

**HIV/AIDS in Hong Kong**

# Living on the Edge

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Consultancy report by

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# Content

<b>Executive Summary</b> .....	1
<b>Introduction and objectives of this report</b> .....	4
<b>Current HIV/AIDS epidemiological and behavioral situation in Hong Kong</b> .....	4
<b>The big picture – local risk can sustain a rapidly expanding epidemic in Hong Kong</b> .....	9
<b>Larger numbers – estimation &amp; trends in HIV infections in Hong Kong until 2005</b> .....	13
<b>The consequences of inaction – the high costs of not averting the Hong Kong epidemic.</b> .....	15
<b>Issues in resource allocation and prevention prioritization in Hong Kong</b> .....	18
<b>Recommendations</b> .....	19
<b>Reference</b> .....	23
<b>Appendix 1 – Meeting conducted during the consultancy visit to Hong Kong</b> .....	24
<b>Appendix 2 – New and current infections in various populations from the AEM projection for the local Hong Kong epidemic</b> .....	25
<b>Appendix 3 – Assumptions in the UNAIDS Workbook calculation</b> .....	27
<b>Appendix 4 – A model for past HIV prevalence trends in Hong Kong</b> .....	28
<b>Appendix 5 – Glossary of terms used</b> .....	30
<b>Appendix 6</b>	
<b>Figure 6a – Summary of recommendations to Health, Welfare and Food Bureau,     Council for the AIDS Trust Fund and Advisory Council on AIDS</b> .....	31
<b>Figure 6b – Summary of recommendations to government unit (DH/SPP),     the community, and academia</b> .....	32
<b>Appendix 7 – Improving Prioritization of the Hong Kong HIV/AIDS Response</b> .....	33

### Executive Summary

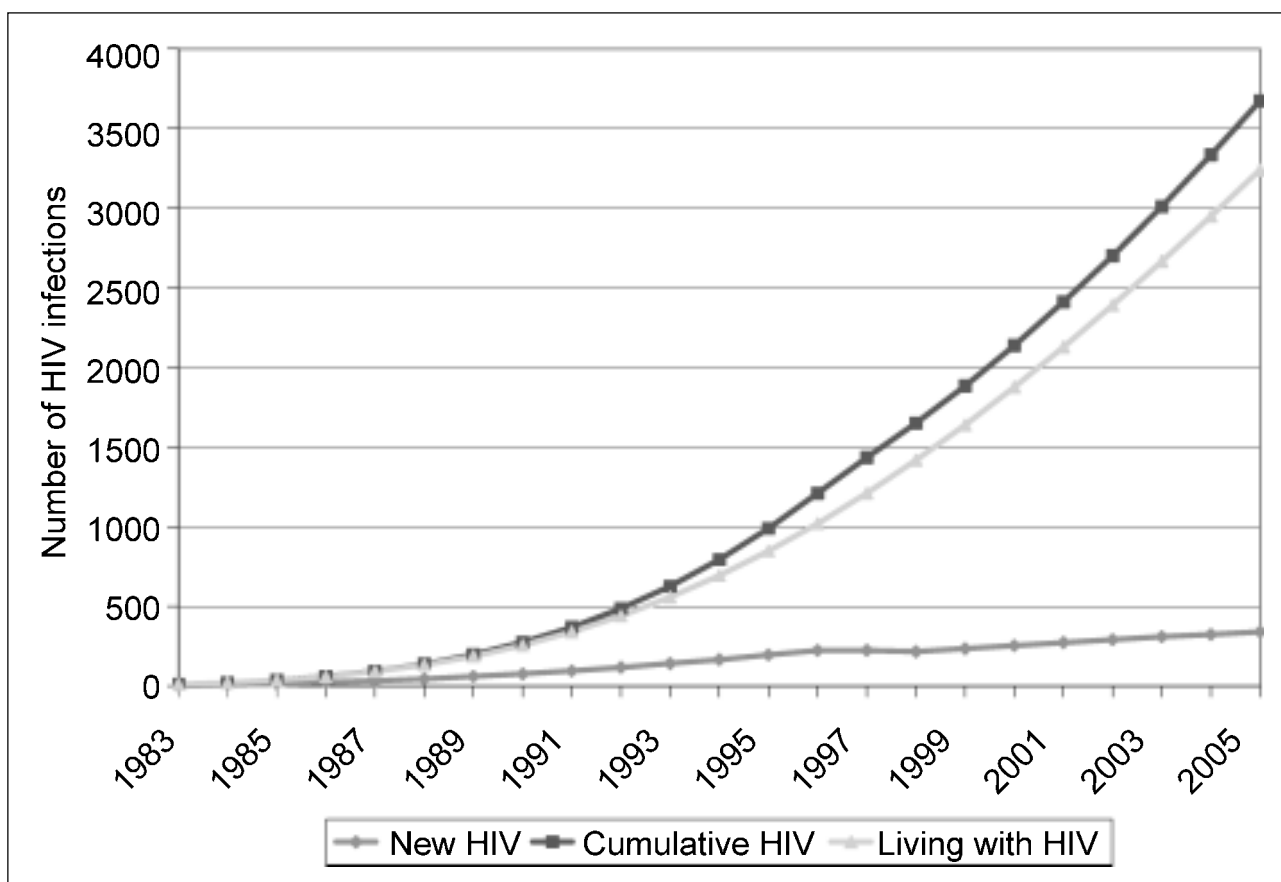
**Past trends show a steadily growing epidemic with 3,200 people living with HIV in Hong Kong today**

Hong Kong has had successes in HIV prevention over the last decade. Prevalence among injecting drug users has remained extremely low. Few female sex workers (FSW) in Hong Kong are HIV positive, and clients of sex workers in Hong Kong consistently use condoms 80% of the time. This has kept the number of new infections from growing rapidly, leading to a steadily expanding epidemic as shown in Figure S-1. Today, roughly 3,200 people are living with HIV in Hong Kong, with roughly 3,600 infected over the course of the epidemic. Approximately 1,200 of those people are today on life-prolonging antiretroviral therapy – a testimony to the effectiveness of the Hong Kong health system. But the nature of the Hong Kong epidemic is changing...

**Past prevention success in Hong Kong is being overshadowed by a growing epidemic...**

In the last three years, the HIV situation in Hong Kong has entered a period of more rapid growth. In that time:

- HIV prevalence among men having sex with men (MSM) has grown rapidly, as seen both in voluntary counseling and testing settings and in their contribution to newly reported infections in the territory. Yet, only 60% of MSM use condoms consistently.
- HIV prevalence levels of several percent have developed among MSM, female sex workers (FSW) and injecting drug users (IDUs) in Southern China. At the same time, behavioral evidence has accumulated that men in Hong Kong increasingly interact frequently with these populations and take fewer precautions in China than they do in Hong Kong.



**Figure S-1.** Estimated growth of the Hong Kong epidemic over the last two decades in terms of numbers of new, cumulative and current HIV infections.

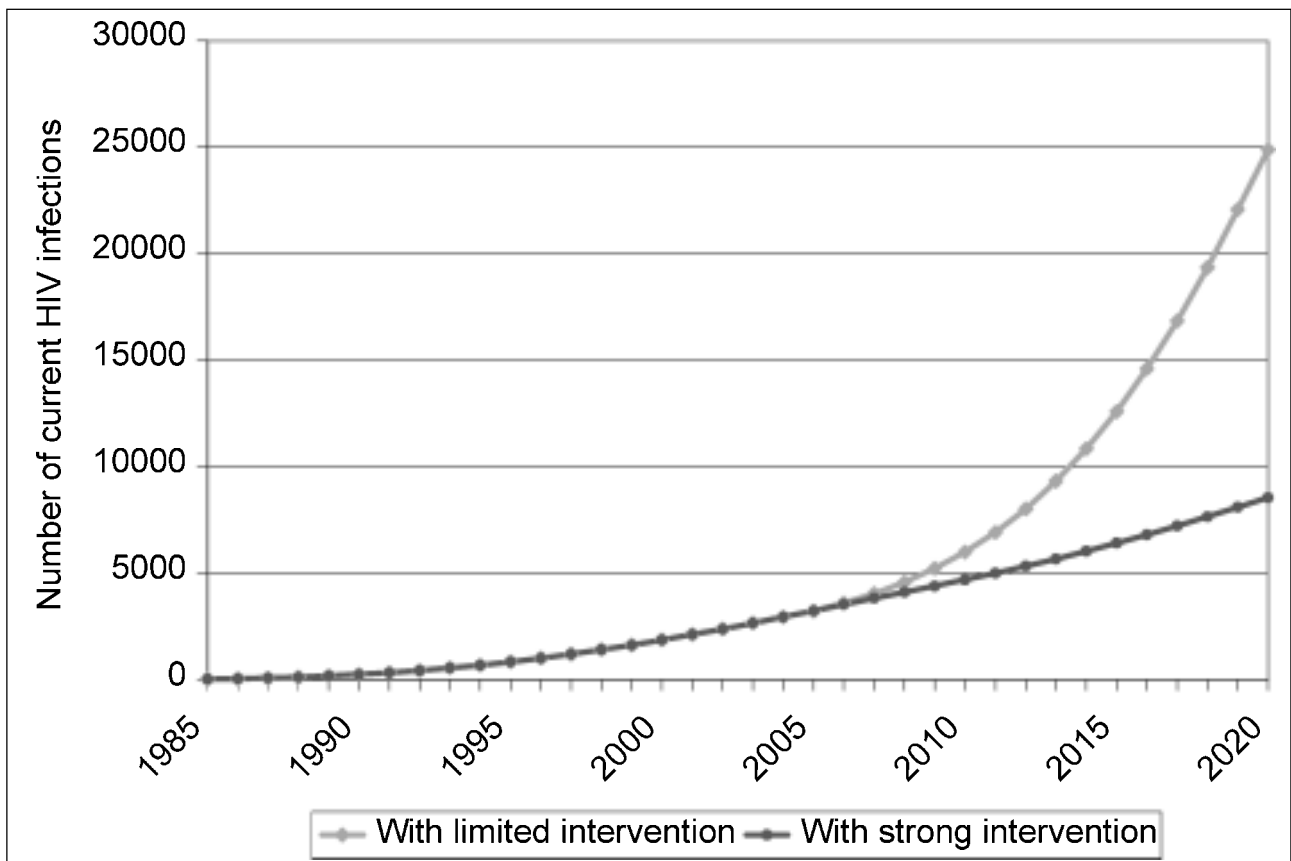
These developments are now threatening to turn Hong Kong's slow and steadily growing epidemic into one with explosive potential.

***Models show that local risk can sustain a rapidly expanding epidemic among men who have sex with men in Hong Kong...***

Modeling work with the Asian Epidemic Model has shown that the levels of risk reported by MSM in Hong Kong are sufficient to support an exponentially growing epidemic in the territory (see the upper line in Figure S-2). MSM from Hong Kong also interact extensively with MSM from other countries of Asia, many of which are also experiencing serious epidemics among their local MSM. Despite this, prevention efforts for this population remain underfunded, the MSM community itself has not mobilized to address HIV, and programs for MSM to date have extremely limited coverage. However, if such efforts can increase condom use from 60% to 80% over the next 3 years, they will radically slow the growth of the epidemic (see the lower line in Figure S-2).

***And increasing cross-border risk is seen across most at-risk populations...***

A close examination of the behavioral data shows strong links between the Hong Kong epidemic and what is happening in Southern China. 20% of street-based IDUs report purchasing or consuming drugs in Mainland China in the last year. Men from Hong Kong who visit sex workers in Southern China are less likely to use condoms than when they are in Hong Kong (65% versus 80%) and large numbers of men are making the journey. Increasing numbers of sex workers are coming from Mainland China to Hong Kong with very limited access to prevention services. Community organizations report increasing travel to Southern China by MSM seeking to purchase sexual services. All the while, prevalence in MSM, FSW and IDUs in Southern China grows at a much faster rate than prevalence in Hong Kong. This increasing cross-border trade in HIV risk may soon reverse the declining trends of the last few years in heterosexual male infections.



**Figure S-2.** Comparison of expected number of current infections in Hong Kong with and without a strong intervention program for MSM.

***Failures to fund prevention today will lead to high care costs in the future***

The costs of undertaking expanded prevention efforts for the relevant populations today will be dwarfed by the high costs of additional antiretroviral care needs generated by new infections in an expanding epidemic. Figure S-3 shows the additional costs of antiretroviral care programs if no expanded efforts for MSM are undertaken. Annual prevention costs in the range of tens of millions of Hong Kong dollars today will avert annual costs of hundreds of millions of Hong Kong dollars in the future.

***Urgent action is needed to maintain Hong Kong's low prevalence***

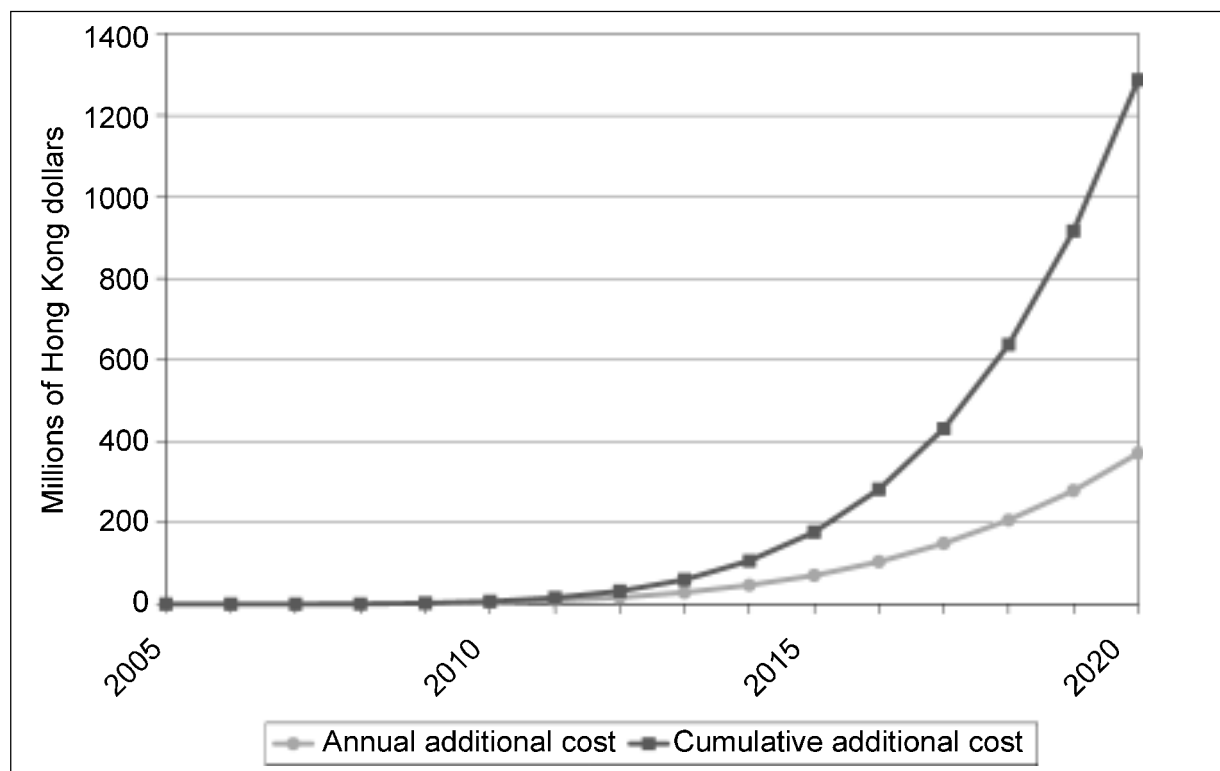
In the face of this dynamic epidemic situation, the Hong Kong prevention response needs to set priorities and act urgently:

- Accord priority to expanded programs for MSM and cross-border risk, as they greatly expand the potential of the Hong Kong epidemic. Mobilize and actively engage the MSM community and Hong Kong non-governmental agencies working across the border in those programs.
- Reallocate existing resources to those programs

that will have the largest impact on the epidemic, as determined by the epidemiological realities on the ground.

- Expand resources as necessary to ensure access to prevention and appropriate care today to avert substantially higher care costs in the future.
- Sustain current programs for IDUs and local sex workers and clients, which have produced high levels of protective behavior, and pay attention to the increasing number of low-risk women contracting HIV from their husbands.
- Strengthen efforts to regularly collect, analyze and interpret epidemiological, behavior and programmatic data (integrated analysis) in order to target the response more efficiently and improve the effectiveness of the overall response.

