did not feel at risk, the main reason was that they had respectively one faithful partner.

### **4.15 HIV testing service, treatment and counseling**

#### **4.15.1 HIV testing service and counseling**

In 2020, 84.9% *C.I (80.1, 89.7)* of PWIDs had ever been tested for HIV as compared to 81.7% in 2017. Among the 15.1% of PWIDs who have never had an HIV test, 40.7% believed they had no risk and were convinced of still being HIV negative, while 18.0% were afraid of being seen by other people during test.

Cost, time and distance did not appear to be real obstacles to have access to HIV testing. On the other hand, 60.5% of PWIDs had been tested for HIV, in the last 12 months preceding the 2017 survey.

Among the 84.9% of PWIDs who had ever been tested for HIV, 70.6% had received pre-test counseling before their respective last HIV tests.

Among the 84.9% of PWIDs who had ever been tested for HIV, the tests were voluntary for 93.2% of them, while 89.8% of those who have ever been tested for HIV had received their test results.

Among the 84.9% of PWIDs who had ever been tested for HIV, 10.2% did not find out any test results, out of whom, 19.4% were afraid to know the results, 12.7% were still waiting for the results and finally, 12.5% had to come back for results.

Among those who had ever been tested for HIV and who had received the test results, 81.1% had received post-test counseling.

Among PWIDs who had ever been tested for HIV and who had received the test results, the majority, 83.9%, accepted to disclose their HIV status during the survey, out of whom, 14.9% *C.I (8.6, 21.0)* stated they were HIV positive.

92.2% of those who had disclosed their HIV positivity, reported they were on ARV treatment and among this group (n=69) , 48.2% were attending the day care centre (NDCCI) every month, while, 11.3% did so every 3 months and finally 40.5% were attending the NDCCI every 6 months.

#### 4.15.2 Treatment

Nearly half of PWIDs, 49.5%, had ever received treatment or psychological support because of injecting drug use, out of whom, 73.5% were currently under treatment because of drug injection. Among those who were currently under treatment, methadone maintenance was the most popular treatment, 80.4%, followed outpatient counseling, 56.4%, then by detoxification, 12.8%, self-help group, 12.5%, residential rehabilitation, 6.0% and other treatment, 4.9%. Apart from substitution and psychological support, 12.3% of PWIDs were suffering or had ever suffered from other kinds of injecting-drug-related medical problems, out of whom, 27.1% had suffered from abscess.

## 4.16 Analysis of disease trend among PWIDs

### 4.16.1 Evolution of HIV among PWIDs (2011-2020)

HIV prevalence among PWIDs decreased from 51.6% in 2011 to 32.4% in 2017, that is, a decrease of 37.2% during that period. From 2017 to 2020, HIV prevalence further decreased by 34.6% from 32.4% *C.I (21.1, 44.0)* to 21.2% *C.I (15.4, 27.1)* respectively. Thus, for the 9-year period 2011-2020, HIV decreased by 58.9%, that is from 51.6% to 21.2%, respectively. During the same period, male HIV prevalence decreased by 63% and female HIV prevalence also decreased by 63%. **Note that the confidence intervals C.I given above for**

**HIV prevalence 2017 & 2020 overlap, meaning that statistically the difference between 2017 and 2020 is not statistically different. The reason is that the confidence interval for 2017 was quite large.**

#### 4.16.2 Evolution of HIV among PWIDs (2011-2020), by sex

Among male PWIDs, HIV prevalence moved from 49.2% in 2011 to 33.2% in 2017, giving a percentage decrease of 33% between 2011 and 2017, while female PWIDs HIV prevalence, for the same period, decreased by 67%, that is, from 85.5% to 28.5% respectively.

