Epidemiology of HIV infection in Hong Kong as of 2016

(Adapted from the HIV Surveillance Report – 2016 Update[1])

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CME / CNE / PEM point accreditation *(please refer to the attached test paper for the number of credit points awarded)*

The HIV surveillance system in Hong Kong comprises 5 main programmes to provide a detailed description of the local HIV/AIDS situation. They are (a) voluntary HIV/AIDS case-based reporting; (b) HIV prevalence surveys; (c) sexually transmitted infections (STI) caseload statistics; (d) behavioral studies; and (e) HIV-1 genotyping studies.

HIV/AIDS reporting system

Since 1984, the Department of Health has implemented a voluntary anonymous case-based HIV/AIDS reporting system which received reports from doctors, AIDS service organisations and laboratories. Doctors report newly diagnosed HIV cases by a standard form (DH2293). Before 2006, only cases with Western Blot confirmed HIV antibody positive laboratory result were counted as HIV infection for cases aged above 18 months. Since the 4th quarter of 2006, however, those cases with PCR positive result and supported by clinical or laboratory indication of recent infection have also been counted as confirmed HIV infection in the reporting system.

HIV Surveillance at a glance (2016)

- 692 HIV reports and 111 AIDS reports
- Gender: 86.1% male
- Ethnicity: 73.0% Chinese
- Age: Median 35
- Risks:
  - 63.7% Homosexual/bisexual contact
  - 21.1% Heterosexual contact
  - 0.9% Injecting drug use
  - 14.3% Undetermined
- CD4 at reporting: Median 284/ul
- HIV-1 subtypes: commonest are CRF01_AE and B
- Commonest primary AIDS defining illness: PCP and TB
- HIV prevalence
  - Blood donors: <0.01%
  - Antenatal women: 0.02%
  - STI clinic attendees: 0.48%
  - Methadone clinic attendees: 1.13%

In 2016, DH received 692 HIV and 111 AIDS reports. The number of reported HIV cases decreased by 5% to 692 in 2016 compared to a record high of 725 cases in 2015. This brought the cumulative total to 8410 and 1766 for HIV and AIDS reports respectively. Public hospitals / clinics / laboratories continued to be the commonest source of HIV reports in 2016, accounting for 38.9% of all. Private hospitals / clinics / laboratories and AIDS service organisations were other the common sources of HIV reports, accounting for 17.8% and 16.3% respectively.

In 2016, around 86.1% of reported HIV cases were male. The male-to-female ratio was 6.2:1 in 2016, comparable to that of 6.3:1 in 2015. About 73% of reported cases were Chinese. Asian non-Chinese accounted for 9% of reports. The median age of reported HIV cases was 35, and 20-29 was the commonest age group in male cases and 30-39 in female cases. Around 85% of reported

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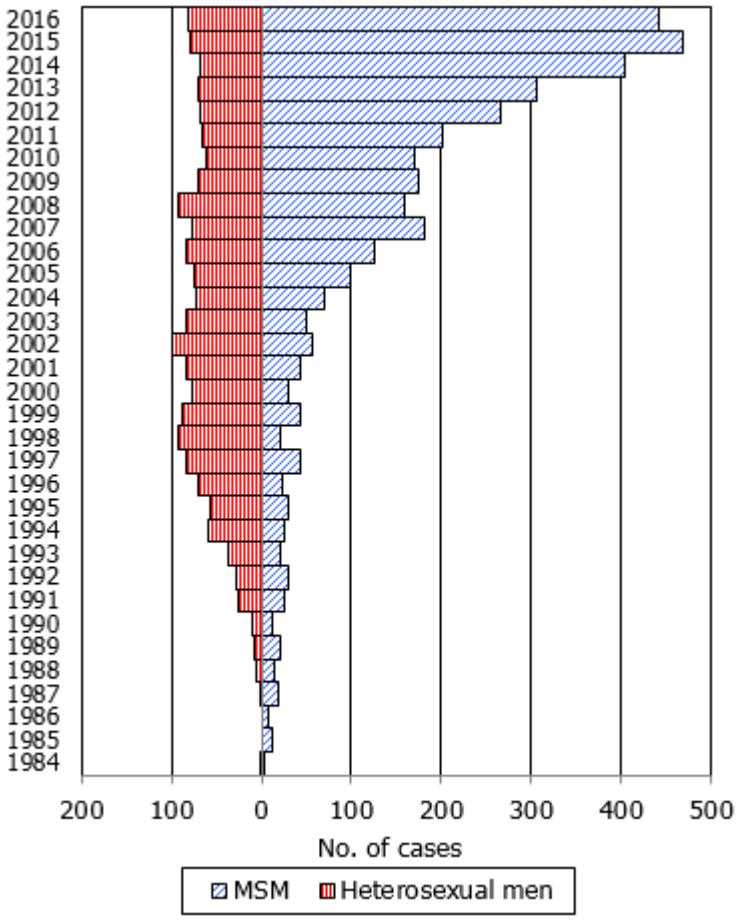
[1] http://www.info.gov.hk/aids/english/surveillance/sur_report/hiv16.pdf

HIV cases acquired the virus through sexual transmission in 2016, including homosexual (57%), heterosexual (21%), and bisexual exposure (7%). Injecting drug use accounted for 1% of reported HIV infections. There was no reported case of HIV transmission via blood/blood product contact route or perinatal route in 2016. The suspected routes of transmission were undetermined in around 14% of cases. This means that, after excluding those with undetermined exposure category, sexual transmission accounted for about 99% among HIV reports with defined risks.