Today, Hong Kong is living on the edge: the HIV situation here has taken on an urgency never before seen. A transition in the HIV epidemic has occurred; it has left its "low and slow" phase and, unless urgent action is taken, may become "fast and furious". Only rapid, collaborative, and targeted action on the part of the government, the NGO sector, and the affected communities can reverse this trend. The costs of inaction will be high in both human and financial terms.



**Figure S-3.** The additional annual care cost (—■) and accumulated additional care costs (—■) associated with failure to expand prevention efforts. These accumulated costs will exceed one billion HKD by 2020.

## Introduction and Objectives of This Report

In April 2006, Dr. Tim Brown was recruited through the East-West Center as an external consultant to the Department of Health of the Government of the Hong Kong Special Administrative Region of the People's Republic of China. Dr. Brown was chosen based on his long history of working with Hong Kong on the HIV/AIDS response, starting with his recruitment as an external consultant during the external review of the Hong Kong Program conducted in 1998. The objectives to be achieved in this consultation included:

- Examining and reviewing data pertinent to the epidemiological situation of HIV/AIDS in Hong Kong
- To develop a report on HIV/AIDS estimation and projection to inform strategy development
- To conduct training for local AIDS workers; and
- To formulate recommendations for strategy and programme development in the medium term.

During the time in Hong Kong, extensive consultation was undertaken with the Special Preventive Programme to review the epidemiological situation and state of the current response in Hong Kong. The results of this consultation are discussed later in this report under the section on the current epidemiological situation in Hong Kong. Discussions were held with the Advisory Council on AIDS and Scientific Committee on AIDS and STIs, with various government service, non-governmental organizations, and community groups, and with the Council for the AIDS Trust Fund at various points during the week. A full list of these meetings is provided in Appendix 1. These meetings centered around both estimations and projections and the need to rapidly expand and redirect the Hong Kong response in light of an expanding epidemic, which has recently entered a new and very dynamic phase.

This report will be presented around the specific objectives of this consultancy and will summarize the key recommendations to improve the response to HIV/AIDS in Hong Kong in both the short- and medium-terms. It draws upon and is intended to supplement the synthesis report ("*HIV Epidemic in Hong Kong: A synthesis report*") and initial estimates and projections reports ("*Estimation and Projection of Hong Kong HIV Situation*") prepared by the Special Preventive Program in February of 2006 and presented to the Scientific Committee on AIDS and STI of the Centre for Health Protection.

## Current HIV/AIDS Epidemiological and Behavioral Situation in Hong Kong

It is clear from the epidemiological record over the last several years that Hong Kong has had some significant successes in HIV prevention. The two populations where this success has been most apparent are injecting drug users (IDUs) and local female sex workers (FSW) and their clients. Sharing is apparently low among IDUs and condom use is high between local sex workers and clients. However, there have also been significant prevention failures. Condom use remains far too low between Hong Kong men and sex workers when they purchase sex in Southern China – this is likely to lead to growing numbers of new infections as prevalence in Chinese sex workers grow. Condom use among men who have sex with men (MSM) remains far too low, and recent evidence shows that prevalence in Hong Kong among MSM is growing rapidly. This section will discuss the recent epidemiological and behavioral data in Hong Kong, highlighting areas requiring sustained and/or strengthened prevention efforts. This will form the evidence base for recommendations made at the end of this report.

***Successes among IDUs need to be sustained, but the Mainland China connection raises concern***

*Programs for IDUs have achieved high coverage and prevalence has remained low.* Active programs for injecting drug users in the methadone clinics and outreach programs have achieved a high coverage in the IDU community. Of an estimated 13,000 injecting drug users in Hong Kong between 9,000 and 10,000 of them are enrolled at the methadone clinics at any one point in time. Coupled with forward looking local policies supporting harm reduction and ready access to clean equipment, these efforts have helped to effectively control HIV among IDUs. The prevalence among IDUs in Hong Kong, as detected in the universal screening now in place at the methadone clinics, remains relatively low between 0.2% and 0.3%. In light of the significantly higher prevalence in various places in Southern China, this is an important accomplishment.

*Needle sharing is comparatively low in Hong Kong, but may be growing.* In the methadone clinics, behavioral data shows a high level of use of new needles, approximately 80 or 90%, and extremely low levels of needle sharing. As reported at the methadone clinics, those who do share tend to share very infrequently. There are some concerns however that the risk behaviors reported at the methadone clinics may be underreported. In surveys among street based injecting drug users behavioral data showed approximately 20% reporting sharing in the last three months through 2001; however, since that time the proportion sharing had increased to 32% in 2003 and 38% in 2004 before falling back to 26% in 2005. These recent increases in sharing remain a concern, calling for ongoing monitoring and close attention to the reasons for this increase. The HCV study in early 2006, found somewhat lower levels with the percentage sharing at 12% in the last 3 months and 19% in the last year. However, these studies have not collected information on the percentage of all injections which are shared, which is important to better characterizing the risk among street based injectors and to validating the extremely low

frequency of sharing reported at the methadone clinics. Future studies should strive to gather this information, along with more information about the size and characteristics of sharing networks, so that better assessments can be made of the potential for future IDU spread in Hong Kong.

*Hong Kong is strongly linked to the IDU epidemics in the Pearl River Delta region.* Despite these local successes what happens with IDUs across the border in Mainland China won't stay in Mainland China. There does appear to be significant movement of injecting drug users to Mainland China and back, with approximately 20% of street based IDUs reporting purchasing or consuming drugs in Mainland China in the past three months. However, these IDUs anecdotally report that sharing in Mainland China is limited and it seems at present there is little chance of an explosive IDU epidemic in Hong Kong. Existing prevention programs must address the increased travel to the Mainland by Hong Kong resident drug users and their injecting behaviors there. IDUs from Hong Kong must be aware of the higher HIV prevalence in Southern China and the need to use clean equipment when they inject there.

*Chinese drug users are coming to Hong Kong.* In addition, a number of HIV-positive IDUs have been coming from Mainland China to Hong Kong. For example, of the 43 HIV-positive cases diagnosed in methadone clinics since the introduction of universal testing until the end of 2005, 44% came from different parts of Mainland China, primarily in the south. Prevalence levels among IDUs in Southern China adjacent to Hong Kong were between 1% and 7% in 2004 and have been climbing steadily over the last several years. Given these higher prevalences compared to the very, very low prevalence in Hong Kong (0.3% in 2005), it seems likely that many more new infections among IDUs are likely to occur in southern China, both in mobile Hong Kong residents and those injectors born in the Mainland who later come to Hong Kong, than in Hong Kong itself. This will continue to contribute to the number of new infections in Hong Kong.



Links to IDU epidemics in other Asian countries are also apparent. Many other countries in Asia have substantial epidemics among injecting drug user, e.g., Indonesia, Nepal, Thailand, and Vietnam. Of those diagnosed HIV-positive since the start of universal screening, 14% have come from other Asian countries at the end of 2005, and between 2000 and 2005, over 45% of detected IDU infections were of non-Chinese Asian ethnicity. This highlights an ongoing need for culturally appropriate prevention efforts for immigrant groups in Hong Kong to ensure that they have ready access to HIV testing and the knowledge needed to protect themselves should they engaging in risk behavior while in Hong Kong.

Sustained programs can keep the IDU contribution to the Hong Kong epidemic low. The contribution of IDUs has in fact been rising slowly in recent data, with the percentage of new HIV infections detected among injecting drug users approaching 10%, compared to historical levels of 4%. To some extent this may be due to the expanded testing in methadone clinics after the introduction of universal testing. However, despite the concerns of increasing numbers of infections occurring in Mainland China, it remains unlikely that these infections will fuel a local epidemic among IDUs if the current levels of risk are maintained. Thus it is absolutely essential that Hong Kong sustains the successes in intervention and the low levels of behavioral risk that have been seen among injecting drug users, while simultaneously expanding the programs to address HIV infections occurring in southern China.

***In sex work, public education has paid off, but the Mainland connection looms large***

Clients of sex workers continue to contribute substantially to the epidemic in Hong Kong. Similarly, substantial progress has been made in addressing risk between clients and local sex workers and Hong Kong. At present, based on the population surveys that have been done, levels of condom use between local clients and local sex workers appear to be quite high with consistent use approaching 80% or more. However, our knowledge base for these populations, especially from the side of the sex workers in Hong Kong, remains comparatively weak. While the studies to date seem to show very promising results, expanded study of the client and sex worker population is essential to understanding their probable overall contribution to the epidemic. There is absolutely no question that clients are still producing substantial levels of new infections in the population. Although there has been a steady downward trend since 2002 in the reported number of male heterosexual infections (see Figure 1), heterosexual men still account for one quarter of the new HIV infections detected in 2005. Almost certainly, in the majority of cases these men contracted HIV as clients of sex workers. While in the last two years, the number of new male infections coming from men who have sex with men has grown, clients continue to contribute very substantially to the number of new infections in Hong Kong.

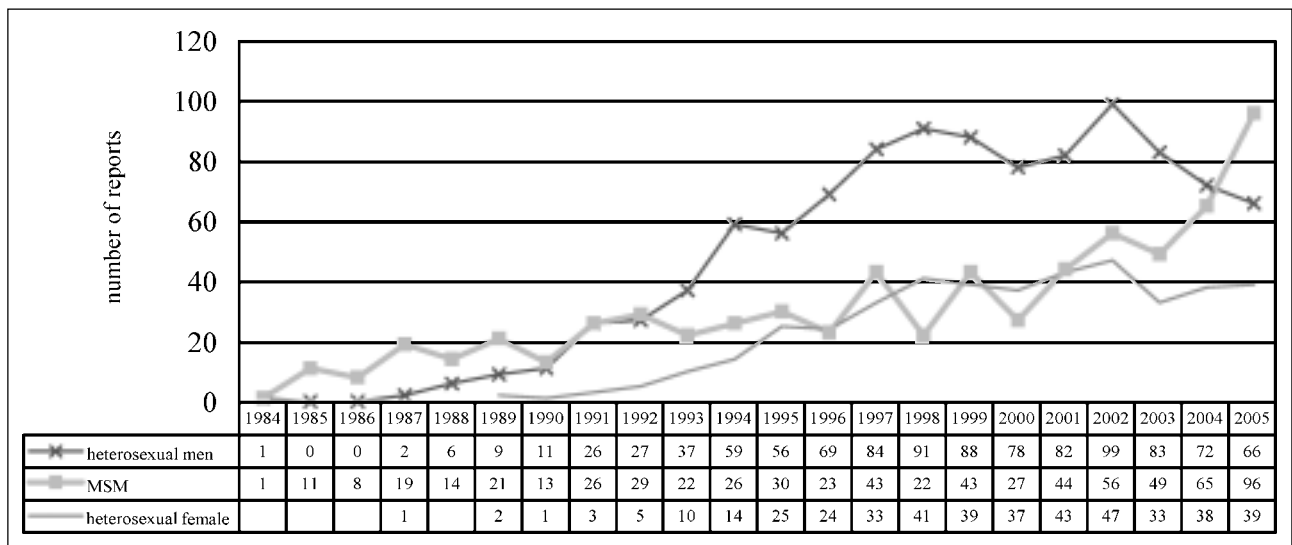


Figure 1. The balance of heterosexual and MSM reports among new infections in Hong Kong in recent years. Source: SPP Synthesis Report.

*The Mainland China connection may increase the client contribution in the future as the situation in Mainland China changes.* And there are reasons to be concerned that the contribution of clients to the epidemic in Hong Kong may increase over the next several years, rather than continuing the slow decline seen since 2002. Through the present, more than half of the heterosexual males attended the government HIV clinic believed they contracted HIV outside of Hong Kong. The same population-based studies that have shown high condom use among Hong Kong residents with local sex workers have also shown much lower levels of condom use, closer to 65%, when these same men visit sex workers in southern China. Unless intervention programs actively address these men crossing the borders, it seems likely that their contribution to the epidemic will increase over the next several years, especially in light of the fact that HIV prevalence among sex workers in some parts of southern China is on the rise. Since 2001, samples taken from FSW in Guangzhou, Zhuhai, and Shenzhen have detected HIV, in several cases at levels exceeding 1%. This could reverse the declining trend seen in reported new infections among heterosexual men since 2002.

*Chinese sex workers in Hong Kong need stronger prevention access and further study.* The other side of the Mainland China sex work connection is that an increasing number of young women are coming from Mainland China to Hong Kong to sell sexual services. These women do not have the same access to prevention services and HIV information as local sex workers in Hong Kong. They also have extremely limited access to services for sexually transmitted diseases. As a result, they are less likely to use condoms, more likely to have STDs, and thus are at higher risk of both contracting HIV and of transmitting it to their clients. There remain substantial data gaps on these women and their behaviors. Far too little is known of the numbers of young women coming across from Mainland China or of their migration patterns. The fact that many of them are on short-term visas, and yet need to pay back substantial costs to those who brought them to Hong Kong, forces them to have many

clients per night. This increases both their risk of HIV and increases the risk to local Hong Kong clients having sex with these young women. The magnitude and nature of risk among these women needs to be ascertained through active research, conducted in the context of developing effective intervention programs for these women.

### ***An exploding epidemic – HIV among men having sex with men in Hong Kong***

*A serious MSM epidemic is underway in Hong Kong.* By far the most serious concern regarding HIV in Hong Kong is the rapid increase in new infections seen among men having sex with men. Several independent sources of data are indicating a substantial and rapid upswing in HIV infection among local MSM. These include:

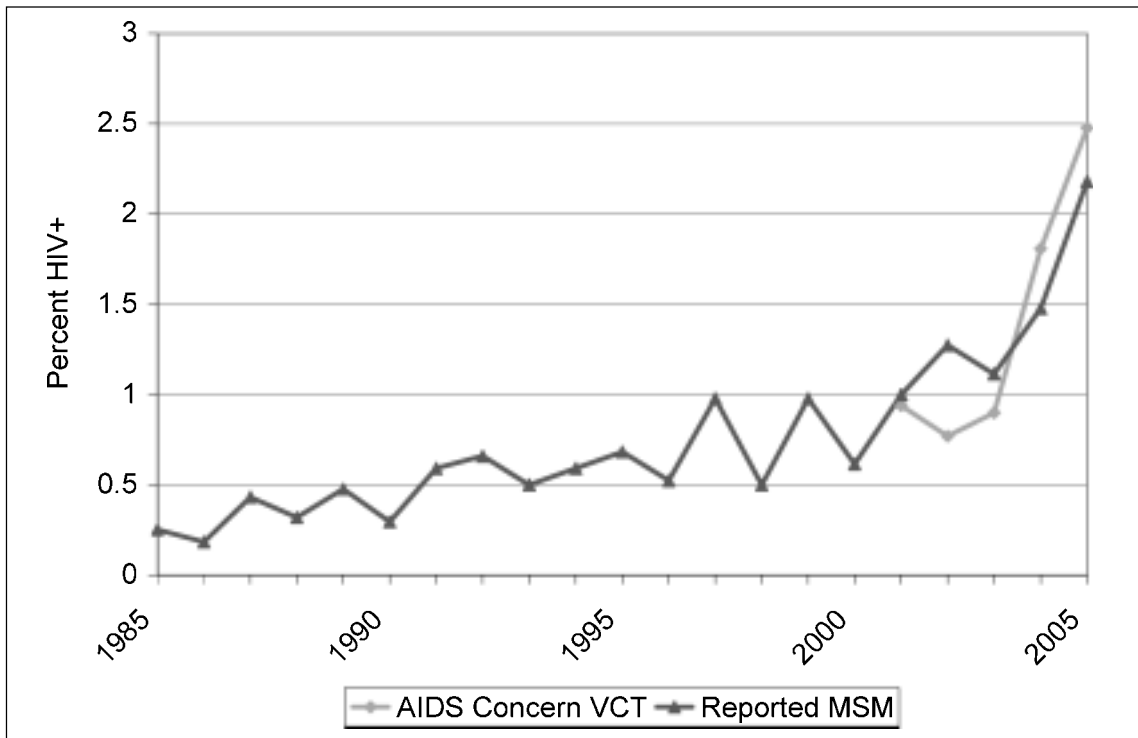
- In studies of the HIV subtype distribution of new infections in Hong Kong using molecular epidemiology techniques, the percent of new infections of subtype B has risen from 29.4% in 2003 to 35.1% in 2004 and 39.7% in 2005. Subtype B infections tend to occur predominantly among men who have sex with men in Hong Kong, while heterosexual infections tend to be predominantly subtype CRF01\_AE. This finding of rapid indigenous spread among MSM has been further bolstered by the detection in 2005 of a cluster of 20 subtype B infections among men having sex with men in Hong Kong. An investigation of these cases identified sexual networking through the internet and the use of soft drugs as common risk factors for the men. The same factors are driving risk in urban MSM populations throughout Asia.
- The number of annual new infections reported among MSM in Hong Kong has risen rapidly since 2003, almost doubling in the last two years from 49 to 96. While a small part of this is attributable to expanded HIV testing through the NGO sector, the increase is far too large to explain by this alone. In the testing done by AIDS Concern only 12 HIV positives were detected in 2005. There is clearly an increasing level of HIV infection among MSM in Hong Kong.