From **2017 to 2020**, HIV prevalence among male PWIDS decreased by 44.6%, from 33.2% in 2017 to 18.4% in 2020, whereas among female PWIDS the contrary was observed, that is, a percentage increase of 10.5% from 28.5% in 2017 to 31.5% in 2020. Thus, for the 6-year period 2011-2017 HIV prevalence decreased significantly for both sexes and for the period 2017-2020, male HIV prevalence continued to decrease in contrast to female HIV prevalence where a setback is observed. **See Figure 12 below and Table 17 & 18 below.**

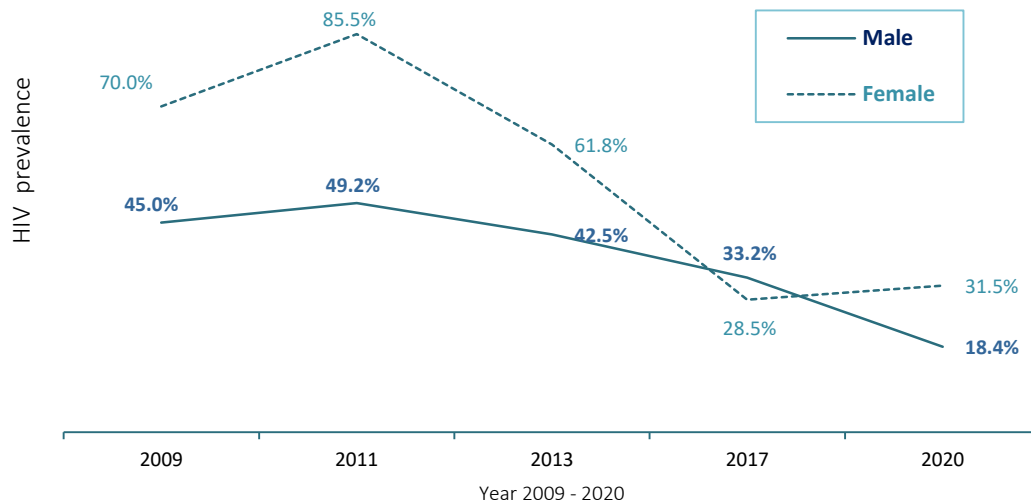
Table 17 - 2020 IBBS survey among People Who Inject Drugs  
Trend of HIV prevalence among PWIDs, by sex, 2011 - 2020

	2011			2017			2020		
	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes
<b>HIV Prevalence</b>	49.2%	85.5%	<b>51.6</b>	33.2%	28.5%	32.4%	18.4%	31.5%	<b>21.2%</b>

Table 18 - 2020 IBBS survey among People Who Inject Drugs  
Percentage change of HIV prevalence among PWIDs, by sex, 2011 - 2020

	2011-2017 (6-year period)			2017-2020 (3-year period)			2011- 2020 (9-year period)		
	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes
<b>Percentage change in HIV prevalence</b>	-33%	-67%	<b>-37%</b>	-45%	<b>+11%</b>	<b>-35%</b>	<b>-63%</b>	<b>-63%</b>	<b>-59%</b>

Figure 12  
2020 IBBS survey among People Who Inject Drugs  
Trend of HIV prevalence among PWIDS, by sex  
2009 - 2020



#### 4.16.3 Evolution of Hepatitis C among PWIDs (2009 - 2020)

From 2009 to 2013, hepatitis C has remained highly prevalent (above 95%) among PWIDs. In 2017, a slight decrease of about 9% was nevertheless observed, with a prevalence of 88.8%. In 2020, prevalence of Hepatitis C among PWIDs was still very high, 89.2% C.I (85.5, 92.8). See Table 19 below. In 2020, Hepatitis C prevalence among male PWIDs was 89.3% against 87.7% among females.

#### 4.16.4 Evolution of syphilis (2011-2020)

Prevalence of syphilis among PWIDs, which was 5.5% in 2011, has moved to 8.0% in 2017, that is, a percentage increase of 45% between 2011 and 2017. In 2017, the prevalence of syphilis was particularly significant female PWIDs, 17.4% as compared to 5.9% in male PWIDs in the same year. In 2020, syphilis slightly increased by 23.8%, from 8.0% in 2017 to 9.9% C.I (2.8, 7.3) in 2020. Thus, for the 9-year period 2011-2020, syphilis has increased by 80% among PWIDs.