Men who have sex with men (MSM) predominated among new HIV infections

In the 1980s and early 1990s, MSM outnumbered heterosexual males among new infections. Heterosexual males overtook MSM from 1993 onwards, only to reverse again in 2004. Since then, the proportion of MSM among new infections has significantly risen. In 2016, there were 441 MSM cases (74.4%) identified out of 593 cases with defined risks.

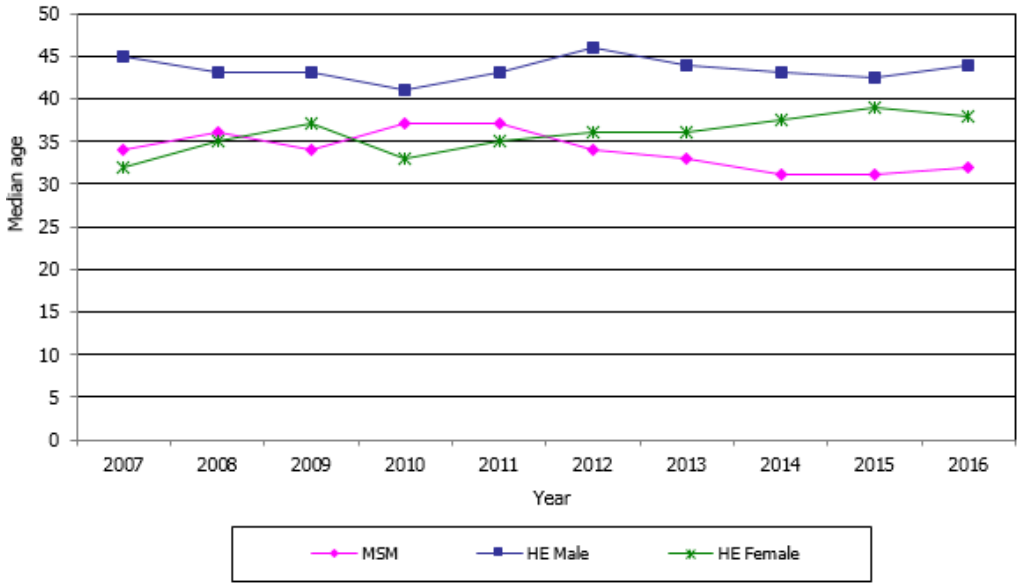
The high weighting of MSM among male HIV cases was also obvious. Homosexual or bisexual contact accounted for 74.2% of all male HIV reports in 2016, heterosexual contact accounted for 13.6%, with the rest (11.2%) being undetermined. 13.6%. The ratio of heterosexual men to MSM gradually dropped from its peak of 4.2:1 in 1998 to 0.8: 1 in 2005 and further to 0.2:1 in 2016.



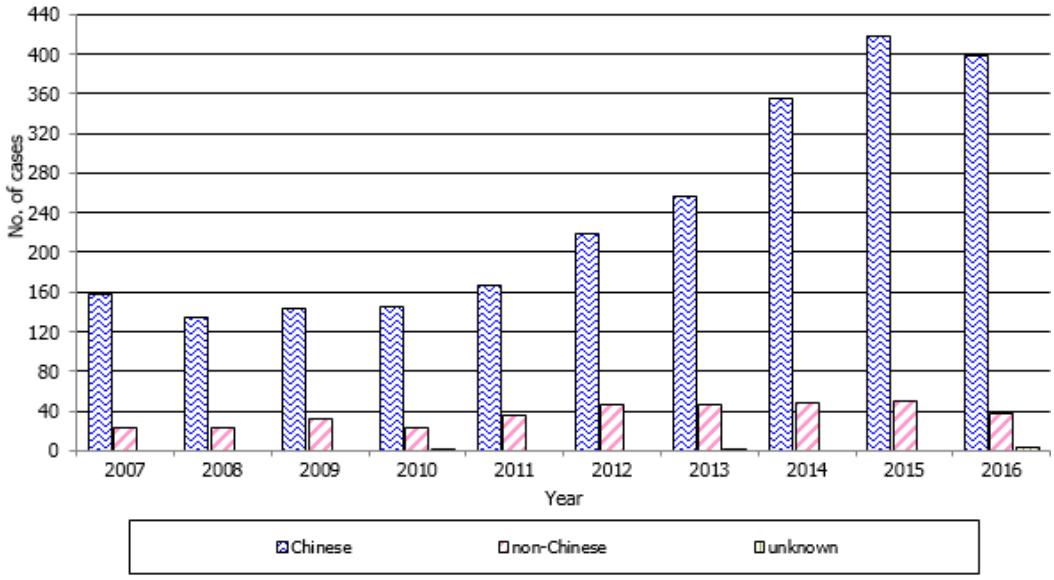
MSM were acquiring HIV locally and at a young age

In 2016, the majority of the MSM cases were Chinese (90.5%), the age group 20-29 (37.9%) being the commonest. A rising trend in the number of reported Chinese MSM cases has been observed in recent years. In 2016, the median age of MSM cases at report was 32, much lower than 44 of heterosexual male cases. The median age of HIV infected MSM population, has shown a decreasing trend in the past few years from 37 in 2010 to 32 in 2016. In 2016, the age group of 20-29 was the commonest age group of reporting in MSM at 37.9%, followed by the age group of 30-39 at 29.9%, and the age group of 40-49 at 17.9%. Reported data since 2006 indicated a higher proportion of locally acquired infections among MSM than heterosexual men. In 2016, the proportion was 75.7 % for MSM and 54.3% in heterosexual men.