- The voluntary counseling and testing data from AIDS Concern, while self-selected in nature, has shown a steady increase in prevalence over the last four years (see Figure 2), from less than 1% in 2002 to 2.5% in 2005. The trend in this data is consistent with the increasing trend in reported HIV infections in MSM.

*Condom use among MSM in Hong Kong remains dangerously low.* The inescapable conclusion from these multiple data sources is that the HIV epidemic among men having sex with men in Hong Kong has undergone a significant transition. It has now entered a period of rapid increase, which has the potential to alter the longstanding pattern of slow, steady growth that has defined the Hong Kong epidemic in the past. The reasons for this are apparent in behavioral data from multiple data sources that show consistent condom use in anal sex among MSM at 60% or lower. Given the high efficiency of HIV transmission through anal sex, this is insufficient to substantially slow, let alone stop, this rapid spread of HIV in the MSM community.

*The rise among MSM in Hong Kong is in keeping with a regional trend of serious and growing MSM epidemics.* This should not come as a surprise. It is in

fact part of a regional trend of increasing HIV prevalence among men having sex with men in Asia. Recent studies in Bangkok have documented an increase in HIV prevalence from 17% in 2003 to 28% in 2005. Studies in Ho Chi Minh City have shown prevalence rise from 6% in 2002 to 8% in 2004. Testing in bathhouses in Taiwan has turned up levels of 5% to 11%. Levels of several percent among MSM have been detected in various places in Mainland China and Indonesia. While seroprevalence testing has been limited in Singapore, a similar increase in the number of infections among MSM has been reported. Given the high mobility of MSM populations, it is unlikely that these epidemics are independent. Some MSM from Hong Kong travel frequently to Bangkok, Taipei and Singapore, and some MSM from those places travel to Hong Kong, providing strong linkages among the epidemics in these geographically diverse locations. As with other populations in Hong Kong, there is growing evidence of a Mainland China connection. Community workers report that many Hong Kong men who have sex with men are going to Southern China to purchase male sexual services, while authorities in Shenzhen report less than 20% of MSM there use condoms every time they have sex, and prevalence among male sex workers is 5%.



**Figure 2.** The rapid rise in HIV prevalence in AIDS Concern VCT among MSM shows the same pattern as the rise in reported MSM infections (normalized to 1.0 in 2001 for comparison only).

*Yet the response has been anemic and the MSM community in Hong Kong reluctant to tackle the problem aggressively.* To date Asian responses have largely ignored the MSM component of the epidemic. This has allowed HIV to continue to spread unchecked in the region and, in many cases, to grow to very high prevalence levels among Asian MSM communities. In Hong Kong, concerns about stigmatization and discrimination, coupled with the lack of solid data, have made it difficult for the MSM community to accept that it has a serious HIV problem. This in turn has made community mobilization extremely difficult.

*Resource constraints have prevented adequate prevention coverage from being achieved.* Through the present, funding for MSM interventions in Hong Kong has been only a small fraction of the prevention resources committed, making it difficult to bring programs to the scale and intensity needed to slow this growing HIV spread among MSM. However, with this rapid increase in the epidemic, the community must mobilize and the resources must be made available to allow interventions to go to scale. This must be a joint effort of the MSM community, the Hong Kong government and its agencies, and the NGO sector. The next section will discuss the consequences for Hong Kong of not addressing the MSM epidemic.

## **The Big Picture – Local Risk can Sustain a Rapidly Expanding Epidemic in Hong Kong**

*We understand HIV epidemics in Asia and we can model their growth with the Asian Epidemic Model (AEM).* We know their patterns, we are clear on what drives them, and we understand how they evolve over time. One thing that is clear from studies of epidemics in other Asian settings is that *local* levels of risk behavior among clients and sex workers, MSM and IDUs determine the potential and rate of growth of *local* Asian epidemics. The Asian Epidemic Model (Brown and Peerapatanapokin 2004) is a program developed to model HIV epidemics in Asian settings. Application of the model to behavioral data in Thailand and Cambodia has accurately reproduced the observed epidemiological trends in surveillance data over more

than a decade. The model assumes closed populations with specified levels of risk behavior, introduces HIV and then projects the trends in HIV prevalence in key populations such as sex workers, IDUs and MSM.

*AEM can capture local dynamics in Hong Kong, but may miss externally introduced infections and does not include the effect of antiretrovirals on HIV prevalence.* The model is not perfect for Hong Kong because a substantial fraction of HIV prevalence in Hong Kong is acquired by residents while outside of Hong Kong. This will need to be added in exogeneously (and the next section will address the issue of current levels of infection in Hong Kong). In addition, the current version of AEM used here does not include the life-prolonging effects of antiretrovirals, which are keeping over 1,000 people with HIV alive today, who might otherwise have died. Thus, the Asian Epidemic Model cannot be expected to accurately reproduce the total number of new and current infections in Hong Kong. However, the behavioral data collected in Hong Kong over the last several years can be used to build a model specifically for local transmission within Hong Kong. This should give an idea of the indigenous potential for local spread of HIV in the SAR.

*What is the future of the epidemic in Hong Kong?* The key questions this model can address include "are the levels of behavioral risk measured consistent with the epidemiological patterns seen through the present?" And, if so, "what is the likely future course of the epidemic in Hong Kong?" That is, given reasonable assumptions about transmission probabilities and measurements of the current levels of risk behavior, would we expect the situation we are seeing in Hong Kong today, and will we continue to have 1) sustained low prevalence among IDUs; 2) sustained low prevalence among local FSWs and clients in Hong Kong; and 3) continuing rapid increases among MSM?

*The model uses local data as inputs to predict the likely course of the epidemic in Hong Kong.* To address these questions, a model was built for Hong Kong under the following epidemiological and behavioral inputs/assumptions:

- HIV was introduced in all populations in 1985.
- IDUs were assumed to represent approximately 0.65% of the adult male population (approximately 13,500 IDUs), to inject twice a day, with 20% sharing needles annually – this is in keeping with the findings of the HCV study in 2005. Approximately 10% of all injections were assumed to be shared by those who did share needles, based on data from the methadone clinics.
- Female sex workers (FSWs) were assumed to constitute 0.67% of the female population (approximately 15,000 FSWs), to have an average of about 2 clients per day, with condom use at 50% in the early 1980s growing to 85% by 2000.
- Clients were taken at 11% of the adult male population.
- MSM were assumed to make up 2% of the adult male population, with 40% practicing anal sex, once a week on average. Condom use was 60% in anal sex.

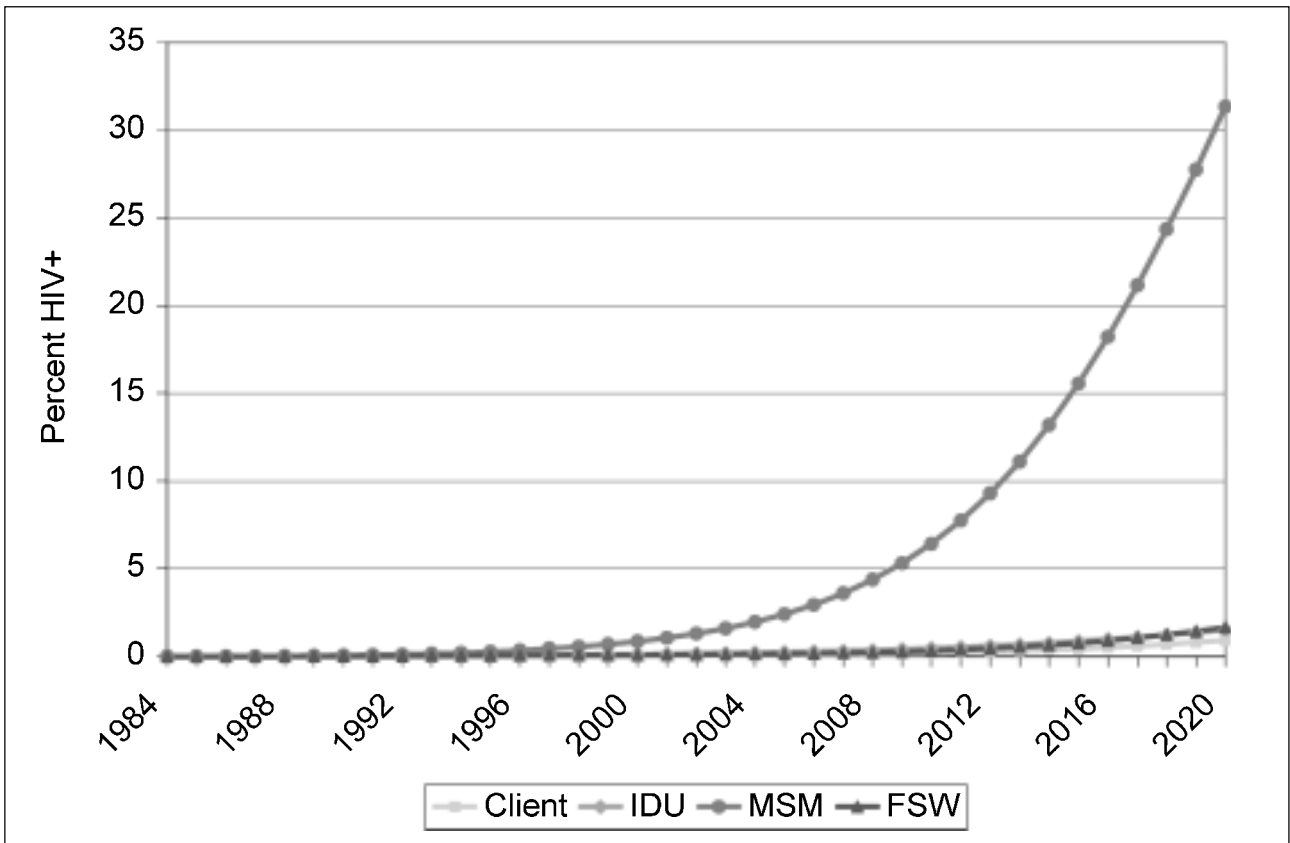
These numbers come from actual behavioral studies done in Hong Kong. Transmission probabilities were set to values that are consistent with work done in other Asian settings, adjusted to ensure that HIV prevalence in the model in 2005 does not exceed measured levels in any specific population.

*The model predicts that under current levels of risk the MSM epidemic will quickly come to dominate the situation in Hong Kong, and that clients and IDUs will continue to contribute steadily to the epidemic.* Figure 3a shows the results of this run. The epidemic among MSM grows rapidly, from around 2% in 2005 to over 30% by 2020. The IDU epidemic grows much more gradually from 0.25% in 2005 to approximately 1.5% by 2020, while the epidemic between sex workers and clients stays low. However, recall that this model only includes transmission between sex workers and clients in Hong Kong, and will not reflect any infections acquired by clients in Mainland China or other parts of Asia, who then return to Hong Kong. Based on past epidemiological reports in Hong Kong, these are expected to more than double the numbers of infections among clients predicted by this model. Their contribution will be even greater if HIV prevalence starts to rise among sex workers in southern China, especially since condom use is lower with sex

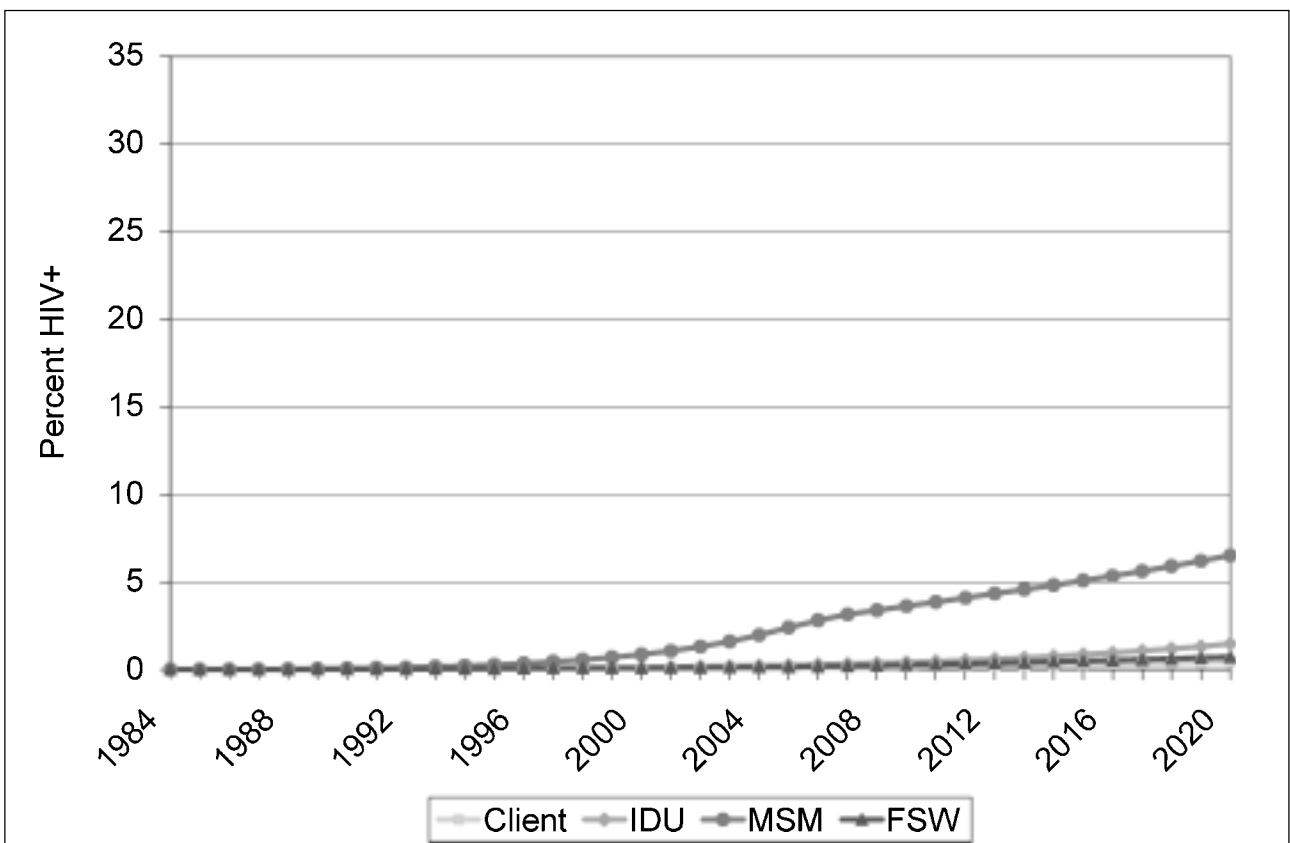
workers in Mainland China. To date, condom use in Mainland China remains much lower than in Hong Kong, so prevalence among sex workers in Mainland China is likely to rise much more rapidly than among sex workers in Hong Kong. This growing prevalence, coupled with lower condom use, will likely lead to mobile clients making an increasing contribution to new HIV infections over time in the future.

*New infections among MSM will dominate the new infections occurring within Hong Kong given current levels of risk.* Figure 4 shows the incidence projected by this model as the number of new infections actually occurring in Hong Kong among specific populations. However, this graph must be interpreted with great caution as it definitely greatly **underestimates incidence and prevalence** in Hong Kong overall because it does not include externally acquired infections among clients and IDUs (see the next section for better estimates of current prevalence and incidence). Appendix 2 shows the new and current HIV infections calculated for these local epidemics, which are much lower than the total epidemic in Hong Kong including external infections). External infections probably contributed 3 to 4 times as many new infections among both clients and IDUs through the last decade as have been produced within Hong Kong, and these in turn have produced more local infections than calculated here. However, this model drives home the point that **local** MSM risk is now driving a **local** MSM epidemic, while these other epidemics continue to be largely driven by externally acquired infections.