In 2020, as well, the prevalence of syphilis was particularly sizable among female PWIDs, 19.2% as compared to 7.3% in male PWIDs. Most syphilis cases were secondary ones and few were treated cases

Figure 13  
 2020 IBBS survey among People Who Inject Drugs  
**Trend of Syphilis prevalence among PWIDS, by sex  
 2013 - 2020**

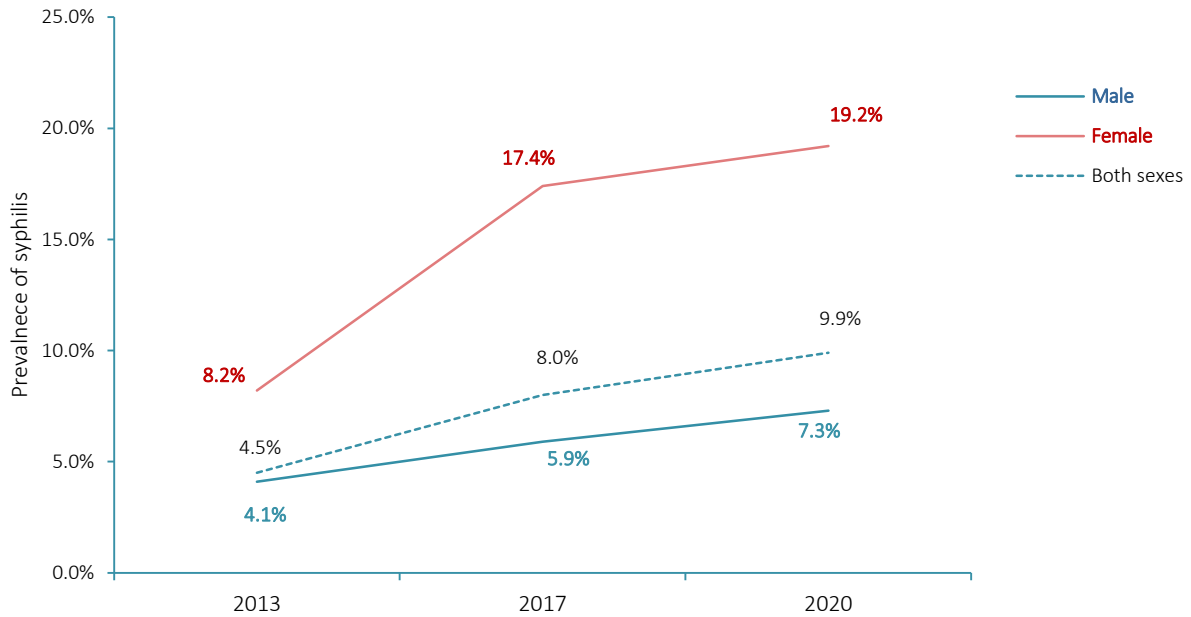


Table 19 below gives a summary of trend of diseases, namely HIV, Hepatitis B, Hepatitis C and syphilis, among PWIDS from 2009 to 2020.

Table 19  
 2020 IBBS survey among People Who Inject Drugs  
**Summary of trend of diseases among PWIDS, 2009 – 2020**

Disease	Prevalence of disease				
	2009	2011	2013**	2017	2020
HIV	47.4%	51.6%	44.3%	32.4%	<b>21.2%</b>
Hepatitis C	97.3%	95.8%	96.5%	88.0%	<b>89.2%</b>
Syphilis	2.7%	5.5%	No data	8.0%	<b>9.9%</b>
Hepatitis B	9.0%	7.0%	6.7%	1.4%	<b>0.7%</b>