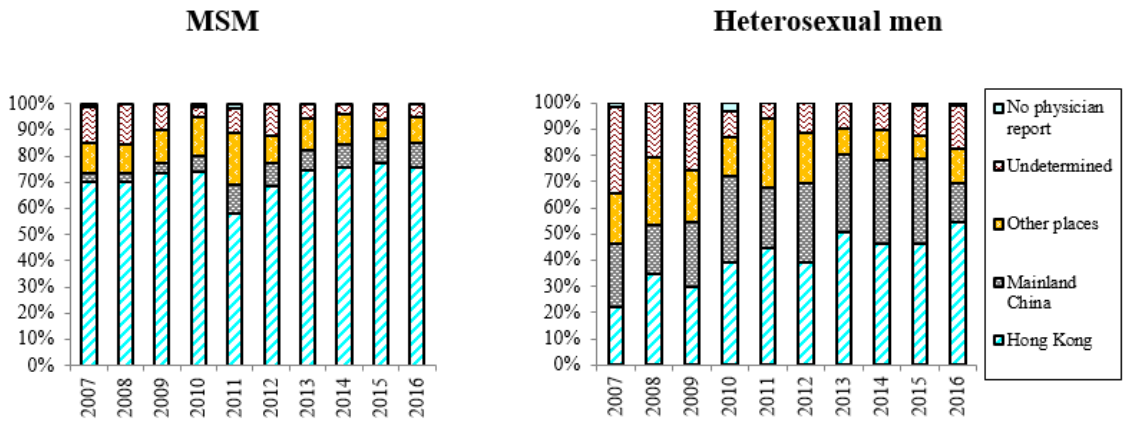
Median HIV reporting age of HIV-infected MSM cases, heterosexual men and heterosexual women (2007-2016)



Ethnicity of reported HIV infection in MSM (2007 - 2016)



Suspected location of HIV infection (2007 – 2016)



HIV prevalence among MSM was higher than other at-risk populations

The second HIV and AIDS Response Indicator Survey (HARiS) conducted in 2014 showed an HIV prevalence of 5.85% among local MSM, which was higher than the findings from previous round of PRiSM (around 4%). This prevalence was higher than female sex workers or drug users.

AIDS Concern's voluntary HIV testing service targeting MSM provides another data source to estimate the HIV prevalence in the local MSM community, despite the fact that sampling bias could not be excluded. It showed a prevalence of 2.24% in 2016, which remained relatively stable in the past few years.

Condom use and HIV testing among men who have sex with men showed a slowly decreasing trend

The 2016 HIV and AIDS Response Indicator Survey (HARiS) for MSM showed that the condom use rate in the last anal sex with emotional relationship partner, regular sex partner, non-regular sex partner and commercial male sex partner were 59.9%, 70.5%, 79.9% and 89.1% respectively, all of which were lower than in 2015. The MSM community should be encouraged to practise safer sex when having sex with all types of partners.

Also, both the 'ever' HIV tested rate (75.8%) and HIV testing rate in past one year (58.5%) in 2016 were slightly lower than that of 2015 (77.5% and 60.8% respectively). More effort is needed to promote the annual HIV testing among MSM.

The high level of risk behaviour among MSM was supported by data from other sources. AIDS Counseling and Testing Service (ACTS) of the Department of Health reported a higher median number of casual sex partners in previous year among MSM than heterosexual men, being 3 in 2016. Additional behavioural data from MSM attending AIDS Concern's testing service showed that the rate of consistent condom use for boyfriend, regular sex partners and casual sex partners in 2016 was 39.6%, 50.5% and 62.7% respectively, consistent with a slowly decreasing trend.

Male-to-female transgender population

Male-to-female transgender has been a neglected and hard-to-reach community, yet various overseas studies have shown that their HIV prevalence can be quite high. To better study the situation in Hong Kong, male-to-female (m-t-f) transgender was included as one of the major at-risk populations in the HIV/AIDS Response Indicator Survey (HARiS) for the first time in 2014. In the survey, it was found that the overall HIV prevalence was 18.6% in m-t-f transgender, which was comparable with findings in other countries. However, the result has to be interpreted with caution due to the small number of subjects.

In HARiS 2015 and 2016, a total of 66 and 87 m-t-f transgender persons were recruited respectively. HIV testing was not done. For 2016, the majority of the subjects were Chinese (60.9%), followed by Filipino (27.6%) and Thai (5.7%). About half (56.3%) had stayed in Hong Kong for more than 3 months in the preceding 6 months. The condom use rate in the last anal sex was 55.6%, 63% and 84.4% with emotional relationship partner, regular sex partner and non-regular sex partner respectively, and was lower than those in 2015 (82.1%, 85.7% and 91.9%). Overall, 65.5% of them had ever had an HIV test and 57.5% had HIV testing in past one year, again in a decreasing trend.

