MIDPOINT REPORT

COMMUNITY BLUEPRINT

Ending HIV Transmission and AIDS
in Singapore by 2030

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
AfA	Action for AIDS Singapore
ART	Antiretroviral therapy
DSC	Department of Sexually Transmitted Infection Control
(GB)MSM	(Gay, bisexual, and other) men who have sex with men
HIV	Human Immunodeficiency Virus
HPB	Health Promotion Board
IDA	Infectious Diseases Act
LGBTQ	Lesbian, gay, bisexual, transgender, queer
M&E	Monitoring and evaluation
MINDEF	Ministry of Defence
MOE	Ministry of Education
MOH	Ministry of Health
NCID	National Centre for Infectious Diseases
NUS	National University of Singapore
NUH	National University Hospital
PEP	Post-exposure prophylaxis
PrEP	Pre-exposure prophylaxis
STI	Sexually transmitted infection
UNAIDS	Joint United Nations Programme on HIV/AIDS

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With thanks to Choy Chiaw Yee for her support as a resource person

Roy Chan (AfA)

EXECUTIVE SUMMARY

The 2019 Community Blueprint was grounded in the belief that scientific breakthroughs and lessons learned from decades of HIV/AIDS responses could end HIV as a public health concern. In line with UNAIDS Fast-Track Targets, the Blueprint emphasised targeting key populations — namely gay, bisexual, and other men who have sex with men (GBMSM), at-risk heterosexual men, transgender people, sex workers, and people who use drugs — with prevention and treatment services. While some targets have been met, progress in areas such as early diagnosis and stigma reduction has been uneven, highlighting areas where community-driven and government-supported interventions are still needed.

Updated Key Population Size Estimates

A recent study from NUS updated population estimates, essential for targeted HIV interventions. Populations studied include male clients of female sex workers, men who have sex with men, female sex workers, people who inject drugs, and transgender people. Estimating these group sizes is challenging due to stigma and legal constraints, but these estimates provide a foundation for planning outreach and prevention. Notably, the study highlighted that estimates may improve with the repeal of Section 377A, as some men may now feel safer disclosing their sexuality.

At-Risk Heterosexual Men

Historically, heterosexual men have shown low rates of voluntary HIV testing, leading to high rates of late-stage HIV diagnosis. Although the number of new HIV cases among heterosexual men has decreased by 77% since a 2014 peak, inconsistent condom use, limited awareness of HIV prevention tools like PrEP, and low self-perceived risk continue to hinder progress. Recommendations for this group include expanded outreach to specific at-risk environments (e.g. entertainment establishments), increasing access to HIV self-testing, and updating PrEP guidelines to be more accessible for heterosexual men.

Gay, Bisexual, and Other Men Who Have Sex with Men (GBMSM)

As of 2023, GBMSM account for 44.6% of all sexually transmitted HIV cases in Singapore, although the past five years have seen a modest decline in new infections due to PrEP and other community-led prevention efforts. AfA's gayhealth.sg programme has documented increased PrEP uptake, with 34% of respondents previously or currently on PrEP and many others expressing openness to it. However, barriers remain, including high costs and limited PrEP availability. Suggested improvements include making PrEP more affordable, enhancing access to STI testing, and delivering HIV prevention education that aligns with a more sex-positive approach.

Unregulated Sex Workers

Sex work in Singapore exists in a legally complex space, with the majority of sex workers operating outside regulated brothels and facing significant barriers to healthcare and social support. Project X's outreach has

been instrumental in providing HIV testing and distributing condoms. However, the criminalisation of sex work restricts access to essential services. To enhance healthcare access and human rights protections for sex workers, the report advocates for decriminalising sex work, increasing access to HIV/STI prevention resources, and establishing violence prevention services for sex workers.

People Who Use Drugs

People who use drugs, especially those engaging in chemsex, face heightened HIV risks. A trauma-informed care approach is proposed for this group, focusing on preventing drug use initiation, improving access to PrEP and PEP, and providing recovery resources that integrate mental health and trauma support. Community organisation The Greenhouse has reported success with this approach, noting high rates of drug use cessation and improved overall well-being among participants. Further training for healthcare providers and stakeholders to deliver trauma-informed, non-judgmental care is recommended.

Transgender and Gender-Diverse People

The transgender population in Singapore faces compounded challenges related to discrimination, limited healthcare access, and lack of HIV testing. The report notes that transgender women are disproportionately affected by HIV and often avoid healthcare services due to discrimination fears. Recommendations include integrating gender-affirming care with HIV services, offering self-testing kits, and providing gender-sensitivity training for healthcare professionals to reduce stigma and encourage routine testing among transgender people.

Late Presenters

Late-stage diagnosis continues to be a concern, with over half of new HIV cases in Singapore each year presenting at advanced stages. Heterosexual men are particularly affected. Diversifying outreach channels, strengthening legal protections for people with HIV, and accelerating the rollout of HIV self-testing kits are recommended to reduce late-stage presentation. Additionally, including HIV testing as a routine service in primary care settings could support early detection.