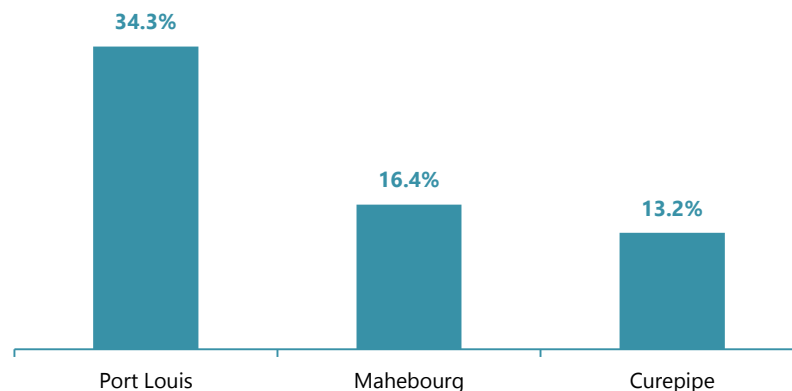
\*\*Unpublished

## 4.17 Disease prevalence among PWIDs

### 4.17.1 HIV infection in 2020

- HIV prevalence in 2020 was 21.2%, C.I (15.4%, 27.1%). It was 18.4% among male PWIDs and was 31.5% among female PWIDs.
- HIV prevalence among PWIDs aged less than 25 years was 9.8% against 23.1% among those aged 25 years and above. It was 10.2% among PWIDs aged 20-24 years, 10.0% among those aged 25-29 years, 16.3% among 30-39 years, 35.9% among 40-49 years and finally 31.4% among PWIDs aged 50 years or more.
- HIV infection was found most prevalent among PWIDs who attended the survey site at Port Louis, that is, 34.3%. At Curepipe survey site HIV prevalence was 13.2% and at Mahebourg survey site it was 16.4%.

Figure 14 - 2020 IBBS survey among People Who Inject Drugs  
HIV prevalence among PWIDs, by survey site



- Among PWIDs who had shared previously-used needles and/or syringes at the most recent injection, those who had shared previously-used needles and/or syringes, but not at the last injection, the HIV prevalence was 27.4%. Among those who had shared at the last injection, 43.6% were tested positive with HIV. Among those who reported they had never shared previously-used needles and/or syringes, HIV prevalence was 11.2%.
- The highest infection rate, by duration on injecting drugs, was for those between 20-29 years of drug injection and those with 30 years or more of drug injection, that is, HIV prevalence of 39.3% and 33.3% respectively. For those having less than five years of drug injection, the HIV prevalence was 8.7%, against 24.0% for those having five years or more of drug injection.

**Table 20**

Estimate for HIV among PWIDs having less than 5 years of injecting practices

	<b>Point Estimate</b>	95% Lower Bound	95% Upper Bound	Estimated Design Effect	Standard Error	Sample Size
Negative	91.3%	80.8%	101.7%	3.52	0.0532	85
Positive	8.7%	-1.7%	19.2%	3.52	0.0532	6
					Total	91

**Table 21**

Estimate for HIV for among PWIDs having 5 years or more of injecting practices

	<b>Point Estimate</b>	<b>95% Lower Bound</b>	<b>95% Upper Bound</b>	<b>Estimated Design Effect</b>	<b>Standard Error</b>	<b>Sample Size</b>
Negative	76.0%	69.8%	82.2%	3.13	0.0318	348
Positive	24.0%	17.8%	30.2%	3.13	0.0318	159
					Total	507

- Among HIV positive PWIDs, 49.4% had used condom at the time they had sex. Among HIV negative PWIDs 23.0% had used condom at the most recent time they had sex.
- Among PWIDs who had used condom at the last time they had sex, 31.4% were infected with HIV and among those who had not used condom HIV prevalence was 14.3%.
- Analysis of HIV by civil status of PWIDs shows that those widows or widowers at much higher risk with a prevalence of 43.2%. The lowest prevalence was among never-married singles, 13.0%. HIV positive among other civil status groups was as follows; "Living in common PWIDs, 29.4%, divorced/separated PWIDs, 21.7% and finally Married PWIDs, 17.2%.

#### 4.17.2 Hepatitis C infection among PWIDs in 2020

Hepatitis C prevalence among PWIDs in 2020 was 89.2%, C.I (85.5, 92.8). It was 89.3% among male PWIDs and 87.7% among female PWIDs. Hepatitis C prevalence among PWIDs aged less than 25 years was 86.8% against 89.7% among those aged 25 years and above.