*The MSM epidemic is the most urgent prevention priority in Hong Kong today – increasing condom use in anal sex can radically slow its growth.* However, this rapid growth in the MSM epidemic is avoidable with achievable prevention goals. Figure 3b shows the effect in the model of increasing condom use among MSM from 60% in 2005 to 80% in 2008, a level of condom use achievable through expanded prevention efforts with good coverage in the MSM community. The exponential growth of the epidemic slows dramatically, and the number of new infections through 2010 is cut in half, from 2,400 to 1,200. That is, in this population alone, rapid scale up of interventions can avert over 1,200 new infections in 5 years time.



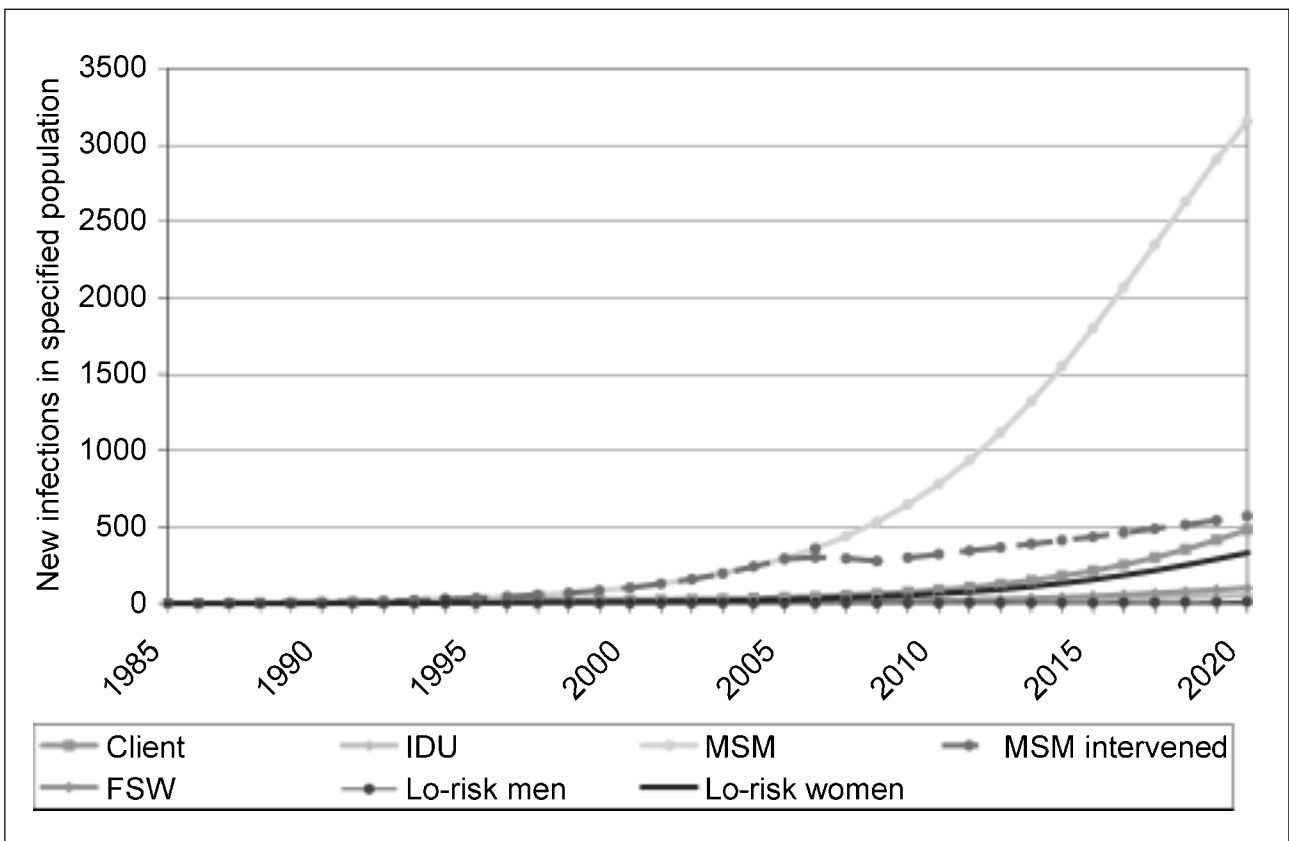
**Figure 3a.** Asian Epidemic Model run for Hong Kong shows rapidly increasing prevalence among MSM, with slow and steady increases among IDUs, sex workers and clients.



**Figure 3b.** Impact of increasing condom use among MSM from 60% to 80% between 2005 and 2008. The number of new infections is cut in half and the exponential growth slowed.

The IDU and sex work epidemics in Hong Kong will see continued slow, steady growth but their contribution will be increased by new infections occurring in Mainland China. The AEM also shows that under the prevailing levels of risk in Hong Kong today, the other major components of the epidemic, namely the IDU and sex work epidemics, are likely to continue a steady, gradual growth. But while they are not likely to grow explosively, the large number of clients and the possibility of imported infections occurring in Mainland China in both clients and injecting drug users may contribute a large number

of additional infections in Hong Kong. While the prevalence in Figure 3 is low for clients, they represent 11% of the adult male population in Hong Kong, which means the number of infections can still be quite high. More careful modeling work should be done in the future to estimate new infections that may result from sex work in Mainland China and add them into the preliminary model presented here. The contribution of these imported infections is likely to be quite substantial in the future, as it has been in the past, when it contributed even more reported infections than the early phases of the MSM epidemic.



**Figure 4.** New infections in specific risk populations from the local epidemic in Hong Kong produced with the Asian Epidemic Model. This greatly underestimates total new infections in Hong Kong because infections acquired outside of Hong Kong, predominantly in clients and IDUs, and their impact in producing further new local infections are not included. The dashed line for MSM shows the effects on incidence of expanding intervention programmes to increase condom use in anal sex from 60% to 80% by 2008.

## Larger Numbers – Estimation & Trends in HIV Infections in Hong Kong Until 2005

*Many HIV infections in Hong Kong occurred elsewhere; AEM does not capture these.* While the use of behavioral data in AEM can give us some idea of the likelihood of a substantial local epidemic in different populations, it is not structured to include the large number of HIV infections that occur outside of Hong Kong. 70% of the HIV+ IDUs detected at methadone clinics since initiating universal screening originated from within Mainland China. 59% of heterosexual men diagnosed with HIV infection in the government clinic suspect the infection occurred outside of Hong Kong. Only among heterosexual women and MSM are most of the infections believed to have occurred in Hong Kong (65% of women at the government clinic suspect infection in Hong Kong, and 80% of MSM believe they were infected in Hong Kong).

*The UNAIDS workbook is the best tool for use in a low prevalence setting like Hong Kong.* Furthermore, Hong Kong remains a low prevalence setting, meaning the best approach for developing an estimate of the number of people actually living with HIV in Hong Kong today is to use the workbook approaches advocated by UNAIDS (Lyerla et al. STI 2006). UNAIDS developed the latest version of this

spreadsheet in 2005 and the SPP has applied it to estimate the number of infections. During Dr. Brown's visit, he proposed some revisions to the inputs in the spreadsheet, which increased the estimated number of current infections in Hong Kong from 2,500 to 3,240. This section discusses those changes and the proposed new numbers for HIV infections in Hong Kong.

The UNAIDS Workbook is based upon setting high and low population sizes estimates and then applying high and low ranges of prevalence to these numbers. The Workbook averages the sum of cross-multiplying these population and prevalence numbers to give the estimated number of infections in a given population. The key populations included are those originally suggested by the SPP with some changes to the population sizes or to the assumptions on high and low prevalence. Appendix 3 describes the assumptions for each group used to prepare this report.

*Currently there are approximately 3,200 people living with HIV in Hong Kong, with a probable range between 2,100 and 3,800.* Table 1 shows the details of the size and prevalence ranges along with the final average estimate arrived at for each group based on those numbers. This is somewhat higher than previous estimates, but given that there were 2,825 HIV infections reported in Hong Kong through 2005, this seems like a reasonable value.

**Table 1.** Proposed numbers of current HIV infections in Hong Kong based on the UNAIDS Workbook methodology. Assumptions are described in the text.

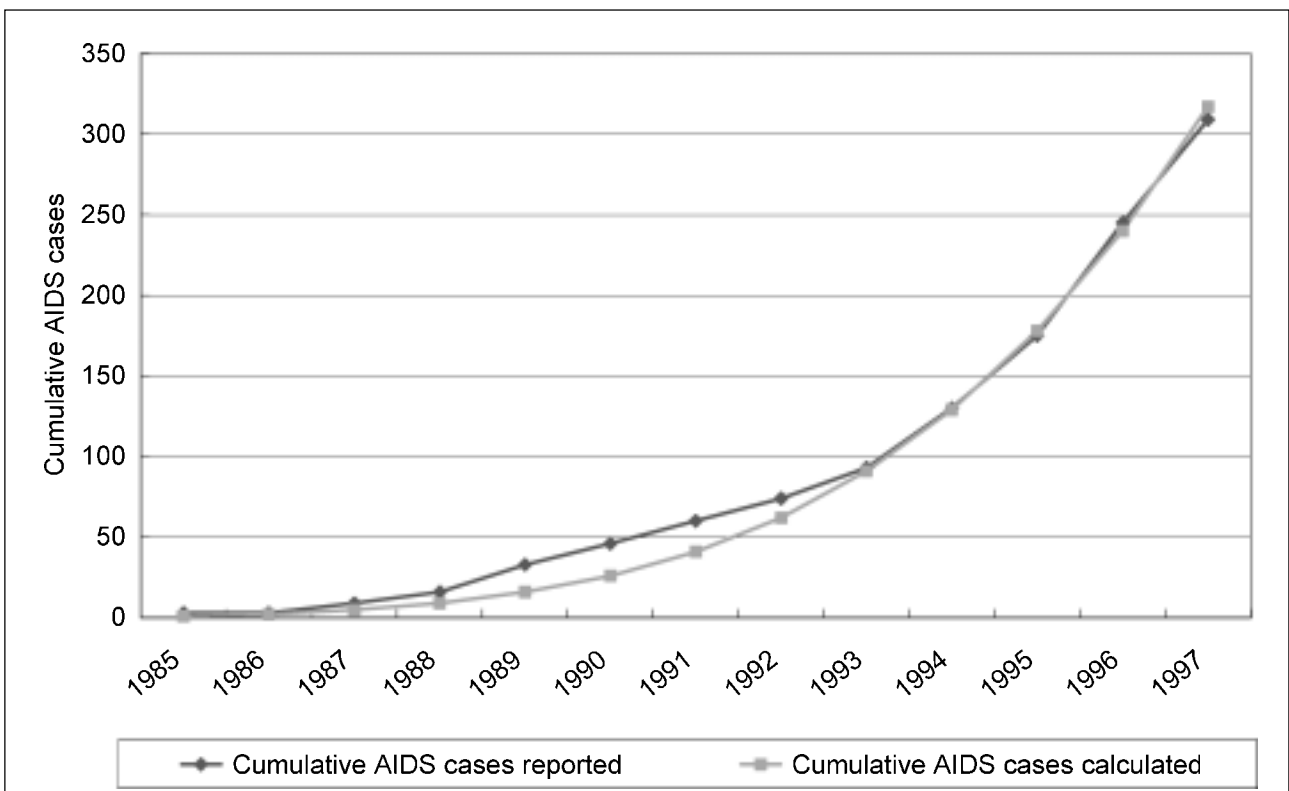
Populations at risk Name of group	Population size estimate		HIV seroprevalence		Average number
	Low	High	Low	High	
Injecting drug users (IDU)	11,000	16,000	0.2%	0.4%	40
Men having sex with men (MSM)	43,000	60,000	1.0%	4.0%	1,290
Female sex workers (FSW)	20,000	40,000	0.1%	1.0%	170
Male clients of FSW	180,000	360,000	0.3%	0.6%	1,240
Prisoners	12,000	13,000	0.1%	0.5%	40
Haemophiliacs					30
Children (perinatal)					20
Low risk women	2,073,700	2,053,700	0.01%	0.03%	410
<b>TOTAL</b>					<b>3,240</b>



Because Hong Kong has a strong health care system likely to capture most AIDS cases, a model for prevalence growth in Hong Kong should fit reasonably with the reported trends in AIDS cases. Reported HIV is notoriously unreliable as a source of estimates of numbers of infections because the number of tests conducted in various groups, uptake of testing services, and access to testing all vary in ways that are difficult to quantify. On the other hand, Hong Kong has a good medical system, which is probably detecting the majority of AIDS cases. Thus, trying to fit prevalence trends to reported AIDS cases makes more sense than trying to fit to reported HIV. However, this only works prior to 1997, when effective highly active antiretroviral therapy became widely available in Hong Kong. A mathematical curve, which produced 3,240 current infections in 2005, was prepared which correctly matched the early growth of cumulative AIDS cases in Hong Kong (see Figure 5) through 1997, when effective antiretroviral therapy (ART) became

widespread (the details of this calculation are described in Appendix 4). After this time, the nature and number of AIDS cases reported was altered by the availability of ART, making direct comparison impossible.

Cumulatively Hong Kong has about 3,700 HIV infections through 2005 with approximately 340 new infections occurring in 2005. After adjusting for the fact that antiretroviral therapy is keeping increasing numbers of people with HIV in Hong Kong alive, this approach estimates that approximately 3,700 cumulative HIV infections in Hong Kong through the end of 2005 (see Figure 6 and Appendix 4). This implies that services in Hong Kong have detected approximately three-quarters of all infections to date through testing or symptomatic care. However, while the number of new infections has only grown slowly through the present, this is now changing with the rapidly expanding MSM epidemic.



**Figure 5.** Comparison of the cumulative AIDS cases reported in Hong Kong to the cumulative number expected in a curve replicating the history of the epidemic through 2005.

The vast majority of current infections are evenly divided between MSM and clients of sex workers, but reported new infections among MSM are rising rapidly while those in clients fall. At present roughly 1,200 to 1,300 MSM and a similar number of clients of sex workers are living with HIV in Hong Kong (see Table 1). However, as seen in the previous section with the AEM work, over the next several years, infections among MSM will come to dominate the epidemic in Hong Kong since their HIV prevalence appears to be rising almost exponentially at present. Whether the number of new client infections rises again will depend on sex worker HIV prevalence at sites in Mainland China, where Hong Kong clients frequently purchase sexual services.

Infections among low risk women are increasing over time and they require access to prevention services. While MSM and clients are producing the largest number of new infections, the number of low-risk heterosexual women being diagnosed with HIV continues to be almost half the number of heterosexual men (clients) diagnosed (see Figure 1). These women are primarily partners of current and former clients, MSM, and IDUs, and their increasing number calls for expansion of their access to voluntary HIV testing,

prevention services in reproductive health settings, and care as necessary. Programs to encourage testing by men who are currently or have been clients of sex workers, MSM and IDU could also benefit these women by enabling these men to take measures to protect their partners.

### The Consequences of Inaction – the High Costs of not Averting the Hong Kong Epidemic

Antiretrovirals have greatly expanded the survival of those with HIV and AIDS. The introduction of antiretrovirals (ARV) to treat AIDS has been one of the great triumphs of modern science. These drugs, when used in combinations (normally of 3 different drugs), are remarkably effective in controlling, and even reversing, the damage that HIV does to a person's immune system. As a result, with good access to drugs and competent medical management most people with HIV and AIDS can hope to live a normal lifespan. Hong Kong has been particularly forward looking, providing these drugs through the government health system to those in need.