Results	**HARiS 2014**	**HARiS 2015**	**HARiS 2016**
Sample Size	59	66	87
HIV prevalence (HARiS)	18.6% (95% CI 9.74-32.62)	/	/
Condom use in last anal sex with:			
ESP*	75.8%	82.1%	55.6%
RSP*	90.0%	85.7%	63.0%
NRSP*	76.9%	91.9%	84.4%
CSP*	76.3%	93.8%	96.8%
*ESP, Emotional Relationship Partner *RSP, Regular Sex Partner *NRSP, Non-regular Sex Partner *CSP: Commercial Sex Partner			
HIV testing			
Ever tested for HIV	72.9%	78.8%	65.5%
HIV test within past year	50.8%	60.6%	57.5%

Comparison between 2014 to 2016 HARiS results (Transgender women)

The number of heterosexual cases remained stable

In 2016, there was a total of 146 heterosexual cases reported, accounting for about one-fifth of all reported HIV cases and comparable to previous years. The proportion of heterosexual cases among all reported HIV cases gradually dropped from its peak of 71% in 1998 to 37% in 2005 and 21.1% in 2016. In recent years, however, the female heterosexual cases rose slightly faster than the male cases, resulting in a gradual increase of female to male ratio for heterosexual cases from 0.5:1 in 2004 to 0.8:1 in 2016. The median age of heterosexual cases in 2016 was 38 for female and 44 for

male respectively. In 2016, heterosexual male cases were mainly Chinese (58%) whereas Chinese accounted for only 40% of female heterosexual cases.

STI caseload statistics from Social Hygiene Clinics is an important component of the local HIV surveillance programme as STI itself is an indicator of high risk sexual behaviors. In 2016, 16.2% of reported HIV cases were referred from Social Hygiene Clinics. The consistent condom use rate among heterosexual men attending Social Hygiene Clinics with commercial / casual partners in the past 3 months in 2016 was 45.7%, which slightly decreased as compared with 47.1% in 2015. The HIV prevalence of Social Hygiene Clinic attendees has been slowly increasing in recent years, reaching 0.483% in 2016. On the other hand, the total number of STI cases in Social Hygiene Clinics has remained relatively stable in the past few years, with an aggregate of 12,325 cases in 2016.

The level of consistent condom use observed among those attending AIDS Counseling and Testing Service (ACTS) increased from 67.9% (2015) to 80.2% (2016) for commercial partners and from 57.4% (2015) to 65.2% (2016) for commercial / causal partners.

New HIV infection among drug users remained low but significant risk behaviors were reported

In 2016, the reporting system recorded 6 cases of HIV transmission through injecting drug use (IDU), which accounted for 1% of all reported cases. For reference, this number has decreased from a peak of 58 cases in 2006. All cases in 2016 were male, and Chinese. The median age was 45.5. Three out of the 6 IDU cases were reported from methadone clinics.

In 2004, the Methadone Universal HIV Antibody (Urine) Testing Programme (MUT) replaced the previous unlinked anonymous screening (UAS) in methadone clinics. It aims to strengthen HIV surveillance among drug users as well as diagnosis and subsequent care of the HIV infected clinic attendees. Among the 8046 methadone clinic attendees in 2016, 5066 clients have been tested for HIV, giving an overall HIV testing coverage rate of 62.7%. A total of fifty seven clients were found to be positive for HIV, giving an overall HIV prevalence of 1.13% among methadone clinic attendees in 2016.

The proportion of drug users who were currently injecting drugs ranged from 23% to 83% across different surveys in 2016. These surveys also showed that 2% to 16.1% of them were practicing needle sharing, which put them at risk of HIV. Therefore, the potential risk of HIV outbreak among drug users cannot be ignored, despite the small number of reported cases in 2016.

No case of transmission from mother to child, or by contaminated blood transfusion

In 2016, there was no reported case of HIV infection via perinatal transmission. Since the launch of the Universal Antenatal HIV Testing in September 2001, around 40,000-50,000 pregnant women attending public antenatal services were tested for HIV every year. The coverage of the programme remained at a high level (100% (51519/51522) in 2016) and the prevalence of HIV infection in pregnant women was found to be stable at around 0.02% in 2016 and the previous years.

In 2016, there was no reported case of HIV infection via contaminated blood or blood product transfusion. The HIV prevalence of new blood donors at Hong Kong Red Cross Blood Transfusion Service remained at a low level of 0.008% in 2016.

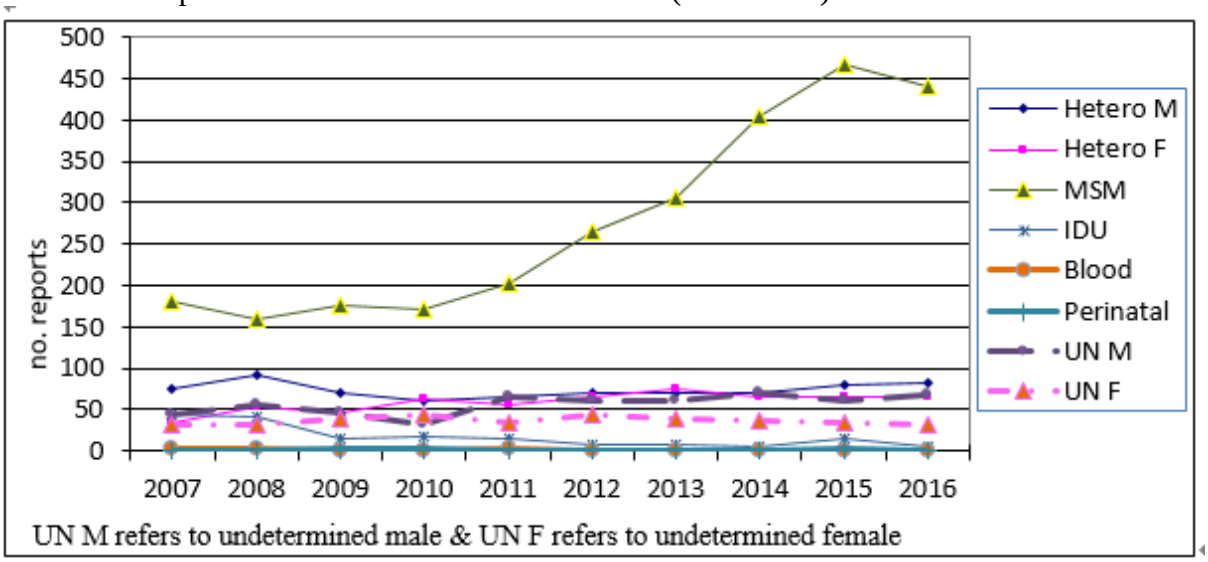
Reconstruction of risk factor for cases without reported route of transmission