#### 4.17.3 Hepatitis B infection among PWIDs in 2020

In 2020, prevalence of hepatitis B among PWIDs was 0.7%. In 2017 it was 1.4%.

#### 4.17.4 Syphilis infection among PWIDs in 2020

In the 2020 IBBS study, syphilis prevalence was 9.9%, C.I (2.7, 17.8). It was 7.3% among male PWIDs and 19.2% among female PWIDs. Syphilis prevalence was 4.4% among those aged less than 25 years as compared to 10.9% for those aged 25 years or more. Curepipe survey site had the lowest prevalence of syphilis, that is, 1.1%, while the highest syphilis prevalence was observed at Port Louis survey site, 20.5%. At Mahebourg survey site syphilis prevalence was 9.0%.



## 4.18 Other sexually transmitted diseases (STIs) among PWIDs

92.9% of PWIDs had ever heard of sexually transmitted diseases (STIs), (*91.7% among male PWIDs 98.8% among female PWIDs*).

52.7% of male PWIDs and 35.6% of female PWIDs could not describe any signs and symptoms of STIs in women. Overall 50.5% of injecting drug users could not describe any signs and symptoms of STIs in women. On the other hand, 32.0% of male PWIDs and 52.9% of female PWIDs could not describe any signs and symptoms of STIs in men, while among all respondents 34.8% could not do so.

The distribution of female respondents describing STIs signs and symptoms in women was as follows: genital discharge, 36.3%, burning pain, 30.6%, foul smelling discharge, 26.8%, itching, 25.4%, abdominal pain, 21.0%, genital ulcers, 16.4% and finally swelling in groin area, 12.7%.

The distribution of male respondents describing STIs signs and symptoms in men was as follows; 39.7%, genital ulcers, 35.0%, burning pain, 32.2%, and finally as swelling in groin area, 24.9%.

Only 2.1% *C.I (0.9, 3.3)* of PWIDs had genital/anal discharge/sore/ulcer, in the last 12 months (*1.7% among male PWIDs and 4.6% among female PWIDs*). Among PWIDs who had STIs, in the last 12 months, 58.3% went to government health facilities, 21.2% went to private health facilities, 10.4% bought drugs at pharmacies and 3.5% treated the STIs at home.

## 4.19 Stigma

In 2020, 45.7% of PWIDs admitted they had ever been verbally insulted as compared to 59.2% in 2011, while 13.7% had ever been physically assaulted as compared to 25.1% in 2011. 2.4% had ever been forced to have sex in exchange for drugs, as compared to 3.7% in 2011.

Among respondents who had ever been stigmatized because they were People Who Inject Drugs, family members and friends were the two main sources of verbal insults, 77.3%. Similarly, physical assaults from families and friends stood at 61.6% of respondents. Stigma by Police was reported by 2.5% of respondents for verbal insults and 18.2% of respondents for physical assaults. Verbal insults and physical assaults from sexual partners were reported by 1.1% and 3.3% of respondents respectively.

80.8% of injecting drug users reported they had ever been arrested by Police, out of whom, 63.7% had been arrested for drugs, 21.2% for larceny and finally 7.1% for violence. Out of those who had ever been arrested, 75.6% had ever been sent to prison.

## 4.20 Women and injecting drug practice

Based on the 2020 IBBS study results, female PWIDs have lesser network sizes, on average 13 injecting partners as compared to 22 partners for males. Women who injected drugs in 2020, were essentially either married or those living in common, 82%, as compared to 44% for males. If only 19% of male PWIDs had generally moved from their first non-injecting drug to their first injecting drug use in less than one year, among females PWIDs 55% had done so in the same interval of time. While 19% of male PWIDs started to use non-inject drugs before reaching the age of 20 years, only 7% of females PWIDs started at this age band.