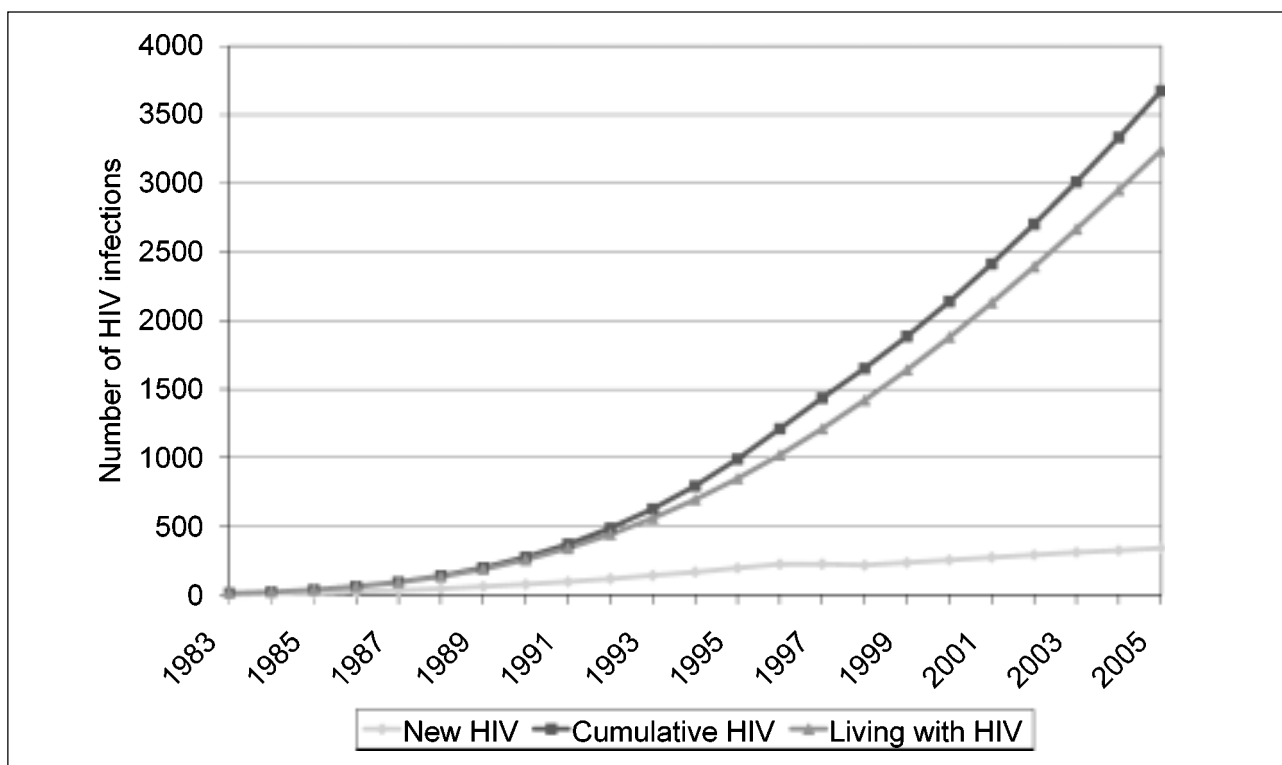


Figure 6. Estimated growth of the Hong Kong epidemic over the last two decades in terms of numbers of new, cumulative and current HIV infections.



*Hong Kong has been effective in expanding antiretroviral access with high quality medical management.* Most people who become ill with AIDS in Hong Kong are currently offered antiretroviral therapy (ART), and the number of people on ART at the government HIV clinic has grown steadily over the years (see Table 2). A similar number of people are believed to receive therapy through the Hospital Authority. This number has steadily increased over time, because with the high quality of medical care in Hong Kong, the vast majority of people with AIDS survive indefinitely. At present, more than 96% of people at the government clinic continue from year to year, an extremely high follow-up and survival rate. This means that the total number of people on therapy is growing steadily in Hong Kong.

*However, ART is expensive in Hong Kong and these costs will continue to grow.* At present it is estimated that the annual cost of care at the government HIV clinic for a patient on ART is roughly 120,000 Hong Kong dollars per year. This includes about 90,000 to 100,000 in drug costs, since Hong Kong does not receive the low prices that most developing countries do. The remainder is for medical consultation, administrative overhead, associated tests and follow-ups, etc. These costs are recovered to some extent through reduced hospitalizations, less need for expensive treatment of major complications, and lower need for symptomatic care for those who would become quite ill and eventually die without access to ART. However, because the survival is so high with good quality care in Hong Kong, the number on ART will continue to grow steadily, as infections acquired over the last decade and a half manifest as symptomatic illness. The costs of ART to the government of Hong Kong can be expected to continue to climb steadily if the epidemic progresses with a slow, roughly stable number of new infections as it did through the late 1990s and early 2000s.

*Prevention can greatly reduce the number of infections in Hong Kong, which will help to lower the ART burden, but even with prevention the number of people living with HIV in Hong Kong will continue to grow.* However, as outlined earlier in this paper this stable situation has changed radically of late, with a rapid growth in new HIV infections among MSM and the potential for expanded growth in clients of sex

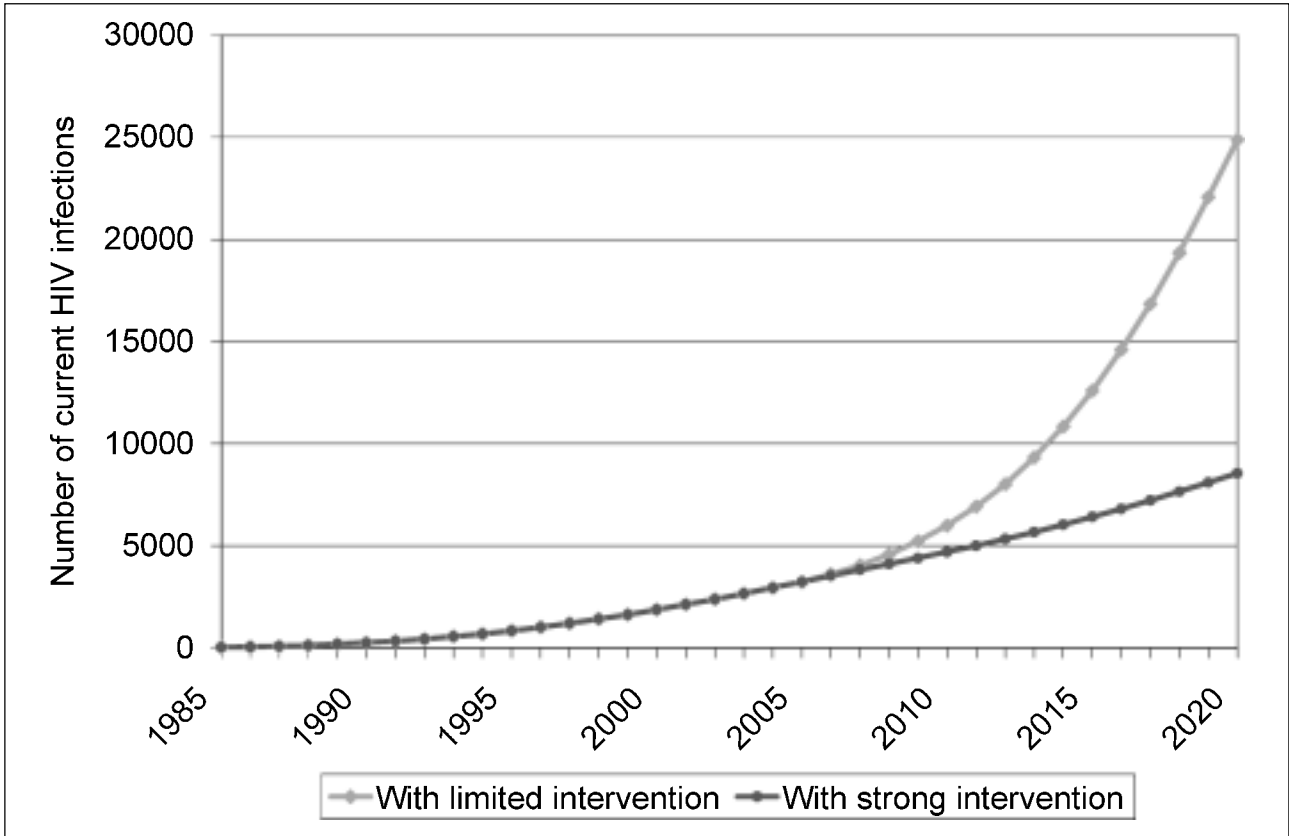
**Table 2.** The number of people on ART at the end of the year has increased steadily over the last several years. The total number on ART in Hong Kong is roughly twice this number.

Year	Number on ART at government clinic
2002	366
2003	443
2004	530
2005	605

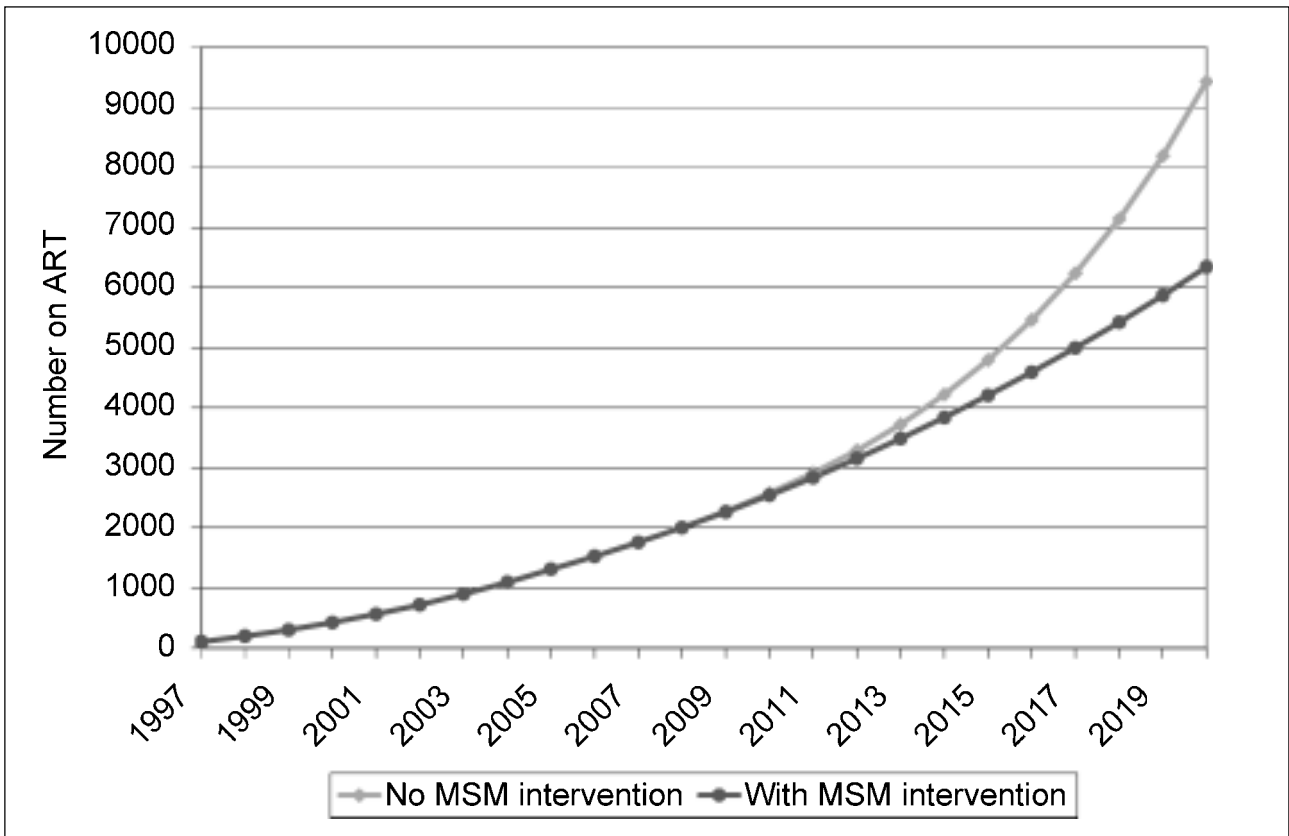
workers. Two scenarios were prepared to look at the potential growth of ART demand with and without effective prevention among MSM in Hong Kong. In the first, shown in the  in Figure 7, it is assumed that behaviors remain as they are, with roughly 60% of MSM using condoms in anal sex. This will lead to an explosive growth of HIV prevalence later in the decade. In the second, shown in , condom use rises to 80% by 2008 because of rapid scale-up of programs for MSM, an achievable prevention goal.

The result is that if prevention programs in MSM remain weak there will be almost twice as many prevalent infections by 2015 and almost 3 times as many by 2020, as compared to the situation if those programs are strengthened. Even the optimistic projection here may prove too low if prevalence among sex workers in Southern China were to rise with Hong Kong men continuing to use condoms only 65% of the time. This could add a significant number of additional infections.

*Antiretroviral demand will grow rapidly if effective prevention is not urgently put in place.* Figure 8 shows the resulting number of people on antiretroviral care in the two scenarios. Even without a rapid MSM increase, there will be a steady growth in the number of people on therapy because it is highly effective and most people continue from year to year. The effects of prevention failure take some time to manifest because on average people are infected 8 years before becoming symptomatically ill, at which point they will seek treatment. Thus, it is only a decade from now that the effects become apparent on medical care. In 2010, it will only add about 40 people to the number receiving treatment; but by 2015, there will be almost 600 more people on ART, and by 2020, this number will have grown to more than 3,000 – and it will be expanding with increasing speed.



**Figure 7.** Comparison of expected number of current infections in Hong Kong with and without a strong intervention program for MSM.



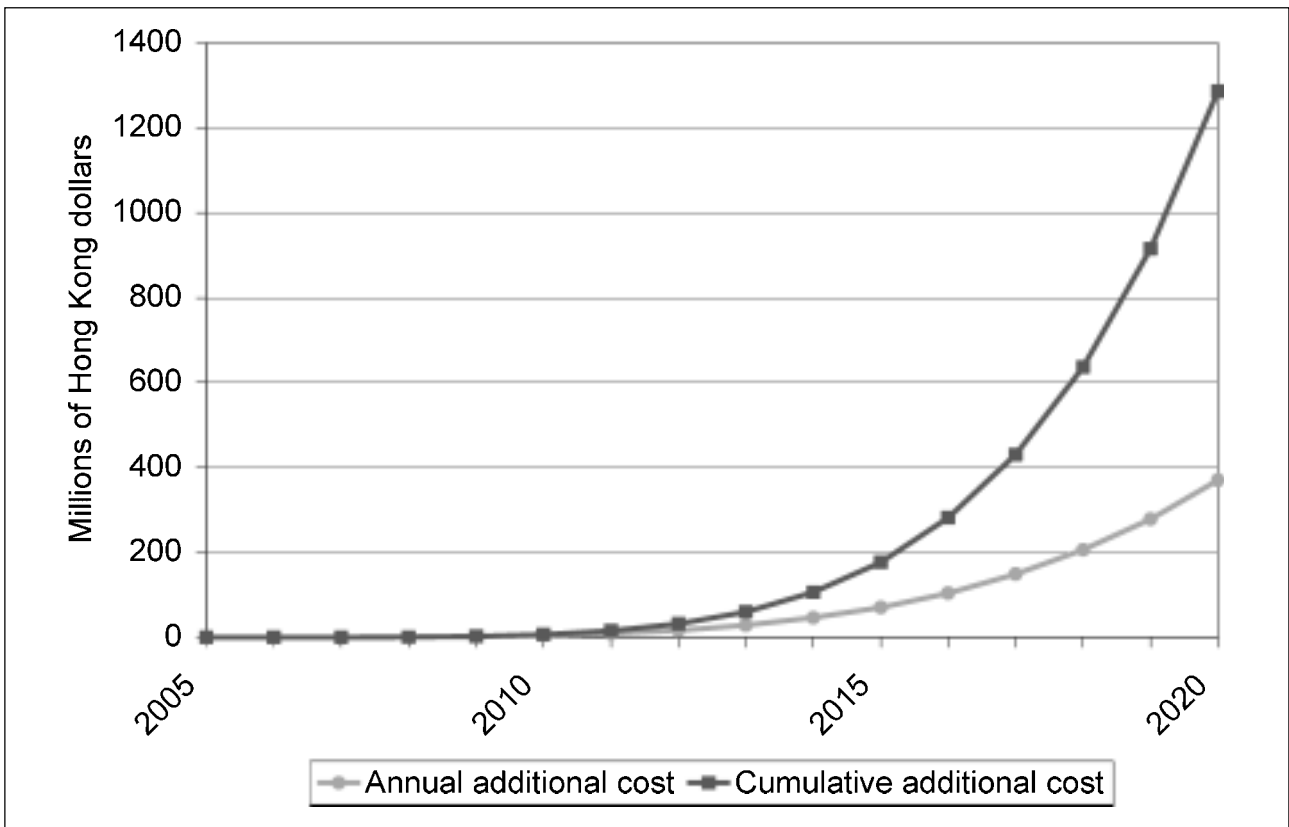
**Figure 8.** The effects of prevention failure take time to manifest, but then do so quickly. The number of people on ART does not increase for nearly a decade, but then expands rapidly.