HIV Pre-Exposure Prophylaxis (PrEP)

PrEP uptake has grown among GBMSM in Singapore, but access barriers — particularly cost and limited availability — continue to restrict its broader adoption, especially among heterosexual men. To further reduce HIV transmission, the report recommends expanding access to generic PrEP, integrating PrEP delivery into routine health services, and increasing PrEP education across all at-risk groups. In 2023, PrEP prescription numbers continued to rise at key clinics, but broadening PrEP availability remains a priority to prevent HIV among diverse high-risk groups.

Reducing HIV-Related Stigma and Discrimination

Repealing Section 377A and amending the Infectious Diseases Act represent significant policy shifts that benefit GBMSM and other at-risk communities, promoting a more equitable legal environment. These changes can provide GBMSM with legal protection that fosters a safer space for seeking HIV prevention and treatment services. The report encourages further steps to reduce HIV stigma, such as workplace protections for people living with HIV, anonymising HIV registry data, and dismantling discriminatory policies against LGBTQ+ individuals. Such measures are essential to creating a health system that supports prevention, treatment, and well-being without fear of discrimination.

Community Workforce: General Practitioners

General practitioners (GPs) play an important role in expanding HIV prevention efforts, including anonymous testing and PrEP dispensing. However, the limited number of GPs trained in these areas remains a bottleneck. Expanding training for GPs on HIV prevention and treatment, increasing the number of designated anonymous testing sites, and promoting routine HIV screening in general practice are key recommendations for bolstering the community health workforce.

Programme Monitoring and Evaluation

Comprehensive monitoring and evaluation (M&E) are essential for effective HIV programming, yet many current evaluations lack data on key populations and qualitative insights. The report recommends regular monitoring based on process as well as outcome measures, greater involvement of programme beneficiaries in evaluation, and sufficient funding for robust M&E frameworks. Enhanced coordination among stakeholders and community participation in the evaluation process are critical to accurately measure programme impact and improve intervention strategies.

Conclusion

This midterm update of the Community Blueprint to End HIV Transmission and AIDS in Singapore presents a nuanced view of the successes, challenges, and necessary next steps to reach the 2030 goal. While progress has been made in reducing new HIV infections among GBMSM and increasing PrEP uptake, significant obstacles persist for heterosexual men, sex workers, transgender people, and people who use drugs. Legislative changes have started to reduce stigma, yet ongoing social and legal reforms are essential to ensuring equitable healthcare access for all at-risk populations. By scaling effective community-led interventions, expanding healthcare workforce capacity, and enhancing monitoring frameworks, Singapore can make substantial strides toward ending HIV as a public health threat.

Roy Chan (AfA)

INTRODUCTION

Over a decade ago, a strong belief arose that there were tools to end the AIDS epidemic. This was based on a combination of major scientific breakthroughs and valuable lessons learned from more than a decade of scaling up the AIDS response worldwide. HIV treatment had dramatically extended the lifespan of people living with HIV and prevented onward transmission. There were other proven strategies for HIV prevention e.g. condom promotion, behavioural change, voluntary medical male circumcision and educational programmes with key populations. These demonstrated their combined power to lower rates of new HIV infections. HIV programmes were further strengthened when they are combined with social and structural approaches. It was felt that the achievement of targets built on these tools needed to be fast-tracked.

In 2014, UNAIDS introduced the **Fast-Track response for countries to accelerate progress towards ending the epidemic**.[1] Fast-Track Targets were established for the post-2015 era that aimed to transform the vision of zero new HIV infections, zero HIV-related discrimination, and zero HIV-related deaths into concrete milestones and endpoints.

Fast-Track Targets

by 2020	by 2030
90-90-90 Treatment	**95-95-95** Treatment
90-90-90 New infections among adults	**95-95-95** New infections among adults
ZERO Discrimination	**ZERO** Discrimination

The first tranche of targets set out that by 2020, 90% of people living with HIV should know their status, 90% of people who know their status should receive treatment, and 90% of people on treatment should have a suppressed viral load. These 90-90-90 targets applied to children and to adults, men and women, poor and rich, and in all populations. In 2015, Singapore's figures were estimated to be 72%, 89% and 94%, i.e. we had some way to go for the first 90 but were doing well for the second and third 90s. Programmes to encourage HIV testing especially among key populations were expanded, as were efforts to ensure linkage to care, retention in care, and access to affordable highly effective anti-retroviral medications.

However, globally and regionally, the 2020 90-90-90 targets were missed.[2] Globally in 2020, 84% of people living with HIV knew their HIV status, 73% were accessing treatment and 66% were virally suppressed. At least eight countries as diverse as Botswana and Switzerland had reached the 90-90-90 targets on time, showing that with sufficient funding, political will and evidence-informed interventions, the targets were achievable.