Females PWID stayed on average 12 years on injecting practice as compared to 17 years for males. Nearly three quarter of them were initiated to injecting drug use by someone else and 70% of them injected daily just like their male counterparts, while only 64% of them injected their drugs by themselves, as compared to 93% among male PWIDs. 55% of female PWIDs had never shared needles against 46% among males. Those who shared needles had 4 sharing partners against 3 among males. Nearly two third had cleaned paraphernalia with hot or boiling water as compared to 35% among males. Only 16% of female PWIDs had obtained new needles from NEP.

21% of female PWIDs had commercial sex in the last three months and had on average 10 commercial sex partners as compared to 2 for males and among this group 73% had used condom during the last commercial sex act. Only 28% of female PWIDs had correct HIV knowledge. Just around one quarter of female PWID were currently on NEP. Finally, 35% and 14% of female PWIDs have been subject to verbal insult and physical assault respectively because of their drug injecting practice.

## 5 Observations and recommendations

### 5.1 HIV testing and HIV status knowledge among PWIDs

Encouraging outcomes have been observed regarding HIV testing performance among the community of people who injected drugs in 2020. The 2020 IBBS survey has revealed that, out of 85% of PWIDs (70% in 2011) who have ever been tested for HIV, 90% have in fact received their HIV tests results (78% in 2011) and among them 80% have received post-test counseling. Thus, HIV testing coverage has increased by 18% in 9 years, 2011-2020, and has increased by 15% for knowledge of HIV status during same period.

### 5.2 Prevalence, incidence and mortality trend among People Who Inject Drugs

Even if the present HIV infection rate of 21% among PWIDs in 2020 is considered as high concentrated infectivity (>5%), nevertheless there has been a considerable reduction in HIV prevalence among People Who Inject Drugs by 60% during the last 9 years 2011-2020. The same degree of reduction was observed respectively among male PWIDs, as well as, among female PWIDs, during the last 9 years 2011-2020. However, during the last three years 2017-2020 the decreasing trend has continued on the same pace for male PWIDs, but a slight upward trend has been observed among female PWIDs with an increase of 11% for HIV infection during that period.

Incidence of new PWIDs (*started drug injecting < 1 year*) was estimated at 5% in 2017 and 4% in 2020, indicating a slight decrease in annual incidence during that period, even if the confidence intervals for the two points of time indicated no statistically significant difference. Taking into account, this rather stable incidence of new PWIDs observed in 2017 and 2020 and the fact that the population sizes of PWIDs have remained almost the same, that is, 6,000 in 2017 and 6,600 in 2020, altogether implies that there is need to understand the mortality pattern during that period, given that the prevalence has jumped from 32% in 2017 to 21% in 2020. In addition, data indicate that the distribution of the length of stay of PWIDs on injecting drug use is identical for 2017 and 2020. Furthermore, one factor that could possibly explain part of the change in prevalence between 2017 and 2020, is the choice of different location of survey sites between the two surveys (See regional details in paragraph 5.4 below).

### **5.3 Hepatitis C and syphilis among People Who Inject Drugs**

#### **Hepatitis C**

Hepatitis C is still very high (90%) among PWIDs, not only because of the obvious reason that injecting practices are known to favor high and rapid transmission of this virus, but also as a result of drug users staying for many years on injecting practice. There were a lot of old cases of hepatitis C among people who actively injecting drugs in 2020, with most of them having started with injecting drug use on average 17 years ago. For the sake of illustration, hepatitis C infection rate was 69% among 45 PWIDs who have started with injecting drugs 3-4 years ago as compared to an infection rate of 94% among those who have started the injecting practice 10-19 years ago. In Mauritius, in 2020, 38% of active PWIDs have been on injecting drug use for more than 20 years.

#### **Syphilis**

Syphilis or history of syphilis among female PWIDs was high in 2020, 19%, as compared 7% among male PWIDs. An increase of 80% has been observed for syphilis infection (both sexes) during the last 9 years. Furthermore, there are disparities in syphilitic infectivity across regions, ranging from 1% to at least 21%.