As the HIV/AIDS case-based reporting system in Hong Kong is voluntary and anonymous, the completeness of the local surveillance database depends heavily on the percentage of cases with the report form DH2293 received from attending physicians. Incomplete data due to cases without a risk factor reported may pose a risk of skewing the local epidemic picture. In 2016, 14% of the infected cases did not have a reported route of transmission, as compared to around 13% in 2015. A systematic reconstruction method proposed by Dr. Tim Brown has been in use since 2010 to factor in the weightings of undetermined risk cases, to assess the risk for local transmission and to plan and guide appropriate preventive actions.

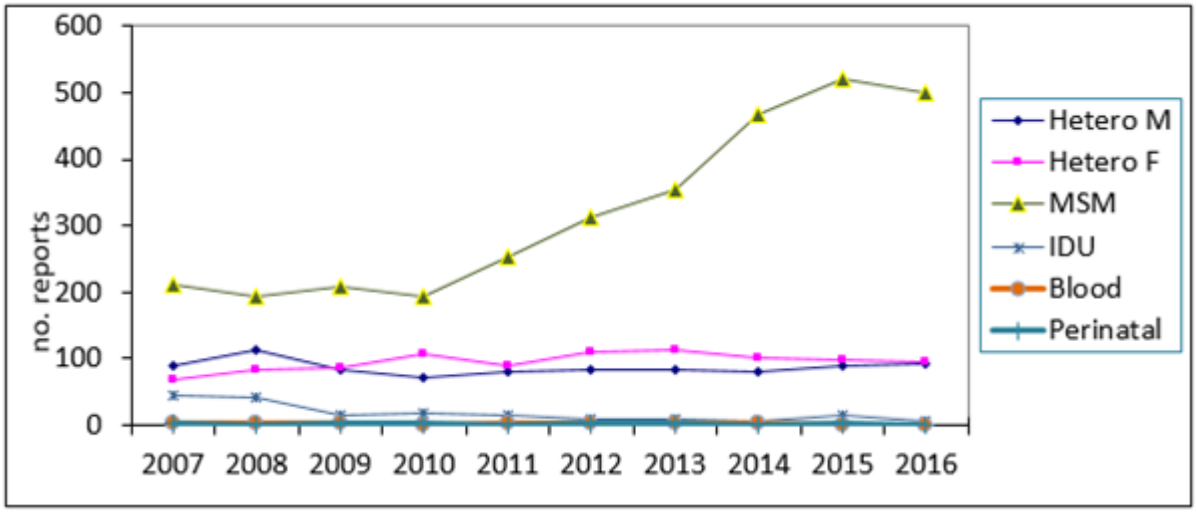
Reconstruction was carried out by assigning one suitable transmission to the undetermined cases. After the analysis of the features of these cases with undetermined risk factor and the prevailing epidemic, it was assessed that all female infections shall be assumed to be heterosexual transmission, unless there is clear indication suggesting otherwise. As for the male cases of undetermined risk factor, it was assessed that they shall be assumed to be either heterosexual contact or homosexual contacts as the risk factor of transmission, subject to the observed ratio in the prevailing year between heterosexual and homosexual contact, providing there is no other indication suggesting otherwise.

The original 10-year data on risk factors from 2007 to 2016 (Box 1) was used for the reconstruction. With or without reconstruction, the cases of MSM showed a marked increase since 2007, while the change in heterosexual male was relatively moderate. (Box 2) At risk of oversimplifying a complex local epidemic, this model provided one possible solution to fill the gap in the HIV surveillance system information.

Box 1. HIV reports before risk factor reconstruction (2007-2016)



Box 2. HIV reports after risk factor reconstruction (2007-2016)



Regular HIV testing before diagnosis was still not a norm in Hong Kong

The HIV/AIDS Report Form (DH2293) was revised in 2010 with one data field added to capture the previously negative HIV result among the newly diagnosed cases. The data helps to inform the epidemiology of those cases who were recently infected. Among the 692 cases reported in 2016, data of the HIV/AIDS Report Form was available in 612 cases, of which only 282 cases (46.1%) had the data on previously negative HIV results, which implied regular testing among HIV patients before their diagnoses was uncommon. Among those 282 cases, 129 (45.7%) had previously negative HIV results within one year of the HIV diagnosis, suggesting recent infection within 1 year of the HIV diagnosis. For those whose last negative HIV results were beyond one year of HIV diagnosis, however, it was not possible to judge whether they had recently HIV seroconverted or not.