While the number of new infections globally fell dramatically with roll-out of testing and treatment programmes in the 2000s, the decrease was plateauing in the mid- to late 2010s. It was recognised that anti-HIV treatment alone could not lead to control of the HIV epidemic. There was a 'prevention gap' that needed to be filled, while at the same time acting to maximise the prevention effects of anti-HIV treatment. The arsenal of HIV prevention strategies has expanded,

from conventional methods of HIV testing and counselling, promotion of condoms, blood screening, education and behaviour modification, harm reduction for injecting drug users, treatment of sexually transmitted infections, to newer methods of medical male circumcision and the use of anti-retroviral drugs for pre-exposure prophylaxis (PrEP).

In June 2021, **UN Member States (including Singapore) adopted a political declaration**[3] calling on countries to provide access to people-centred and effective HIV combination prevention options for 95% of people vulnerable to acquiring HIV within epidemiologically relevant groups, age groups and geographic settings. The declaration reinforced the call for Member States to work towards 95-95-95 testing, treatment and viral suppression targets. The UNAIDS 95-95-95 targets extend the 90-90-90 framework, incorporating additional priorities, such as meeting women's needs for HIV and sexual and reproductive health services, promoting person-centred combination prevention for people living with and affected by HIV, adopting an integrated approach to well-being and healthcare, and addressing social and legal barriers that limit access to and use of HIV services.[4]

These include the **10-10-10 targets for societal enablers:**

- Less than 10% of countries have restrictive legal and policy environments that lead to the denial or limitation of access to HIV services
- Less than 10% of people living with HIV and key populations experience stigma and discrimination
- Less than 10% of women and girls, people living with HIV and key populations experience gender-based inequalities and violence

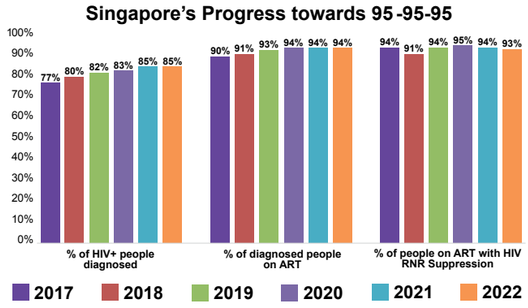
And the **30-60-80 targets for community leadership, service delivery and monitoring:**

- 30% of testing and treatment services to be delivered by community-led organisations
- 60% of the programmes to support the achievement of societal enablers to be delivered by community-led organisations
  80% of service delivery for HIV prevention programmes for key populations and women to be delivered by community, key population and women-led organisations

The figure below shows Singapore's performance on the 95-95-95 targets up to 2022. We are almost on target for the second and third 95. However, we are still 10 points off for the first 95.

Singapore's Results

Progress Through The Year (2017 - 2022)



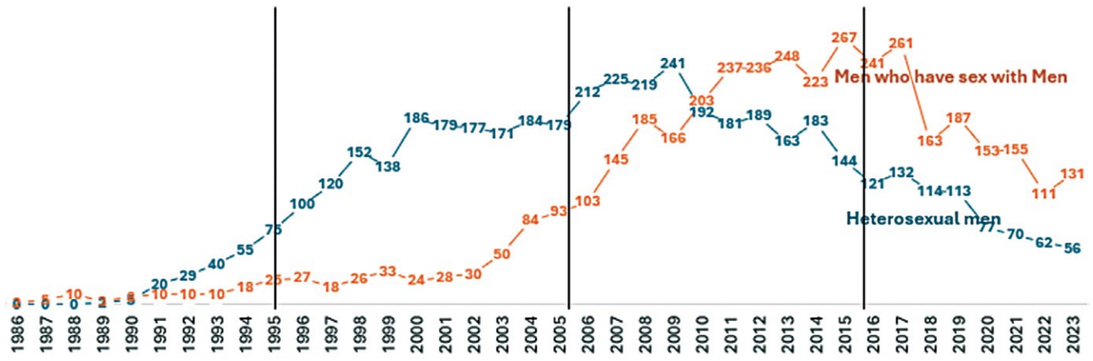
The International AIDS Society has outlined essential considerations for countries to achieve 95-95-95.[5] These include:

- Tailored and user-centred approaches: individuals vulnerable to HIV acquisition have diverse needs, preferences, behaviours and experiences.
- Comprehensive and integrated care for better health outcomes: HIV testing, prevention, treatment and care, tuberculosis, hepatitis B and C and sexually transmitted infection (STI) screening, with other services like mental health support, offered at a single facility or site.
- Support *"nothing about us, without us"*: collaborate with civil society and community-led organisations from design to implementation of programmes to address the needs of key populations.
- Address stigma and create a supportive environment: organise health services around the needs of people rather than focusing on one disease, shifting towards a person-centred approach across the continuum of care.
- Strengthen partnerships and learn from successful examples: cultivate robust collaborative partnerships among stakeholders, uniting industry, government and civil society.
- Ensure sustainable and scalable interventions through concerted actions and investments to mitigate fragmentation among diverse initiatives

In 2023, the National HIV Programme updated its recommendations for HIV screening in Singapore.[6] We should not rely on testing that is confined to health facilities and by medically-trained staff. Current policies need reviewing to broaden testing options. These include allowing testing to be more community-based, scaling-up self and home testing, increasing event- and location-based testing, and engaging the most affected populations in testing. Last but not least we need to reduce social inequalities, stigma and discrimination, as well as better understand factors that continue to make people fear testing and a potential positive diagnosis.