A patient-centred approach is to be adopted and implemented. Strategies needs to be put in place to ensure that the patients complete the treatment course for syphilis

### **5.4 Disparities of PWIDs health and risky behaviors across regions**

Port Louis still remains the most affected region in terms of risky behaviors among people who inject drugs and the diseases resulting from these risks. Yet, Grand Port, with Mahebourg as one of its most important village, is the second region significantly affected, reflecting half of the burden observed in Port Louis, while Upper Plaines Wilhems region is nearly one third of the epidemic load prevailing in Port Louis. In fact, the mean network size of people who injected drugs in 2020 was 34 PWIDs, 18 PWIDs and 11 PWIDs respectively for Port Louis survey site, Mahebourg survey site (Grand Port) and Curepipe survey site (Upper Plaines Wilhems). Similarly, the same pattern of HIV infectivity was observed, that is, HIV prevalence of 34%, 16% and 13% at Port Louis survey site at Mahebourg survey site (Grand Port), and at Curepipe survey site (Upper Plaines Wilhems) respectively. As already mentioned, syphilis infection rate in Port Louis was twice higher than in Mahebourg and nearly 20 times higher than in Curepipe. NEP coverage was 66%, 34% and 15% at Port Louis survey site, Mahebourg survey site and Curepipe survey site respectively.

### **5.5 Access and behaviors towards utilization of needles and syringes**

In 2020, many PWIDs continued with risky behaviors, exposing themselves and their peers to HIV and hepatitis C infections. In a period of less than three months, around one quarter of them had shared previously-used needles/syringes, while one quarter of this subgroup had respectively more than four injecting partners. Furthermore, in a year they had an average of 12 needle sharing partners. On the other hand, half of them had shared paraphernalia and among them half had used cold water to clean the equipment used. There is also need to bridge the gap between awareness of access of new sterile needles/syringes and its utilization. In fact, while 63% were aware that they could obtain new needles/syringes at NEP, only 22% of them had used this means most often.

### **5.6 The need to bridge the gap between awareness and utilization services**

There is need to bridge the gap between awareness and utilization of new sterile needles/syringes. Nearly 90% of male PWIDs were aware of the Needle Exchange Program, yet only 64% attended program, almost a 25% gap. Among females the disparity between awareness against utilization was even more substantial, that is, 85% of awareness against 40% of utilization, that is, a 45% percent gap. On the other hand, while 63% were aware that they could obtain new needles/syringes at NEP, only 22% of them had used this means most often, that is, a 40% gap between awareness and utilization. It is to be noted that only one quarter of female PWIDs were currently on NEP.

### **5.7 Condom use**

Although, almost all (98%) of PWIDs knew places or persons in order to get male condoms, generally speaking, condom was not the method of choice among this HIV most-at-risks community. At their last respective sexual acts, 72% had not used condoms. Utilization of female condom alone stands only at 11% among PWIDs. From the various reasons evoked for not using condoms, it is clear that some PWIDS showed lack of concern towards the risks involved in sexual activities. As an illustration, among 61% of PWIDs who had sex in the last three months, there were on average 4 commercial sex partners per PWID and for 53% of them, either condom was not available or the respondent did not think it was necessary or did not even think at all about it. However, among female PWIDs, three quarter had use male or female condom in commercial sexual acts.

### **5.8 Youth and injecting drug practice**

In 2017, out of a sample of 500 PWIDs, only 14 PWIDs aged 15-19 years participated in the IBBS survey, that is, teenagers made up 3% of the sample. In 2020, out of a sample of 601 PWIDs, only 7 PWIDs aged 15-19 years had participated in the IBBS survey, that is, teenagers constituted around one percent of the sample. It is to be noted that only one female PWID aged 15-19 years was in the study in 2020, making it practically impossible to draw inference about this group.