Pneumocystis Pneumonia and Tuberculosis remained the commonest Primary AIDS Defining Illnesses (ADI)

After the introduction of highly active antiretroviral therapy (HAART) in Hong Kong in 1997, the annual number of reported AIDS cases began to drop to a relatively stable level of 80 to 110 cases per year in the past decade. A total of 111 AIDS cases were reported in 2016 as compared with 110 cases in 2015. The vast majority (96.4%) of the AIDS reports in 2016 had their AIDS diagnosis made within 3 months of HIV diagnosis, suggesting late presentation of these cases.

Pneumocystis jirovechi (formerly *Pneumocystis carinii*) pneumonia was the commonest ADI in Hong Kong in 2016, accounting for 43.2% (48 cases). It had been 50% in 2015. The second most common primary ADI in 2016 was *Mycobacterium tuberculosis* which accounted for 15.3% of all reported AIDS cases (17 cases). They were followed by 'others' (13.5%), other fungal infections (9.9%) and *Penicilliosis* (8.1%). Unlinked anonymous screening, followed by universal voluntary testing since 2009 in TB & Chest Clinics since 2009 yielded information on HIV prevalence among TB patients. In 2016, the HIV testing coverage in patients attending government TB & Chest Clinic was 92% and HIV prevalence was 0.856%, which was consistent with a low level of <1% in the past few years.

The median CD4 of newly reported HIV is above 200, but those of older patients has remained at a lower level

The median CD4 of newly reported HIV cases in 2016 was 284/ul, which was similar to previous few years. The proportion with CD4>=200/ul in 2016 was 66.8%, which was also comparable to those in previous few years. Reporting of CD4 level has become routine practice among physicians, providing useful information on the timing of diagnosis in the course of HIV infection. In 2016, 79.3% of HIV cases had their CD4 level at diagnosis reported. (Box 3) The median CD4 for those aged < 55 was 296/ul in 2016, which slightly decreased as compared to 306/ul in 2015. In addition, the median CD4 count among those who are aged 55 or above has decreased from 127/ul in 2015 to 104/ul in 2016. It was lower than the younger group, suggesting that more patients reported at age 55 or above were diagnosed at a relatively late disease stage. (Box 4)

Box 3 – Reported CD4 levels at HIV diagnosis

Year	**No. of HIV reports**	**No. of CD4 reports (%)**		**Median CD4 (cell/ul)**	**CD4>=200 (cell/ul) (%)**	
2007	414	329	(79.5%)	235	182	(55.3%)
2008	435	317	(72.9%)	193	155	(48.9%)
2009	396	290	(73.2%)	278	182	(62.8%)
2010	389	292	(75.1%)	207.5	149	(51.0%)
2011	438	323	(73.7%)	256	190	(58.8%)
2012	513	387	(75.4%)	279	251	(64.9%)
2013	559	445	(79.6%)	286	285	(64.0%)
2014	651	515	(79.1%)	321	371	(72.0%)
2015	725	591	(81.5%)	297	407	(68.9%)
2016	692	549	(79.3%)	284	367	(66.8%)

Box 4 – CD4 Reports by age group*

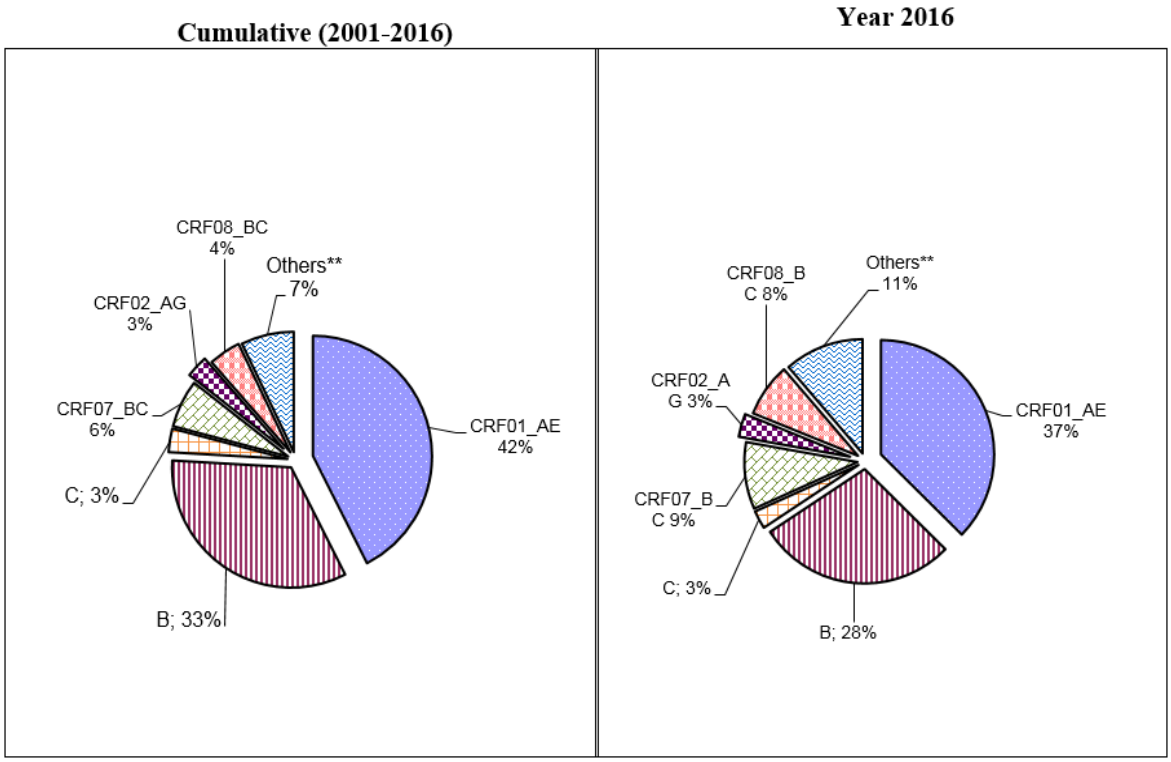
Age	Year	No. of HIV reports	No. of CD4 reports (%)	Median CD4 (cell/ul)	% of CD4 >= 200 (cell/ul)
<55	2007	377	302 (80.1%)	245.5	(57.0%)
	2008	380	274 (72.1%)	217	(52.6%)
	2009	357	261 (73.1%)	299	(66.7%)
	2010	353	260 (73.7%)	215.5	(52.3%)
	2011	384	286 (74.5%)	275	(61.5%)
	2012	463	346 (74.7%)	300	(66.8%)
	2013	501	394 (78.6%)	309	(68.3%)
	2014	596	477 (80.0%)	330	(75.1%)
	2015	675	549 (81.3%)	306	(71.4%)
	2016	615	500 (81.3%)	296	(69.4%)
>=55	2007	33	27 (81.8%)	90	(37.0%)
	2008	53	43 (81.1%)	74	(25.6%)
	2009	38	29 (76.3%)	72	(27.6%)
	2010	36	32 (88.9%)	121	(40.6%)
	2011	53	37 (69.8%)	126	(37.8%)
	2012	48	41 (85.4%)	193	(48.8%)
	2013	58	51 (87.9%)	104	(31.4%)
	2014	53	38 (71.7%)	55.5	(34.2%)
	2015	48	42 (87.5%)	127	(35.7%)
	2016	68	49 (72.1%)	104	(40.8%)