The figure below illustrates the trend of HIV infections in sexual key populations from 1985 to 2023, based on statistics released by the Ministry of Health. The number of infections has shown a downward trend since 2018, especially among heterosexual males. There was an uptick for MSM in 2023 compared with 2022. The downward trend is clearly not a given, and much more needs to be done to ensure that we get back on track to see the end of HIV/AIDS as a public health threat by 2030.

HIV INFECTIONS AMONG MALE SINGAPORE RESIDENTS SEXUAL KEY POPULATIONS 1985-2023



Alex Cook (NUS Saw Swee Hock School of Public Health)

UPDATED KEY POPULATION SIZE ESTIMATES

A recent study by Sharon Quaye and colleagues at NUS' Saw Swee Hock School of Public Health provided updated estimates of the numbers of people in key populations for the control of HIV in Singapore.[7] This built on an earlier pilot study led by Alvin Teo and Kiesha Prem, which developed a Singapore version of a network scale-up instrument.[8] Network scale-up is a method to estimate the size of groups that would be hard to estimate through direct questioning, for instance, those that are stigmatised or criminalised. Rather than asking survey respondents whether they belong to the group of interest, the approach involves asking about how many people they know who belong to the group of interest, and comparing the results to other groups whose size is known, such as taxi drivers or newly married couples.

The earlier study provided some initial estimates of the size of four key populations: male clients of female sex workers, men who have sex with men, female sex workers, and people who inject drugs. However, this was based on a small sample of 200 participants in the Singapore Population Health Study run by NUS Public Health. The new study provides more robust estimates, as it is based on close to 3000 participants. It also expanded the number of key populations to five, newly including transgender people.

Nevertheless, uncertainties and limitations remain: a key one is that the method is subject to a form of bias if membership of the key populations is not divulged to members of the social network. For instance, if Judy is taking part in the study, and Harry is part of Judy's social network, and Harry is a member of one of the key populations (for example, he might be a man who has sex with men), but hasn't told Judy that he belongs to this key population, then when Judy answers the survey, she may falsely report that she knows no member of the key population. To get around this, both studies incorporated questions on participants' views of the key populations into the estimates. Nevertheless, ideally these estimates would be validated through additional studies using alternative approaches.

Best estimates of the sizes of the five populations studied by Quaye et al. are:

- 76,800 male clients of female commercial sex workers
- 139,000 men who have sex with men
- 8,030 female sex workers
- 3,470 people who inject drugs
- 18,000 transgender people

The study also provided an indirect perspective of the demographics of members of the key populations, through the demographics of those who reported knowing members of the groups. Some examples are that older respondents knew more male clients of female commercial sex workers, suggesting that men in their 40s to 60s may be more represented within this group, while younger respondents reported knowing more men who have sex with men.

The study was conducted before Section 377A of the Penal Code – which criminalised sex between men – was repealed. It is plausible that with the repeal, more members of this group may be willing to communicate their sexuality to their social contacts, which may reduce the need to use attitudinal questions to adjust the estimates, should future waves of the study be conducted.

The newer study included an estimate of the size of the transgender community for the first time. However, as there is little other data to validate this estimate, this should be a priority for future work.

Terry Lim, Tan Yi-Roe & Fikri Alkhatib (AfA)

AT-RISK HETEROSEXUAL MEN

Background

Heterosexual men who engage in commercial and/or casual sex are at higher risk of acquiring HIV. There are an estimated 76,800 male clients of female sex workers in Singapore as of 2023.[7] In 2007, 22.5% of heterosexual men reported having casual sex.[9] It has likely increased in the 17 years since, but no recent studies have b een done to quantify this.

Up till 2009, heterosexual men made up more than half of new HIV infections reported among men in Singapore yearly. They now account for less than a third of new cases.

Progress and Challenges

There has been a sustained decrease in the number of new HIV notifications among heterosexual men for the past decade. In 2023, only 56 new cases of HIV were reported among heterosexual men[10], down 77% from the peak of 241 cases in 2014.

However, heterosexual men exhibit very low levels of voluntary HIV testing. In 2023, only 1 case (1.7%) was detected via self-initiated testing, compared to 22.9% of cases among MSM.[10] Consequently, they are more likely to be detected at a late stage of infection. COVID was a major setback: at AfA's Anonymous Testing Service, the largest of its kind in Singapore, while MSM client numbers bounced back to pre-COVID levels in 2022, heterosexual client numbers have yet to return to the same.