The costs of not expanding prevention programs will be high, adding over a billion Hong Kong dollars in care costs by 2020. The expanding number of people requiring care at a cost of roughly 120,000 Hong Kong dollars per person per year will contribute substantially to the cost of care. Figure 9 shows the increase in the annual cost of care from failure to undertake aggressive prevention efforts, as well as the accumulated additional cost of antiretroviral care alone. These costs may well be an underestimate of the total burden as antiretroviral therapy costs may increase with the development of resistant strains of the virus, earlier detection and treatment, and increasing costs of newly developed drugs and tests. Additional new infections acquired by clients in China may also increase the numbers, and consequently, the costs. Although it is difficult to give figures for the costs of prevention in Hong Kong without more careful analysis of local costs of intervention efforts, it seems likely that an investment of a few tens of millions each year will avert treatment and care costs in the range of hundreds of millions downstream.

### Issues in Resource Allocation and Prevention Prioritization in Hong Kong

Before closing with recommendations for the response in Hong Kong, it seems prudent to mention some of the issues in resource allocation and prioritization of responses that require addressing in Hong Kong.

In the external evaluation in 1998, the consultants recommended a process of community planning, which subsequently took place. The Council for the AIDS Trust Fund subsequently agreed to fund efforts in the six key populations identified at that time. However, no specific resource allocation decisions have been made among these populations in terms of epidemiological priorities, and the consultant has heard anecdotally that much funding has gone for programs for lower risk populations, which will have limited impact on the epidemic. Potentially higher impact programs for MSM have received only a very small portion of all funding and programs dealing with cross-border issues with Mainland China have been largely unfunded.



**Figure 9.** The additional annual care cost (—■) and accumulated additional care costs (—■) associated with failure to expand prevention efforts. These accumulated costs will exceed one billion HKD by 2020.

In light of the current serious and evolving epidemiological situation, the Council for the ATF needs to consider implementing a stronger prioritization system that correlates closely with the epidemiological situation in Hong Kong. The exact mechanism by which this might occur would require technical inputs from the surveillance program and discussion among the Council, the ACA, the SPP and the NGO sector. A system should be agreed upon that ensures that the funding priorities correlate with the epidemiological priorities. While recommendations on an exact apportionment of resources are impossible to make at this point, certainly MSM and client and sex worker programs dealing with sex work in Mainland China need to receive substantially higher priority, as these are the likely sources of most new infections in Hong Kong in the next decade. The ATF may also wish to consider using current coverage of epidemiologically important populations as a factor in determining their year-to-year funding priorities, reallocating resources as necessary to ensure coverage of the populations producing the largest number of new infections.

*The assumption that the ATF can fund most prevention needs in Hong Kong needs to be tested and additional resources mobilized as necessary to ensure coverage.* Should this not be the case, the government needs to seriously evaluate other possible mechanisms for supporting HIV prevention efforts in Hong Kong, including special funding allocations and ongoing support schemes such as those used for other social services. It should be noted that the government will end up paying well over a hundred million Hong Kong dollars in higher annual costs for antiretroviral care in the future, certainly much less than the tens of millions annually needed for prevention today to avert those future costs.

## **Recommendations**

The following is a list of key recommendations that have come out of this external consultant visit. The list is priority ordered by population to reflect the relative urgency of the various situations contributing to Hong Kong's exposure to HIV in the near future. See

Appendix 6 for a list of recommendations for specific stakeholders.

- *Urgently expand prevention programming and community mobilization efforts among MSM in Hong Kong.* Multiple epidemiological and behavioral data sources are pointing to an exploding epidemic among men having sex with men in Hong Kong. Failure to contain this epidemic will alter the qualitative nature of the Hong Kong epidemic, shifting it from a gradually growing "low and slow" epidemic to one expanding exponentially. This in turn will place huge additional demands on Hong Kong's health care services. To address this, urgent action is needed including:
  - *Expand the resources available for HIV prevention among MSM, either through an emergency allocation for HIV prevention or prioritization of MSM and immediate mobilization of substantial additional resources for the organizations working with MSM through the AIDS Trust Fund.* Without sufficient resources to expand condom promotion and outreach programs and educate the MSM community on the growing HIV risk in their midst, the Hong Kong epidemic will enter a rapid growth phase, perhaps seeing a greater than 10-fold increase in HIV incidence by 2020. The Health, Welfare and Food Bureau should consider an emergency fund allocation to ensure resources are available to expand MSM programs and the AIDS Trust Fund should immediately make substantial resources available to organizations working with MSM.
  - *Make high coverage with effective interventions a key objective and indicator.* The programs are not going to be maximally effective unless they reach all MSM with high risk in Hong Kong. This means they must reach all the venues, including MSM who are more sheltered or reluctant to acknowledge their behavior. Achieving high coverage in all risk situations should be set as a goal, and coverage should be systematically measured and reported to ensure adequate resources are available to achieve it.

- *Mobilize and empower the MSM community to take ownership of HIV prevention efforts for its members.* Ultimately, the response to this new component of the Hong Kong epidemic must come from within the community itself. Raise awareness among members of the community. Put programs into place to reach more closeted members of the community and to educate young MSM as they come out. Existing organizations serving MSM must urgently expand their efforts. Simultaneously, non-HIV related MSM community organizations must take a role in educating their own members and clients on HIV and its prevention. In order to engage the community more effectively, the government should provide resources to ensure technical support and capacity building for community groups in areas of prevention, monitoring and evaluation of programs, and surveillance.
- *Urgently establish community-based surveillance for HIV prevalence and risk behavior.* The data sources at present do not provide as consistent a set of data as is necessary to ascertain the rate of HIV prevalence growth among MSM and to evaluate the effectiveness of expanded community prevention efforts. Working with the SPP and the university sector, the MSM community should assist in establishing a regular surveillance system, ensuring that the findings of this system on HIV and risk behavior levels regularly feed back to community members and to those serving them to allow for improved delivery of prevention and care services.
- *Educate MSM in Hong Kong about the high HIV prevalence being seen in MSM communities around Asia.* The MSM community in Hong Kong has many mobile members, who travel frequently and interact with their counterparts in other Asian cities. In many of these cities, HIV prevalence has risen to extremely high levels, especially in venues such as bars, parks and saunas. Recent HIV prevalence results from Thailand, Taiwan and other countries should be widely disseminated through the community so that people can make informed choices on their sexual behaviors when in those places.
- *Improve networking and information exchange within the region to understand and monitor the regional MSM epidemic.* As mentioned above, what is happening in Hong Kong is part of a region wide trend. Expanded collaboration and cooperation among service providers and researchers in the major cities of Asia will help to ensure that local programs are coordinated in responding to the regional epidemic. Researchers should actively explore what produces the most effective prevention programs and the linkages among the epidemics in different locations. This information, in turn, should inform local prevention efforts for mobile MSM.
- *Conduct these activities in a way that does not foster further stigma and discrimination.* The responses to this expanding epidemic must remain within the community. Drawing attention to the issue in the mainstream media will do little to slow the epidemic, and may contribute to increased stigma and discrimination, making it harder to engage the MSM community. Undertake efforts in a carefully targeted way, developing the approaches, messages, and materials in close consultation and collaboration with the MSM community. Ideally, most efforts will themselves be community driven, so that they reflect the community's concerns from the start. The Home Affairs Bureau should take whatever steps it can to create a supportive environment for MSM to own and respond to the HIV epidemic in their midst.

- *In collaboration with the community, undertake appropriate research and monitoring activities to fill information gaps, identify unmet needs, improve service delivery, and monitor the effectiveness and coverage of the response. Only by regularly following up on the effectiveness and impact of responses can the programs be improved over time.*
- *Address the Mainland China sex work and IDU connection with a program of focused research and expanded prevention programming.* The economic differential between Hong Kong and Mainland China, i.e., the lower cost of sexual services in Mainland China, is likely to increase the use of Mainland China-based sexual services by clients from Hong Kong over time. Accordingly, several steps need to be taken to reduce the impact of prevalence growth in Mainland China on Hong Kong:
  - *Strengthen research on Chinese sex workers in Hong Kong – accurately characterize their local risk in Hong Kong, migration patterns, access or lack of access to essential prevention services, and occupations and level of risk when in Mainland China.*
  - *Strengthen programs for Hong Kong men visiting sex workers in Mainland China.* Expand programs for and research on Hong Kong men who purchase sexual services, both female and male, across the border in Mainland China. Undertake qualitative work on the reasons for substantially lower condom use in Mainland China than in Hong Kong, the reasons for purchasing services in Mainland China, and factors that might facilitate stronger preventive behavior on the part of these men.
  - *Introduce expanded programming for Chinese sex workers in Hong Kong.* Simultaneously with this strengthening of the evidence base, expand appropriate interventions to provide Chinese FSWs access to essential prevention services, ensure they get treatment for STI, and actively promote their use of condoms with clients and regular partners.
- *Work with police and other partners to remove barriers to effective prevention such as using possession of condoms as evidence of prostitution.* This has been an ongoing issue in Hong Kong and has affected both programs for MSM and for female sex workers. These barriers should be addressed through legal and policy channels and the same positive public health oriented approaches toward harm reduction among sex workers and clients taken as are currently used for injection drug use.
- *Raise public awareness of growing prevalence among sex workers and IDUs in Southern China.* Undertake this in a targeted way that reaches potential clients and IDUs and couple it with expanded prevention efforts to motivate safer behaviors while in Mainland China.
- *Monitor ongoing levels of risk among Hong Kong IDUs visiting Mainland China and among Chinese IDUs coming to Hong Kong.* Watch for any indications of increased sharing or growing numbers of Chinese IDUs coming to Hong Kong. If either of these increases, implement appropriate prevention efforts to reach them.
- *Sustain active prevention efforts for IDUs in Hong Kong, while building understanding of recently reported increases in needle sharing.*
  - *Maintain Hong Kong's supportive and protective environment for harm reduction (good needle access and ready availability of substitution therapies) and sustain HIV prevention efforts and surveillance in methadone clinics, while expanding awareness in the IDU community of higher HIV levels in Southern China.* This very public health oriented environment and the programs it has produced have played an essential role in keeping HIV injecting risk low and reducing sharing, but aggressive efforts to raise awareness of the growing epidemics in the Pearl River Delta region are needed.



- *Undertake qualitative studies of the reasons for recently reported increases in sharing in surveys of street-based injectors.* The reasons for this increase should be determined and prevention programs adapted to address this increasing risk. These studies should be coupled with efforts to understand the interactions between Hong Kong-resident and non-resident IDUs which may increase exposure to HIV among locals.
- *Expand outreach programs working with non-Hong Kong injectors coming from Mainland China and other Asian countries or ethnic groups.* The significant contribution of non-Hong Kong born injectors is a worrying trend, and in light of their disproportionate contribution to HIV among IDUs in Hong Kong, programs to ensure they do not share needles while in Hong Kong are necessary. These programs might take place in outreach settings or in institutional settings such as the methadone clinics.
- *Revisit, appropriately target, and expand prevention funding as necessary in Hong Kong.* While increasing levels of resources have become available for treatment in Hong Kong, prevention funding has not been well prioritized according to critical prevention needs, that is, targeted at the communities and situations producing the largest numbers of new infections as determined from epidemiological and behavioral data. It has also remained relatively static in the face of what is now a very dynamic and rapidly evolving epidemic. To address this, it is recommended that Hong Kong:
  - *Immediately mobilize additional prevention resources to avoid hundreds of millions in care costs in the future.* The costs of expanding prevention today will be much lower than the costs of paying for infections not averted. By targeting these prevention resources on the right populations, a larger scale epidemic can be averted.
  - *Implement a stronger prioritization mechanism within the ATF.* While the ATF has made some adaptation of their programs to reflect the outcomes of previous evaluations, relatively little prioritization has occurred. While this did not have a major negative impact in a slow growing epidemic, failure to prioritize MSM and Mainland China-related programs at this point will have serious consequences for the people of Hong Kong in the future.
  - *Review and evaluate the existing prevention funding mechanisms in Hong Kong for coverage, prevention effectiveness, and their impact on the sustainability of community prevention efforts.* Stronger efforts are needed to evaluate the effectiveness of current prevention funding in Hong Kong. Is it sufficient to meet the prevention needs? Are the programs funded proving effective? What coverage are they achieving? Are current community programs sustainable in the long term with existing funding mechanisms? If not, then means must be found of diversifying prevention funding and ensuring sustained funding for ongoing programs. The Department of Health and the Health, Welfare and Food Bureau should consider ways of generating adequate sustainable funding for ongoing prevention efforts, perhaps similar to the schemes used to support other long-standing public service efforts in other government sectors.
  - *Explore joint funding of cross-border prevention programs.* There is increasing international support for Mainland China, and it may be possible to capitalize on this to co-fund projects between Hong Kong and counterparts in the Pearl River Delta. More openness to such co-funding on the part of the ATF may help Hong Kong's NGO sector to mobilize additional resources from sources outside of Hong Kong.
- *Sustain Hong Kong's efforts to regularly collect, analyze and interpret population, behavioral, epidemiological and programmatic data relevant to the HIV situation.*

- *Strengthen population based surveillance activities.* Hong Kong is a low prevalence setting, which presents unique challenges in HIV surveillance. However, keeping the territory's prevalence low requires vigilance on both the epidemiological and behavioral fronts. Current IDU surveillance activities are appropriate and capable of providing warning of any significant change in the epidemic, although some additional information on frequency of sharing and sharing network would be of value. However, epidemiological and behavioral monitoring among MSM and FSWs is much weaker and needs strengthening and additional resources. In particular, surveillance efforts and sampling methods should be as community based as possible to ensure representativeness and that members of these communities are informed about HIV, aware of their community's own HIV situation, and prepared to respond to it.
- *Build capacity to monitor and evaluate prevention and care program effectiveness, coverage, and cost.* The Hong Kong response needs to be an evidence-based one. That means that programs which are not having an impact should be discontinued, while those showing efficacy should be scaled-up rapidly. Establishing monitoring and evaluation guidelines for programs, and building NGO/CBO capacity to monitor and evaluate their own programs will pay benefits through better programs producing more effective responses. Similarly, gathering of costing data on programs will allow the cost-effectiveness to be determined and help Hong Kong to decide the most appropriate allocation of its HIV prevention and care resources.
- *Instantiate the capacity and provide resources to synthesize and integrate all available data into a clear picture of the epidemic, the factors driving it, and the impact of response alternatives.* Hong Kong has made strides forward in this regard in the last couple of years. The SPP sent Dr. Krystal Lee to train in integrated analysis at the East-West Center and 3 participants from Hong Kong attended an Asian Epidemic Model training in Bangkok in late April. The synthesis report Dr. Lee prepared prior to this external consultation was an

important contribution to the consultant's own understanding of the current situation. There are resources and skills currently at SPP and also at Chinese University of Hong Kong, and some consideration should be given to the possibility of establishing an epidemic synthesis and analysis group that stays current on tools, helps to guide data collection, and regularly analyzes the response for appropriate targeting, effectiveness, and direction in a dynamically evolving epidemic.

- *Network more extensively with both nearby Chinese and regional colleagues on surveillance and effective prevention for MSM, IDUs, sex workers and clients.* It is clear now that locations and populations outside of Hong Kong are strongly influencing the epidemic in Hong Kong. This is true for all the key populations involved in the epidemic. Thus, the Hong Kong response must broaden to work with colleagues to address risk in those places where men from Hong Kong are engaging in risk and to reduce the risk of those non-Hong Kong residents coming to the territory. Serious consideration should be given as to ways to expand this networking, which will benefit prevention efforts both inside and outside of Hong Kong.

In summary, Hong Kong is living on the edge: the HIV situation here has taken on an urgency never before seen. A transition in the HIV epidemic has occurred; it has left its "low and slow" phase and, unless urgent action is taken, may become "fast and furious". Only rapid, collaborative, and targeted action on the part of the government, the NGO sector, and the affected communities can reverse this trend. The costs of inaction will be high in both human and financial terms.