*: there may be a slight discrepancy between the sum of individual reports in Box 4 and the figures showed in Box 3 because of unknown age.

The commonest HIV-1 subtypes were CRF01_AE and B, but genetic diversity has continued to increase. The level of primary drug resistance mutation is low

In 2016, about 84% of HIV reports had their subtypes documented, at a comparable level as in the past years. Subtypes CRF01_AE and B of HIV-1 remained the first and second most common subtypes identified in Hong Kong, respectively at 42% and 33% of all cases having subtype identified from 2001 to 2016. In 2016, they together accounted for 65% of all HIV cases with subtype documented. (Box 5) Over the past decade, CRF_01AE was found to be commoner in female, Asian non-Chinese, heterosexuals and IDU. On the other hand, subtype B was consistently commoner in male, MSM and Chinese. Subtype C was commoner in female, Chinese and heterosexual. Over the past few years, both the proportion of Subtype CRF01_AE and B showed a decreasing trend. In contrast, a trend of increasing diversity in other subtypes and circulating recombinant forms was noted, in particular since 2009. Notably, the proportion of subtype CRF07_BC has increased from 3.4% in 2008 to 9.5% in 2016 while that subtype CRF08_BC increased from 0.8% to 7.6% respectively.

Box 5 Distribution of HIV-1* subtypes



*: including cases with HIV type 1 or PCR positive result.
**: including subtype A, A1, A2, B', D, F, F1, G, CRF03_AB, CRF05_DF, CRF06_CPX, CRF10_CD, CRF11_CPX, CRF12_BF, CRF13_cpx, CRF14_BG, CRF15_01B, CRF55_01B.

According to the HIV resistance threshold survey conducted since 2003, the prevalence of intermediate or high level Drug Resistance related mutations in 2015 was 2.8%. This figure has remained <5% *0 – 4.3%) in recent years.

Discussion

After a modest drop in 2009 and 2010, the rising trend of HIV reports has continued since 2011 and remained at a high level. The total number of HIV reports in 2016 was 692, which decreased by 4.6% as compared to the 725 cases in 2015. The decrease in the number of MSM reported cases was the major contributing factor for this decrease. The number of heterosexual contact infections remained relatively stable and the number of cases among injecting drug users also remained at a relatively low level of 1-15 cases per year in the last decade.

The number of HIV reports among MSM continued to remain high and accounts for the largest proportion of cases in 2016. From the data of previous few years, the increasing trend will likely continue in the foreseeable future and play a significant role in the local epidemic. Using the reconstruction methodology described in paragraph 25 above, we can observe an ever more dramatic increase in the infection cases among MSM. The latest community-based HIV prevalence survey (HARiS) among MSM in 2014 revealed a HIV prevalence of 5.85%, which was higher than the findings from previous rounds of PRiSM. Possible contribution from methodological difference of the two surveys cannot be excluded. Regardless, the figure was worrying as it was significantly higher than other at-risk populations including the female sex workers and drug users. Although the majority of the MSM cases (75.5%) were infected locally in 2016, potential risk of HIV contracted from neighboring cities / countries should not be taken lightly due to the high level of cross-border sexual activities in the population.

Heterosexual transmission remained relatively stable over the past few years of around 130 cases per year. The proportion of female among heterosexual cases has been rising and was 44.5% in 2016. Upon reconstruction of undetermined female cases, it showed an even more obvious increase for female heterosexual cases. The HIV prevalence in social hygiene clinics attendees and antenatal women remained at a relatively low level in the past decade and was 0.48% and 0.02% in 2016 respectively. However, consistent condom use rates of commercial / casual sex especially gauged from the surveys of heterosexual male remained far from satisfactory and could pose a threat of rebound in the number of cases via heterosexual route.