Additionally, yearly surveillance surveys conducted by AfA continue to find inconsistent condom use among at-risk heterosexual men. Consistent condom use with casual partners (41%) is lower than with sex workers (75%). Knowledge and use of other HIV prevention methods is very low: only 33% of men surveyed had heard of PrEP and 4% had taken it, while 26% had heard of PEP and 4% had taken it.[11]

Heterosexual men risk being left out of public health campaigns on HIV prevention.[12,13] The AfA Heterosexual Outreach Programme has had some success conducting targeted outreach at places frequented by at-risk heterosexual men, such as entertainment establishments, coffeeshops, and getai shows. Newer projects include a pivot to online outreach during the COVID period, and coverage by mainstream Chinese newspapers that encourages new audiences of heterosexual men to find out more about HIV and get tested.

However the landscape is constantly evolving. Past studies found that men engage in higher-risk behaviours when seeking sex at entertainment establishments[14] and online[15] compared to regulated brothels. This is borne out by AfA's observations on the ground: men perceive their relationships with informal/ indirect sex workers and casual partners as

less transactional and more organic than those with brothel workers and thus lower risk, despite casual partners, not sex workers,being the primary contacts of STIs since the early 2000s.[16]

Patrons at entertainment establishments are ageing – counterintuitively increasing their risk appetite as they have fewer responsibilities and are more blasé about their health – and are shunning online platforms due to fears of scams.

On the other hand, younger men who would have patronised regulated brothels in the past are turning to dating apps and other informal online networks to find casual sex. Before COVID, travel was identified as a key risk factor for HIV exposure, and we may see a return to this now with revenge travel in full force. The new hotspot for paid sex is Johor Bahru, which is much easier to get to than Thailand or the Riau Islands. Keeping up with these trends is crucial for HIV prevention to work.

Recommendations

1. Expand targeted outreach to include different groups of at-risk heterosexual men

Certain groups of men warrant special attention, whether because they are more likely to engage in high-risk behaviours or are left out of traditional outreach campaigns or both. AfA's surveys found that men frequenting entertainment establishments and coffeeshops take greater sexual risks but are more likely to turn to friends than authoritative sources for sexual health information.[11] The best way to reach these men remains showing up where they are, building personal rapport with them, and reiterating messaging around HIV prevention in clear, accessible language. Outreach efforts should also be expanded to other groups, such as ethnic minorities. We are also observing a small number of heterosexual men who report having sex with men. Budget support would be needed to fund in-person outreach and provide free HIV tests for these men.

2. Improve broad-based outreach and comprehensive sex education, especially for younger heterosexual men

Providing quality sex education early in life is important both to provide young men with the necessary skills and knowledge before they engage in risky sexual behaviours and because, for heterosexual men especially, community networks weaken once they leave the formal structures of school and NS. AfA is exploring reaching the younger generation through university outreach and new mediums such as podcasts and TikTok/reels. We recently had a very successful collaboration with influencer Luke Chan (@lukeyychan8), with over 280,000 views and 12,500 interactions for two videos covering information on HIV/STIs in a humorous, accessible way. But building a strong foundation for sexual health needs to be undertaken by a broad range of actors, including MOE, MINDEF and MOH/HPB, and not just specialists in the HIV/STI space.

3. Increase research and data sharing about heterosexual men's sexual risk behaviours

As the sexual behaviours of heterosexual men are often hidden and constantly changing, there is need for regular surveillance to keep up – and to share what information that is available. HPB's National Behavioural Surveillance Survey on HIV/AIDS and STIs, a key source of information on heterosexual men's sexual behaviours, was last done in 2012 and last publicly shared in 2007. Detailed HIV and STI epidemiological information is needed and should be made available for planning. Without this information, it is very challenging to develop effective HIV intervention programmes.

4. Accelerate the roll-out of HIV self-testing

NCID found that the majority of at-risk heterosexual men prefer self-testing for its convenience, privacy, anonymity, and autonomy.[17] This has been confirmed by AfA's experience running the HIV self-testing pilot, where heterosexual men made up a larger proportion of self-test clients than on-site test ones. Self-testing thus has the potential to encourage more heterosexual men to voluntarily take HIV tests in their own safe spaces.

5. Update PrEP guidelines and improve the accessibility of PrEP

Singapore guidelines only recommend daily PrEP for heterosexual men, which makes the process burdensome and expensive, especially for those who are only sexually active during specific periods (e.g. travel). New research about how PrEP works will hopefully soon open the pathway for on-demand PrEP for heterosexual men. An update to the guidelines in 2023 to prescribe PrEP to anyone who asks for it[6] is a big step forward, especially as heterosexual men may be reluctant to disclose their risk behaviours to medical professionals. However, feedback on the ground has still been that healthcare providers are less likely to believe that heterosexual men need PrEP compared to MSM when they ask for it. Heterosexual men also face the same barriers to PrEP access as MSM: in Singapore, PrEP is exceedingly expensive and overly medicalised.