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**Appendix 1 – Meeting conducted during the consultancy visit to Hong Kong**

<u>Date/Time</u>	<u>Venue</u>	<u>Activity/meeting</u>
17 Apr/11am	Hotel	<ul style="list-style-type: none"> <li>Meeting with members of the SPP to discuss the plans for the week and review situation</li> </ul>
18 Apr/9:30am	YMT	<ul style="list-style-type: none"> <li>Meeting with SPP personnel and researchers regarding current epidemiological situation</li> </ul>
18 Apr/7:00pm	Yuen Long/ Mongkok	<ul style="list-style-type: none"> <li>Visit with community outreach workers for female sex workers</li> </ul>
19 Apr/9:30am	YMT	<ul style="list-style-type: none"> <li>Meeting with agencies working with IDUs</li> </ul>
19 Apr/10:30am	YMT	<ul style="list-style-type: none"> <li>Meeting with agencies working with MSM</li> </ul>
19 Apr/11:30am	YMT	<ul style="list-style-type: none"> <li>Meeting with agencies working with FSW</li> </ul>
19 Apr/1:30pm	YMT	<ul style="list-style-type: none"> <li>Continued meeting with SPP researchers on estimation and projection</li> </ul>
20 Apr/10:30am	WC House	<ul style="list-style-type: none"> <li>Informal joint ACA/SCAS meeting on estimation and projection</li> </ul>
20 Apr/2:00pm	PHLC	<ul style="list-style-type: none"> <li>Half-day workshop on Integrated analysis to improve responses to the HIV epidemic</li> </ul>
20 Apr/6:30pm	PHLC	<ul style="list-style-type: none"> <li>Open lecture on Balancing HIV prevention and care - a policy level perspective</li> </ul>
20 Apr/8:00pm		<ul style="list-style-type: none"> <li>Dinner with ACA Chair</li> </ul>
21 Apr/10:00am	RRC	<ul style="list-style-type: none"> <li>Community briefing on estimation and projection and improving responses</li> </ul>
21 Apr/3:30pm		<ul style="list-style-type: none"> <li>Meeting with members of the ATF Council on the current local situation</li> </ul>
21 Apr/6:00pm		<ul style="list-style-type: none"> <li>Dinner with SPP personnel</li> </ul>
21 Apr/8:00pm		<ul style="list-style-type: none"> <li>Meetings with local MSM groups on urgent need for mobilization of community response</li> </ul>

Key: YMT – Yaumatei Jockey Club Clinic, Kowloon  
 WC House – Wu Chung House, Wanchai  
 PHLC – Public Health Laboratory Center Exhibition Hall  
 RRC – Red Ribbon Centre, Kowloon

## Appendix 2. New and current infections in various populations from the AEM projection for the local Hong Kong epidemic

The following tables show the numbers of new and current infections in key populations in Hong Kong for the Asian Epidemic Model (AEM) run described in the text.

**IMPORTANT DISCLAIMER:** These only account for local HIV spread and are *not* intended to be an accurate representation of the spread of HIV in Hong Kong in the future. They are used to explore whether the current reported levels of risk behavior are sufficient to support a local HIV epidemic in Hong Kong. They do not capture externally produced infections (e.g., clients or IDUs acquiring infections outside of Hong Kong), nor their downstream impact in generating additional infections, and these have played a key role in the Hong Kong epidemic to date. Thus, these numbers should only be used with extreme caution.

**Table A2-1.** New infections occurring annually within Hong Kong based on the Asian Epidemic Model run for the local component of the epidemic. Numbers for MSM and the totals are presented in both non-intervention (continued 60% condom use in anal sex) and expanded intervention scenarios (increased to 80% condom use, shown shaded). New infections for other groups will also be lower in the intervention scenario because of the reduced impact of MSM infections on other groups, but these are not shown in the table.

*(IMPORTANT NOTE: This will not include infections acquired outside of Hong Kong, nor their effect in producing further infections within Hong Kong. This is particularly important for the client populations. As such, this table should NOT be taken as representative of the HIV situation in Hong Kong.)*

Year	Clients	FSW	IDU	MSM without inter- vention	MSM with inter- vention	Lo-risk women	Lo-risk men	Total without MSM inter- vention	Total with MSM inter- vention
1985	0	0	0	1	1	0	0	2	2
1986	1	0	0	1	1	0	0	3	3
1987	1	0	1	2	2	0	0	5	5
1988	2	0	1	4	4	0	0	7	7
1989	3	0	1	5	5	0	0	11	11
1990	5	1	1	8	8	1	0	15	15
1991	7	1	1	11	11	1	0	21	21
1992	9	1	1	15	15	1	0	28	28
1993	12	2	1	20	20	2	0	37	37
1994	15	2	2	26	26	3	0	47	47
1995	18	3	2	34	34	4	0	60	60
1996	20	3	2	44	44	5	0	74	74
1997	22	3	3	55	55	6	0	89	89
1998	23	3	3	69	69	7	0	106	106
1999	23	4	4	85	85	9	0	124	124
2000	22	4	4	103	103	11	0	144	144
2001	24	4	5	128	128	13	1	174	174
2002	27	5	5	157	157	15	1	210	210
2003	30	6	6	195	195	18	1	255	255
2004	34	7	7	239	239	21	1	308	308
2005	39	8	8	293	288	25	1	374	369
2006	45	9	9	359	301	30	1	454	394
2007	53	11	11	439	295	36	1	550	403
2008	62	13	12	534	276	43	1	666	401
2009	74	16	14	647	298	52	2	805	440
2010	88	20	16	781	321	63	2	969	481
2011	105	23	18	937	343	76	2	1161	523
2012	126	28	20	1117	366	91	3	1385	566
2013	150	33	23	1322	389	110	3	1640	611
2014	179	40	26	1550	412	131	4	1929	658
2015	213	47	29	1801	436	156	4	2250	706
2016	253	56	33	2068	461	184	5	2599	757
2017	300	66	37	2347	487	216	6	2971	811
2018	353	76	41	2629	514	251	7	3358	867
2019	414	88	46	2904	542	290	9	3752	925
2020	481	101	51	3155	569	330	10	4129	984

## Appendix 2. New and current infections in various populations from the AEM projection for the local Hong Kong epidemic (cont)

**Table A2-2.** Current infections in the various populations for the local component of the epidemic. Numbers for MSM and the totals are presented in both non-intervention (continued 60% condom use in anal sex) and expanded intervention scenarios (increased to 80% condom use). Note that table values for other groups will also be somewhat lower in the intervention scenario, but only the reduction in the total is shown in the table.

**IMPORTANT NOTE:** These are substantially lower through 2005 than the estimates and projections for the total HIV epidemic in Hong Kong presented in the text. This is because the AEM does NOT include infections occurring outside of Hong Kong (for example, clients going to Southeast Asia or Mainland China) or the effect that their infections will have in producing additional new infections within Hong Kong after their return. As a consequence, these numbers cannot be taken as representative of the HIV situation in Hong Kong as a whole, however they do illustrate the potential for rapid spread among MSM in Hong Kong under prevailing levels of risk behavior.

Year	Clients	FSW	IDU	MSM without inter-vention	MSM with inter-vention	Lo-risk women	Lo-risk men	Total without MSM inter-vention	Total with MSM inter-vention
1985	1	0	1	2	2	0	0	5	5
1986	2	0	2	3	3	0	0	7	7
1987	3	0	2	5	5	0	1	12	12
1988	5	1	2	8	8	1	2	19	19
1989	8	1	3	13	13	1	3	29	29
1990	12	1	3	20	20	2	5	44	44
1991	17	2	4	29	29	4	8	64	64
1992	24	3	5	42	42	6	12	91	91
1993	33	4	6	59	59	8	18	127	127
1994	43	5	7	79	79	12	25	172	172
1995	56	7	8	107	107	16	36	231	231
1996	68	8	10	140	140	22	46	294	294
1997	81	9	11	180	180	29	59	370	370
1998	94	11	13	230	230	37	76	460	460
1999	106	12	15	290	290	47	95	566	566
2000	117	13	17	361	361	58	117	684	684
2001	129	15	20	448	448	71	142	825	825
2002	143	16	23	555	555	85	170	992	992
2003	161	19	26	687	687	103	205	1201	1201
2004	180	21	30	846	846	121	240	1439	1439
2005	206	24	34	1042	1037	145	286	1738	1733
2006	238	28	39	1283	1221	173	342	2104	2040
2007	277	33	44	1576	1377	206	409	2545	2336
2008	325	40	51	1930	1492	246	488	3079	2607
2009	383	47	58	2357	1609	294	585	3724	2894
2010	454	56	66	2871	1727	349	701	4497	3192
2011	540	67	75	3484	1847	415	841	5422	3505
2012	642	80	86	4211	1970	496	1009	6523	3833
2013	764	95	98	5064	2096	593	1208	7822	4175
2014	908	114	111	6054	2226	710	1442	9339	4533
2015	1077	135	127	7190	2360	848	1716	11093	4909
2016	1272	161	144	8475	2500	1012	2032	13095	5302
2017	1497	190	162	9907	2646	1203	2392	15352	5716
2018	1753	224	183	11477	2800	1425	2796	17859	6150
2019	2038	262	207	13158	2958	1677	3242	20584	6603
2020	2338	303	231	14883	3116	1953	3690	23398	7046

### **Appendix 3. Assumptions in the UNAIDS Workbook calculation**

The UNAIDS workbook was applied to get a rough estimate of the number of people currently living with HIV in Hong Kong. This Appendix describes the assumptions on size and prevalence in the various populations.

For the most part the size estimates were as described in the document "Estimation and Projection of the Hong Kong HIV Situation":

- IDU numbers were based on multiplier methods using data from the Central Registry for Drug Abuse, methadone clinic registrations, and street drug user surveys. Range: 11,000 to 16,000
- MSM numbers were based on applying the age-adjusted results of territory wide telephone surveys of sexual behavior with other men in the last 6 months to the population of Hong Kong. Range: 43,000 to 60,000
- Female sex worker numbers were based on best estimates of community workers, police and others knowing the situation. Range: 20,000 to 40,000
- Male clients of sex workers based on 11% of adult male population visiting sex workers (a bit lower than the 14% used in the earlier document). Range: 180,000 to 360,000.
- Prisoners based on upper and lower estimates of number of prisoners between 2002 and 2004. Range: 12,000 to 13,000.

The prevalence ranges used were estimated as follows:

- IDU prevalence was based on the 95% confidence intervals in the various testing done in the methadone clinics, which have large sample sizes. Range: 0.2% to 0.4%
- MSM prevalence based on combination of VCT data at DH and AIDS Concern. Higher end based on prevalences seen in MSM populations in other similar Asian settings. Range: 1% to 4%.
- Female sex worker prevalence low value based on fact that very few infections detected in local sex workers, high value based on the Mainland China national estimate of about 1%. Range 0.1% to 1.0%
- Client prevalence based on Social Hygiene Clinic data. 95% CI for 2004 was 0.105% (95% CI 0.077 to 0.140%) with 84.2% of HIV+ diagnoses male and 58.8% of attendees male. This implies about 0.15% prevalence among males at SHC. 22.8% of the reported heterosexual male infections came from SHC, where 67.7% of the men who are HIV+ report they are heterosexual. Thus, about 0.1% of the 0.15% at SHC is heterosexual males and total client prevalence in Hong Kong is  $0.1/0.228$  (i.e. increase by fraction outside of SHC). This yields a range of 0.32% to 0.60% when the 95% CIs are used.
- Hemophiliacs and pediatric just added in by estimated number of infections.

Finally, the range of infections was set from the sum of the high prevalence by low population size and low prevalence by high population size calculations in the workbook. The UNAIDS Reference group has determined this gives the most reasonable range for current infections. This yields a range from 2,100 to 3,800.

#### **Appendix 4. A model for past HIV prevalence trends in Hong Kong**

In order to estimate the previous trends in the HIV epidemic in Hong Kong, a gamma function was fit to AIDS cases in Hong Kong through 1997, when antiretroviral therapy became common, with the constraint that the number of infections in 2005 would be 3240 as estimated from the UNAIDS workbook. This was done using an early version of the UNAIDS EPP software based on the gamma function. The fit for early AIDS cases and the total results of this procedure are shown in Figures 5 and 6 in the main report. The progressions used for HIV to AIDS and AIDS to death were calibrated to reproduce the UNAIDS Reference Group recommended average survival of 9 years. Slower progressions would produce larger numbers of total infections in Hong Kong over time.

However, the calculation needs adjustment after 1997 for the effect of antiretroviral therapy keeping people alive. The following procedure was applied:

- It was assumed that 50% of those who would have died in 1996 after the introduction of antiretroviral therapy survived. The number who would have died by the following year was estimated from the number of new AIDS cases produced by the model.
- After 1997, it was assumed that 96% of those on therapy continued to survive from year to year.
- Those who survive on ART are part of the current number with HIV, because the number of infections has been calculated from prevalence values based on the entire population. Cumulative HIV infections were therefore adjusted downward to reflect the contribution of the increasing number of people surviving due to ART.
- Finally, the incidence must also be lower, so incidence was formed by looking at the difference in adjusted cumulative infections from year to year.

The result of this procedure is shown in Table A4-1. The columns which are colored represent the final estimates of the adjusted current, cumulative and new HIV infections in the presence of ART.

As a check, we calculate the sum of the number on ART from preceding years and the number of new AIDS cases expected in a year, which will give the total number of people on therapy at the end of a year. The result of this calculation is displayed in Column 2 of table A4-2. Comparing this with the number actually on antiretroviral therapy provides a valuable check on whether these new estimates are reasonable. The total number on ART was not available during the consultancy, but was estimated at roughly twice the number on ART at the SPP run government clinic, because the Hospital Authority has approximately the same number of people on ART. This estimate is listed in Column 4. There is clearly a good agreement with the results of these projected trends and what has actually been observed in Hong Kong in terms of the number of people currently on antiretroviral therapy.

**Appendix 4. A model for past HIV prevalence trends in Hong Kong (cont)****Table A4-1.** The calculation of the number of current, cumulative and new HIV infections adjusted for the effects of access to antiretroviral therapy

	Current HIV modelled*	Cumulative HIV modelled	New HIV modelled	Expected new AIDS modelled	Additional survival from ART	Cumulative additional number surviving from ART	Adjusted cumulative HIV	Adjusted new HIV
	A	B	C	D	E	F=F(year-1)+D *E	G=B-F	H=G (year +1)-G(year)
1985	36	36	15	1			36	15
1986	58	60	24	1			60	24
1987	90	93	33	3			93	33
1988	132	138	45	4			138	45
1989	187	198	60	7			198	60
1990	255	274	76	10			274	76
1991	339	369	95	15			369	95
1992	440	486	117	21			486	117
1993	558	627	141	29			627	141
1994	694	793	166	38			793	166
1995	848	988	195	49			988	195
1996	1020	1211	223	62			1211	223
1997	1210	1466	255	77	0.5	31	1435	224
1998	1417	1754	288	94	0.96	104	1650	215
1999	1639	2074	320	113	0.96	190	1884	234
2000	1877	2429	355	134	0.96	291	2138	254
2001	2129	2819	390	156	0.96	408	2411	273
2002	2392	3243	424	180	0.96	541	2702	291
2003	2667	3703	460	206	0.96	692	3011	309
2004	2950	4197	494	233	0.96	862	3335	324
2005	3240	4726	529	261	0.96	1052	3674	340

\*built by fitting gamma curve with current infections of 3240 cases adjusted to reproduce AIDS cases through 1997

**Table A4-2.** Comparison of expected number of people on antiretroviral therapy from the model with the approximate number on therapy in Hong Kong (as estimated from twice the ART caseload of the government HIV clinic. Note: for 2005, the numbers are based on those on therapy at the end of the third quarter).

	Expected new aids in the year modelled	Cumulative additional number surviving from ART	Expected numbers needing ART	Reported number on therapy at government clinic at end of year	Estimated total number on therapy in Hong Kong (twice the preceding column)
	D	F	D+F		
2002	180	541	721	366	732
2003	206	692	898	443	886
2004	233	862	1095	530	1060
2005	261	1052	1313	605	1210



## Appendix 5. Glossary of terms used

*ACA* – Advisory Council on AIDS of Hong Kong.

*AIDS* – acquire immune deficiency syndrome, a complex of symptoms caused by the decline of the immune system in response to prolonged infection with the human immunodeficiency virus.

*ART* – antiretroviral therapy, the treatment of HIV with a combination of drugs that act to control the replication of the virus. Modern ART is extremely effective at reversing much of the damage done by HIV to the immune system.