The number of injecting drug cases has remained stable. Despite that, the proportion of injection and risky needle-sharing behaviours among the drug users as gauged from several surveys remained at a significant level, which continued to pose a potential risk of cluster outbreak and rapid upsurge of infection in the population. Moreover, the HIV testing coverage in methadone clinics showed a decreasing trend in the past few years which may miss or delay diagnosis and subsequent care of infected drug users.

In conclusion, the number of newly reported HIV infections in Hong Kong continued to remain high in 2016. Similar to the situation in many developed countries and neighboring areas, MSM infection continued to dominate the HIV epidemic in Hong Kong. The situation of heterosexual population and injecting drug user population has been relatively stable thus far. Apart from locally acquired infections, infections contracted outside Hong Kong would also play an important factor influencing the local HIV epidemiology. In 2016, the HIV prevalence among the general population in Hong Kong was estimated to remain at a low level of about 0.1%. To combat the HIV epidemic, continuous and collaborative effort in HIV prevention is essential.

Test paper - Epidemiology of HIV infection in Hong Kong as of 2016
(Adapted from the HIV Surveillance Report – 2016 Update[1])

Expiration Date: 15 April 2019

CME point **#** ***/ CNE point: 1 / PEM point: 0***

- Please indicate one answer to each question.
- Answer these on the answer sheet and make submission by fax to Special Preventive Programme, Department of Health.

*Please contact respective authorities directly for CME/CPD accreditation if it is not on listed below.*

Accreditors	CME Point
Department of Health *(for practising doctors who are not taking CME programme for specialists)*	1
Anaesthesiologists	1
Community Medicine	1
Dental Surgeons	1
Emergency Medicine	1
Family Physicians	1
Obstetricians and Gynaecologists	1
Ophthalmologists	0.5
Orthopaedic Surgeons	pending
Otorhinolaryngologists	pending
Paediatricians	1
Pathologists	1
Physicians	0
Psychiatrists	1
Radiologists	1
Surgeons	1

1. Which of the following is NOT a component of the HIV surveillance system in Hong Kong?
   (a). HIV prevalence surveys
   (b). Name-based HIV/AIDS reporting system
   (c). Sexually transmitted infections (STI) caseload statistics
   (d). Behavioural studies
   (e). HIV-1 genotyping studies

2. Which of the following is false about HIV reports in 2016?
   (a). There were a total of 692 HIV reports for 2016, a record high for Hong Kong
   (b). Male to female ratio was high at 6.2:1
   (c). The majority of reports were that of local Chinese
   (d). Reports could be made based on a positive HIV PCR test, if supported by clinical or laboratory indication of recent infection
   (e). The second biggest ethnic group among the HIV reports was Asian non-Chinese

3. Which of the following is true regarding men who have sex with men (MSM) and the HIV epidemic of Hong Kong?
   (a). MSM has consistently outnumbered heterosexual men since 1984
   (b). Since 2010, the ratio of MSM to heterosexual male has been maintained at a stable level of 2
   (c). Most (more than 50%) of MSM with HIV are non-Chinese
   (d). In recent years, there has been a decreasing trend in the median age among MSM with HIV
   (e). In 2016, more MSM acquired HIV overseas than locally

4. In behavioural studies, the following is observed among MSM
   (a). Condom use tends to be less frequent with regular than casual sex partners
   (b). The ever HIV tested rate among MSM was slightly lower in 2016 than 2015
   (c). The rate of annual HIV testing among MSM was slightly lower in 2016 than 2015
   (d). MSM has more sexual partners than heterosexual men
   (e). All of the above

5. Which of the following is true about the CD4 count included in HIV report?
   (a). It is mandatory that a physician include CD4 count in the report form (DH2293)
   (b). In the last decade, the median CD4 count at HIV diagosis has shown a consistent downward trend
   (c). Only a minority (<50%) had a CD4 count <200/uL
   (d). The median CD4 count at diagnosis has been generally lower for those younger than 55 years of age.
   (e). All of the above

6. Which of the following was the most common HIV-subtype in 2016?
   (a). CRF02_AG
   (b). CRF08_BC
   (c). Subtype C
   (d). Subtype B
   (e). CRF01_AE

7. What was the level of primary HIV drug resistance in 2015?
   (a). <0.1%
   (b). 0.1% to <1%
   (c). 1% to <5%
   (d). 5% to <10%
   (e). 10% or above

8. Data on risk factors from 2007 to 2016 were subject to reconstruction to eliminate the category of undetermined risk factor. After reconstruction, MSM continued to be the predominantly affected group.
   (a). True
   (b). False

9. Which of the following sequence correctly represents the relative HIV prevalence?
   (a). MSM > methadone clinic attendees > STI clinic attendees > blood donors
   (b). STI clinic attendees > MSM > methadone clinic attendees > antenatal mothers
   (c). Methadone clinic attendees > MSM > STI clinic attendees > blood donors
   (d). Methadone clinic attendees > STI clinic attendees > MSM > antenatal mothers
   (e). MSM > STI clinic attendees > methadone clinic attendees > blood donors

10. Based on the HIV epidemiology, which of the following is an appropriate consideration?
   (a). Target older MSM for annual HIV testing
   (b). Further promote condom use among MSM
   (c). Injecting drug use has ceased to be a threat for local HIV epidemic
   (d). Convert antenatal HIV testing from opt-out to opt-in