Chronos Kwok (AfA)

GAY, BISEXUAL AND OTHER MEN WHO HAVE SEX WITH MEN

Background

The most recent estimate of the number of gay, bisexual and other men who have sex with men (GBMSM) in Singapore is 139,000.[7] The HIV epidemic in Singapore is increasingly concentrated in this population. Though GBMSM only make up -5% of the resident male population, sexual contact between men has accounted for 44.6% of all cases of sexual transmission up till 2023, and GBMSM have made up the majority of new cases yearly since 2010.

Progress and Challenges

Since 2017, there has been a general downward trend in new HIV infections among GBMSM. However, there have been yearly fluctuations in case numbers – with the latest being an18% increase from 111 cases in 2022 to 131 in 2023[10] – so it will continue to take sustained effort to keep numbers down.

Trends of usage and attitudes towards PrEP

PrEP is likely a major driver behind the drop in new infections. Based on the 2020 and 2024 iterations of gayhealth.sg (AfA's GBMSM outreach programme)'s regular surveys of the GBMSM community, there was a large increase in the proportion of respondents who reported being currently on PrEP (from 6% to 34%), having ever used PrEP (from 13% to 39%), and having partners who were on PrEP (from 10% to 24%).[18,19] Among those who had never used PrEP, acceptability remained high: around 75% of such respondents in both surveys indicated that they were open to taking it. At DSC Clinic, the number of PrEP prescriptions rose more than 9 times from 2018 to 2021. NCID and NUH BePrEP Clinic have seen a tripling in PrEP assessments in the past 3 years.

However, there are still significant barriers to PrEP access. Since the launch of this Blueprint in 2019, Truvada/Descovy are still the only PrEP drugs available in Singapore, and no generic PrEP has been approved even though the patent for Truvada has expired in September 2020. The combined costs of consultations, laboratory tests and medications is prohibitive, especially for GBMSM who are younger, students, or unemployed. A first-time visit at a subsidised PrEP clinic costs $200-300 without medications. In the 2024 survey, cost was cited as the main reason (42%) for those who had stopped or had never taken PrEP.[19] Despite the increase in PrEP consults at local clinics, more GBMSM are purchasing PrEP overseas or online (from 54% in 202120 to 60% in 2024[19]), with friends being the next most popular source (from 15% in 2021 to 17% in 2024). Barriers to PrEP access not only discourage uptake among the PrEP-naïve but also increase the risk of breakthrough infections among those who are taking it.[21]

Challenges with promoting condom use

Despite being a mainstay of HIV prevention messaging, promoting condom use is increasingly challenging. Regular seroprevalence surveys of GBMSM have shown a decline in consistent condom use with casual partners from 75% in 2010 to 67% in 2020.[20] The latest gayhealth.sg survey showed a further decline to 58% in 2024.[19] This trend is likely to persist as PrEP use increases. In the 2024 gayhealth.sg survey, 61% of respondents who were using or had previously used PrEP reported inconsistent condom use, compared to 33% of those who had never used or heard of PrEP. While condomless sex increases the risk of other STIs, STI testing rates are much lower than HIV testing rates: 25% of respondents had never tested for syphilis, compared to 8% who had never tested for HIV.[19] Inaccessibility to anonymous STI testing is also a current barrier that impedes improving STI testing rates.

Increase in online engagement

During the COVID pandemic, AfA intensified online outreach to GBMSM. Engagement with gayhealth.sg's social media platforms increased from 24,000 in 2020 to 127,000 in 2023. Besides promoting sexual health information, the strengthened online base helped channel more GBMSM to on-ground outreach efforts once they could resume. Round 10 of the GBMSM seroprevalence study, conducted in 2024, recruited 38% of its participants via online platforms, compared to 16% for round 9, which was conducted in 2020-2021. The gayhealth.sg team has expanded its reach since pre-COVID and managed to achieve its earlier Blueprint target of reaching out to 60% of GBMSM in Singapore (estimated based on take-up rates for outreach activities such as condom distribution, HIV/STI testing, and workshops).

Trends in testing and risk behaviours

Voluntary HIV testing was disrupted by COVID but recovered quickly. The number of GBMSM at AfA's Anonymous and Mobile Testing Services decreased by 39% in 2020 but rebounded in 2021 and in 2023 we tested 9% more GBMSM clients than in 2019. 74% of respondents for the 2024 gayhealth.sg survey had gone for a voluntary HIV test within the last 12 months, compared to 65% in 2020. There was also a decrease in the proportion of younger GBMSM (aged 18-24) who had never tested for HIV, from 32% in 2022 to 22% in 2023.[18,19]

The post-COVID increase in outreach and testing came in tandem with the resumption of risk behaviours, particularly related to travel. Travel restrictions were relaxed from 2022 and there was a surge in regional/international MSM parties and events. This was a major driver behind the global outbreak of mpox in 2022, though Singapore fortunately only saw a few cases. Nonetheless, travel remains a key risk factor as a significant number of GBMSM who were diagnosed with HIV in the past couple of years were likely to have acquired it overseas.