*ARV* – antiretroviral, any of a class of drugs that helps to control a class of virus known as retrovirus, which produce long-term, slow developing illnesses in most cases. HIV is a retrovirus.

*Asian Epidemic Model (AEM)* – a computer model which reconstructs the course of epidemics in Asia, including all the key risk behaviors which transmit HIV.

*Epimodel* – an early model for HIV/AIDS that applied a mathematical function to the prevalence in a given year to show the trends in the epidemic. A variant developed by UNAIDS has been used here, which allows the early course of the epidemic to be fit more precisely.

*FSW* – female sex workers, who are at risk of HIV by virtue of frequent sexual contact and often high rates of other STIs, which enhance HIV transmission.

*HIV* – human immunodeficiency virus, the cause of AIDS

*IDU* – Injecting drug users, who are at substantial risk of HIV infection through needle sharing.

*Incidence* – the number of new infections per unit time, used here with reference to HIV.

*MSM* – Men who have sex with men, who are at substantial risk of HIV infection through practice of anal sex, which is very efficient at transmitting HIV.

*NGO* – non-governmental organization.

*Prevalence* – the number of current infections with any particular pathogen, used here with reference to HIV.

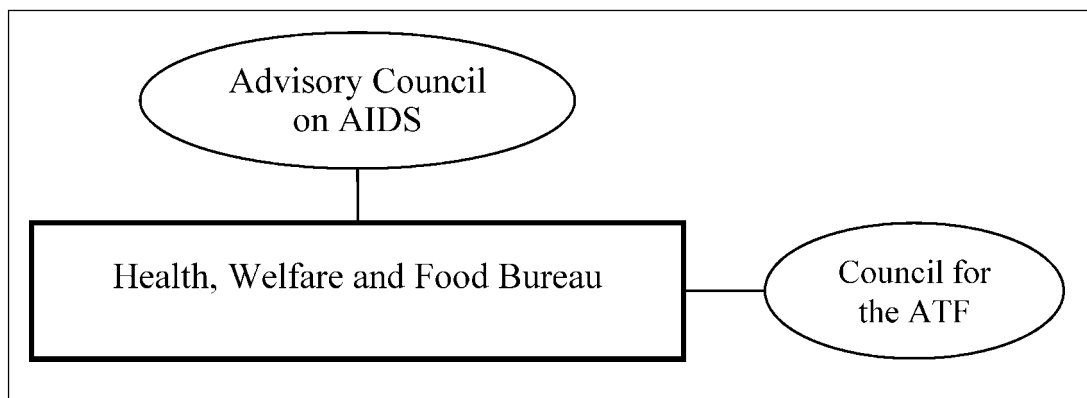
*SCAS* – Scientific Committee on AIDS and STIs of the Centre for Health Protection, Department of Health.

*STI* - Sexually transmitted infections, any of a number of pathogens transmitted through sexual intercourse, including, but not limited to: chancroid, herpes simplex-2, HIV, human papilloma virus (HPV), gonorrhea, and syphilis. They are known to greatly increase HIV transmission through sexual contact when one or both sexual partners has one.

*Subtype* – a genealogical classification for the type of HIV-1 virus. Common subtypes in Asia include CRF01\_AE, B, and C.

*UNAIDS Workbook* – an Excel workbook prepared by UNAIDS which uses high and low estimates of population size and HIV prevalence in key populations such as sex workers and clients, IDUs and MSM to estimate the number of HIV infections in a country.

**Appendix 6**



*Figure 6a. Summary of recommendations to Health, Welfare and Food Bureau, Council for the AIDS Trust Fund and Advisory Council on AIDS*

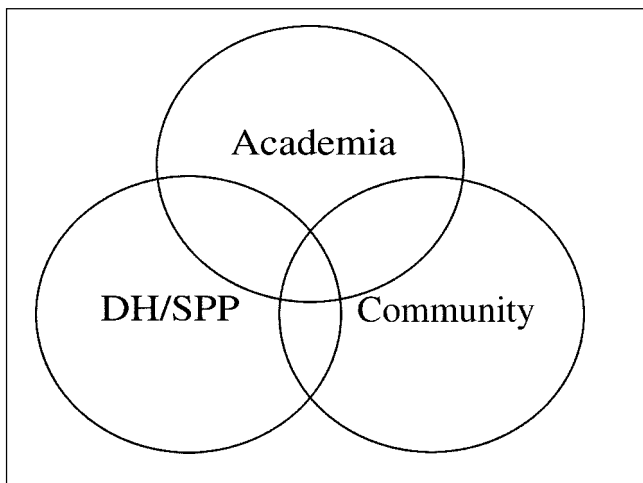
**SHORT TERM**

- S1. EXPAND resources available for prevention in MSM by the community
- S2. REMOVE barriers for effective HIV prevention from law enforcement agencies (possession of condoms as evidence for prostitution)

**MEDIUM TERM**

- M1. PRIORITIZE funding areas for HIV prevention through ATF according to epidemiological situation
- M2. REVIEW resource allocation mechanism for community based HIV prevention and care programmes on issues including prevention effectiveness, sustainability of programmes and diversity of funding sources
- M3. SUPPORT and FACILITATE cross-border prevention programmes (sex work, injecting drug use, and male same-sex activities)
- M4. EXPAND CAPACITY for local integrated analysis and mid-course corrections to Hong Kong response

**Appendix 6 (cont)**



*Figure 6b. Summary of recommendations to government unit (DH/SPP), the community, and academia*

<b>SHORT TERM</b>	<b>DH/SPP</b>	<b>Community</b>	<b>Academia</b>
<b>S1. EXPAND prevention effort in MSM IMMEDIATELY without furthering stigmatization</b>			
1. Disseminate information to the MSM community			
2. Implement prevention activities			
3. Establish surveillance mechanisms			
4. Mobilize the community			
5. Coordinate, monitor and evaluate response			
6. Undertake appropriate studies to improve response			
7. Network and exchange information in the region			
<b>S2. ADDRESS issues in sex workers and clients arising from human mobility</b>			
1. Strengthen prevention programmes for men visiting sex workers in China and non-local sex workers			
2. Expand understanding of the risk pattern of sex workers, esp those from China in Hong Kong			
<b>S3. SUSTAIN prevention in IDUs</b>			
1. Strengthen programmes for non-local injecting drug users			
2. Undertake qualitative studies on sharing or identified risks			
3. Expand current programs' emphasis on cross-border risk			
<b>S4. ADDRESS prevention among partners of clients and those at-risk</b>			

**MEDIUM TERM**

<b>M1. EXPAND capacity towards integrated analysis to monitor and improve responses</b>			
1. Strengthen population based surveillance activities			
2. Build capacity to monitor, evaluate programmes & costs			
3. Instantiate capacity & resources for integrated analysis			
<b>M2. FOSTER efforts in regional networking, capacity building and information exchange</b>			

- The unit should take the lead in undertaking or coordinate the activity
- The unit should participate or support to the activity

## **Appendix 7. Improving Prioritization of the Hong Kong HIV/AIDS Response**

*Tim Brown, Senior Fellow, East-West Center, 25 July 2006*

*In a follow up trip (11-12 Jul 2006) to the consultancy project on estimation and projection of HIV/AIDS in Hong Kong, Dr. Tim Brown met with the Secretary for Health, Welfare and Food, Director of Health, Controller of CHP, Chairman of Advisory Council on AIDS and Chairman of Scientific Committee on AIDS and STIs. The key issue of tackling a fast growing epidemic with a targeted and coordinated response was discussed. Below is a summary of the observations and recommendations.*

### ***An expanding epidemic calls for a well targeted response***

The HIV/AIDS epidemic in Hong Kong has recently entered a phase of rapid expansion, with substantial growth of HIV among men having sex with men (MSM). To reverse this steady growth and limit the future human and financial costs of HIV, the government of Hong Kong needs:

- 1) to adequately resource and prioritize the responses in accord with an evolving epidemiological situation, and
- 2) to monitor and evaluate the impact of intervention and mitigation efforts on HIV infections.

### ***Current issues in targeting the response in Hong Kong***

The majority of current prevention resources are vested in the AIDS Trust Fund (ATF). However, the ATF was conceived for the purpose of providing ex gratia payments to haemophiliac and other patients contracting HIV through contaminated blood products in the early 1980s. As such, the Council of the AIDS Trust Fund and the terms of reference were largely constituted for management of financial payments to affected individuals. As infection in haemophiliac patients came down with time while infections in other populations grew, the ATF was increasingly seen as a resource that *might* be used for other prevention and care purposes, but the composition of the Council did not adapt as this de facto change in purpose occurred.

With the limited expertise in the Council and the secretariat, it is difficult for ATF to identify the programs and efforts that will have the greatest impact on the epidemic. While the Council has responded in a limited way to recommendations made in the 1998 external consultancy review and to subsequent community planning efforts, the funding by ATF has remained unfocused with a major portion of funds going to programs for low risk populations.

Furthermore, they have had limited capacity for evaluation of program effectiveness and impact, and primarily evaluate programs on financial grounds. This has also resulted in an inability to rigorously determine which programs should be expanded and which should be terminated as ineffective.

As a consequence, the majority of prevention resources in Hong Kong have not gone to programs for the populations driving the epidemic, e.g., MSM, clients and sex workers, and certainly some resources have been expended on programs with little or no impact on the epidemic. With the epidemic transitioning to a rapid growth phase, the territory needs to substantially expand its capacity to implement, evaluate, and adapt effective responses to a changing HIV/AIDS epidemic.

### ***Realizing an effective and efficient response in Hong Kong***

To minimize the impact of HIV/AIDS in the future, Hong Kong needs to move to a science-based, epidemiologically-targeted, and regularly evaluated response to HIV/AIDS and its mitigation. Accomplishing this may require some fundamental changes in the mechanisms currently in place. The following recommendations suggest ways of modifying existing structures and establishing new ones that can improve the efficiency and effectiveness of the Hong Kong response in the future.

## **Appendix 7. Improving Prioritization of the Hong Kong HIV/AIDS Response (cont)**

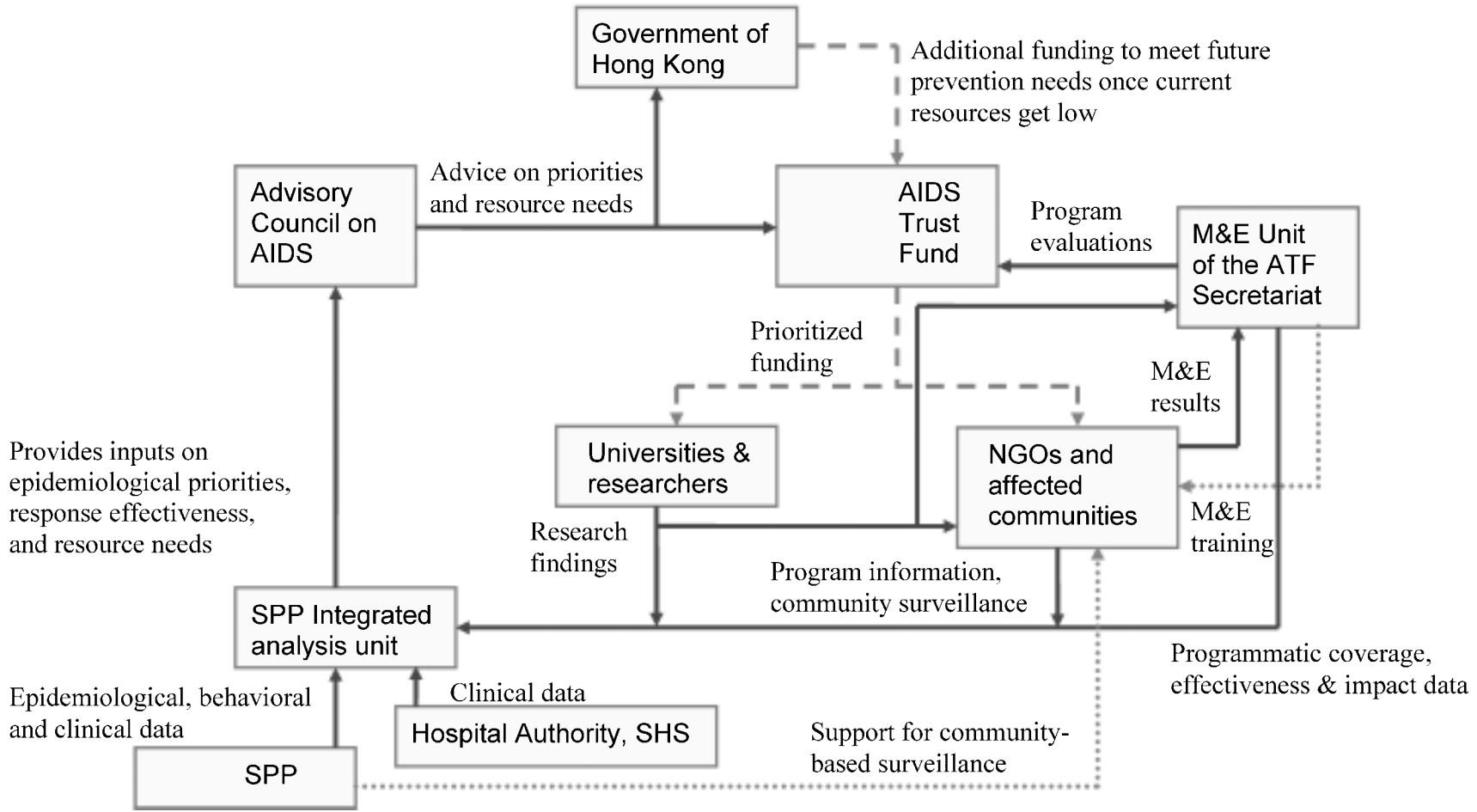
### Recommendations:

1. Revise the terms of reference of the AIDS Trust Fund and the composition of its Council to give the ATF direct responsibility and accountability for effective prevention and impact mitigation in Hong Kong and appoint members who have experience and familiarity with HIV prevention and care.
2. Create an integrated analysis unit within the SPP with the appropriate epidemiological, behavioral, programmatic and clinical expertise to analyze the epidemic, monitor and evaluate the overall response in Hong Kong, and provide recommendations to the Advisory Council on AIDS (ACA) and the ATF on prioritization of the response, the level of resources (financial and human) needed to respond, and how best to improve its effectiveness.
3. Have ATF adopt a timely and rational resource allocation and prioritization plan for effective HIV prevention and fund according to this information. Inputs to this resource allocation and prioritization plan can effectively be drawn from the ACA through which information from the integrated analysis unit and community opinions are regularly gathered and translated into practical recommendations on resource allocation and resource needs. To ensure closer ties to and greater acceptance by the community, it would be valuable to consider the appointments of some community members with strong prevention and care expertise to the ACA.
4. Allow the ATF to spend down its resources if necessary. The ATF has largely maintained its current capital, yet essential prevention needs are not being met in Hong Kong. The long term costs associated with these prevention failures will be much higher than the cost of doing prevention today. The ATF should be advised to expend the resources necessary to ensure an effective response and assured that the government will allocate additional resources as necessary in the future.
5. Establish a monitoring and evaluation unit within or closely tied to the ATF secretariat. This unit should have three primary purposes: 1) to work closely with NGOs, community organizations and others submitting applications to the ATF to ensure that programs have appropriate monitoring and evaluation (M&E) mechanisms; 2) to provide training in M&E for these organizations to build their capacity to implement effective programs; and 3) to review actual effectiveness of programs in close consultation with the NGOs, community organizations, and affected communities to inform future decisions and ensure program effectiveness.
6. Consider establishing an operational fund for NGOs and community organizations within the ATF. A consistent concern among the NGO and community sector in Hong Kong has been continuity of funding and the ability to sustain essential staffing. A mechanism should be established to support at least some core staffing costs for a longer period of time, especially in the area of monitoring and evaluation. If the NGOs are asked to take on more M&E responsibilities for their own activities, they should have support for these additional responsibilities.

The following diagram illustrates the interrelationships among the various organizations in Hong Kong embodied in these recommendations. Implementation of these recommendations or an alternative ensuring prioritization and adequate resources for the response in Hong Kong will bring the epidemic under control and save the Hong Kong government billions of dollars in the future.

**Possible Structure for Strengthening the Effectiveness and Efficiency of the Hong Kong HIV/AIDS Response**

— lines below represent flow of data and recommendations, - - lines represent funding flows, ..... capacity building



Appendix 7. Improving Prioritization of the Hong Kong HIV/AIDS Response (cont)