Nearly half of the active PWIDs population in 2020, were aged less than 20 years when they first injected drugs. On the other hand, among those aged 20-24 years, only 20% were currently on NEP as compared to 36% among those aged 25-29 years, while the overall NEP current coverage was 37% of all PWIDs. Added to this situation, among those aged 15-19 years, there were on average 12 needles sharing partners (median 20 sharing partners) as compared averages of 2 to 6 sharing partners for those in other higher age groups, (medians 2 to 4 sharing partners). Correct knowledge of HIV was very low among young PWIDs, 9% among the 15-19 years and 16% among the 20-24 years PWIDs, as compared to more than 30% among other higher age groups respectively. Young PWIDs are highly sexually active, almost at

the same level as their elderly drug injecting peers. Among those who ever had sex, 60% had sexual intercourse in the last 12 months, a similar pattern observed among older PWIDs

The legal as well as social environment may present a barrier to the adolescents and young adults. The Ministry of Health and Wellness is already implementing programmes targeting the adolescents and young adults (Addiction Unit, Detoxification Centres at Nenuphar, Montagne Longue and Mahebourg). Youth friendly services should be considered.

### **5.9 Women and injecting drug practice**

There were positive outcomes for female PWIDs, while in some other areas of the HIV program there is need to pay more attention. HIV among female PWIDs has decreased considerably by 63% in the last nine years, but is actually twice higher than male prevalence. Almost the same observation is made for syphilis prevalence, which is more than twice the male PWIDs figure. Female HIV test coverage is excellent, 98% and condom use in commercial sex is at an acceptable level, 73%, even if an improvement is required. However, many have shared needles previously used, 45%, while they have on average 4 needles sharing partners and 10 commercial sex partners. Furthermore, only a few are currently on the NEP, while very few actually get their new needles/syringes from NEP. A few female PWIDs had correct HIV knowledge. There is need to scale up and reinvigorate some areas of the Harm Reduction program to response to the needs of female PWIDs. It is to be noted that in the Female Sex Worker IBBS survey held in parallel in 2020, 18% were involved in injecting drug practice and that the prevalence of HIV among them was 31% as compared to 11% among female sex workers who were not injecting drugs, 11%.

### **5.10 Non-injecting drug users as a reservoir for generating and driving new cohorts into the population of people who inject drugs**

Most PWIDs are also users of non-injecting method. For instance in 2020, 90% had ever used non-injecting drugs (94% among males and 67% among females). In addition, the large majority of PWIDs never starts with injecting practices without having firstly experienced with non-injecting drug use. Based on the three IBBS studies carried out in 2013, 2017 and 2020, on average only 6% of PWIDS would generally start with injecting before using a non-injecting method. Furthermore, based on the same studies, on average 85% or more would statistically, not to say inevitably, adopt injecting method within 2 – 10 years following non-injecting method. It is also worth to keep in mind that, based on past IBBS studies, nearly three quarter of PWIDS, by and large, started non-injecting drug use before reaching the age of 20 years. National drug reports have demonstrated that substances which have largely been the most popular non-injecting drugs were; cannabis, heroin, synthetic drugs and tranquilizers. These drugs appear to be the gateway that leads people from an exclusive non-injecting use practice to injecting drug use. In fact, the 2020 IBBS among PWIDs showed that 60% were on cannabis, 45% were non-injecting heroin, and 46% were using synthetic drug as a non-injecting drug. Significant use of tranquilizers and cough syrups as non-injecting drugs are also to be mentioned in this observation.

### **5.11 Extension of the peer-to-peer-driven RDS technique to the provision of routine service**

Through the peer-to-peer recruitment system it has been able to get a picture of the structure of the network of PWIDs, in terms of the pattern and magnitude of the interconnection of People Who Inject Drugs. For quite some years now around the world, the respondent driven technique has proven itself to be a determinant tool to reach hidden members of specific hard to reach groups or population. As a result, this method could be extended as a peer-to-peer invitation system in the routine service of HIV intervention program to penetrate hidden networks and reach hidden members of the networks in need of services. The 2020 IBBS survey has shown that many injecting drug users either, were not aware of programs, or had moved away from programs for which they knew the existence. In other words, members of key-affected population are the best elements who actually can influence and “drive” in a more effective way other members, when it comes to renew with services or to respond to HIV programs properly. Although this might entail additional cost to the existing programs, but its long-term cost-effectiveness should be evaluated. Reducing gaps in program adherence has become crucial as many behaviors and attitudes of PWIDS have remained unchanged for quite some years back, even if the national HIV program have impacted on many of them.