Impact of the repeal of 377A

Finally, Section 377A of the Penal Code, which criminalised sex between men, was repealed in 2022. While this was a monumental success for LGBTQ activism, at the same time, the government amended the Constitution to "protect heterosexual marriage" and underscored its commitment to maintaining discriminatory policies in housing, education, and media. For example, censorship in Singapore has often restricted more positive or nuanced depictions of gay lives, allowing only portrayals of gay men as perverse, promiscuous, or morally questionable, thus reinforcing societal stigma. Sex education in schools continues to exclude – if not actively condemn – any sexuality expressed outside of heterosexual nuclear families. The effects of continued institutionalised homophobia on the HIV response cannot be ignored, as GBMSM who experience stigma and discrimination have long been known to be less likely to access sexual health services and have poorer health outcomes. [22–24]

Recommendations

1. Increase affordability and accessibility of PrEP

It is an opportune moment to leverage the growing popularity of PrEP among GBMSM to maximise its potential as a HIV prevention tool at both the individual and population levels. To do this, lowering and/or subsidising the cost of PrEP is critical. Making generic PrEP available through local providers would lower costs significantly, as well as ensure that a stable and safe supply of PrEP is easily obtained compared to relying on online/overseas providers or friends, who may not be offering authentic medication or adequate follow-up. Costs for routine follow-up consultations and laboratory tests can be prohibitive even when subsidised, and should be streamlined where possible. As there will always be GBMSM who remain resistant to engaging healthcare providers, accurate PrEP information must be made widely available through community channels to empower them to make safe decisions for themselves and reduce the risk of poor adherence.

2. Increase access to HIV/STI testing

While voluntary HIV testing rates among GBMSM weathered the test of COVID, most GBMSM are still diagnosed through non-self-initiated testing (77% in 202310) and often diagnosed at a late stage of HIV infection. Anonymous and affordable/free testing services have proven to be a successful way of increasing HIV testing among GBMSM and should continue to be funded. Avenues for HIV testing should also be expanded, such as through more community-run testing at MSM-frequented venues (e.g. saunas) and self-test kits. The OraQuick self-test kit was successfully piloted at AfA and DSC from 2022 to 2024, though AfA's GBMSM clients gave feedback that they preferred the more sensitive later generation tests that are cheaper (as they are often provided for free as part of testing outreach campaigns) and have shorter window periods.

STI testing among GBMSM has lagged HIV testing every year and is of growing concern as condom use declines.[18–20] STIs are a risk factor for HIV transmission, on top of being health concerns in themselves. Despite anonymous test sites being the most popular option for syphilis testing among the GBMSM surveyed in 2024 (43% had tested at AfA in the past year[19]), MOH suspended community-based STI testing in 2023. STI testing is often even more expensive and inaccessible than HIV testing and making it more widely available to GBMSM needs to be prioritised. The barriers that stand in the way of HIV testing also apply to STI testing; linking HIV and STI testing is the obvious way to go to improve STI control.[25]

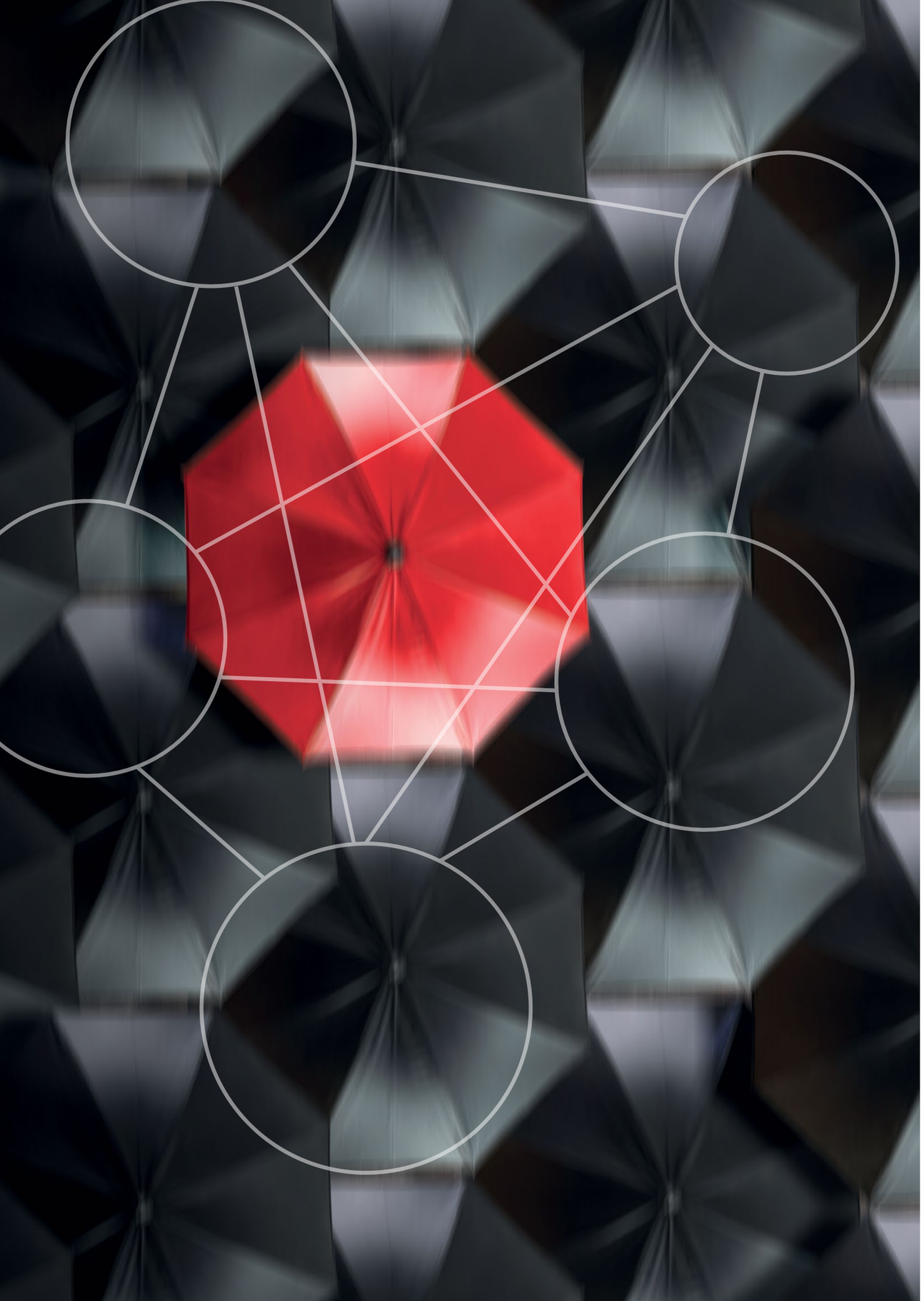
3. Increase outreach and education for younger GBMSM

GBMSM aged 18-24 are the least likely to have done an HIV/STI test, despite the average age of their first penetrative sexual experience being 21 and HIV diagnoses among GBMSM skewing younger than for heterosexual men. Targeting the younger population with sexual health education would ensure that they know how to take care of themselves just as they are beginning to become sexually active. Current outreach efforts that reach out to younger GBMSM in universities, on dating apps and at party venues, have proven to be beneficial in raising awareness and integrate routine testing behaviours. They need to be sustained and scaled up where possible. Reducing HIV and

STI vulnerability in the younger subgroup could also help to sustain safer-sex behaviour through later years and prevent onward transmission of such infections.

4. Diversify the promotion of HIV prevention methods and adopt a more sex-positive approach

The GBMSM community has diverse needs, abilities, and experiences, and over-emphasising any single method of HIV prevention – whether abstinence and condoms in the past, or PrEP now – will alienate some people. Campaigns must thus give a holistic view of HIV prevention – including regular testing, condoms, PrEP/PEP, and treatment as prevention/U=U – to empower each person to make the decisions that are best for them. Prevention messaging that relies on shame and fear to change behaviours is not well-received. We need to continue to explore more sex-positive messaging that emphasises the benefits of healthy sexuality, aims to empower rather than scare people, and recognises sexual health as core to physical and mental wellbeing.



Vanessa Ho (Project X)

UNREGULATED SEX WORKERS

Background

Current estimates indicate that there are approximately 8,030 cisgender female sex workers.[7] Of these, fewer than 1,000 (less than 10%) are registered under the Medical Surveillance Scheme (i.e. regulated brothels). These numbers do not include transgender and gender-diverse sex workers. This leaves a significant portion of sex workers operating in criminalised environments, limiting their access to essential social and health services.

Project X's regular surveys of unregulated female sex workers show considerable diversity in demographics and sexual practices among sex workers. In 2023, almost a third (31.5%) of respondents were transgender, and almost half (48.2%) were non-Singaporean – primarily coming from other Southeast Asian countries and China.[26] A recent unpublished analysis by NCID and Project X highlighted the heterogeneity of the unregulated sex worker population and proposed five broad categories with marked differences in their demographic and risk characteristics as well as contact with prevention efforts: massage-centric workers, street-centric workers, brothel-based workers, KTV and nightclub workers, and online-based workers. These findings underscore the need for public health interventions that take into account and address differences in context, sub-group characteristics and exposure risk.

There is no recent data on HIV prevalence or new infections among sex workers in Singapore.

Progress and Challenges

Strong community-led efforts by Project X to promote sexual health

HIV prevention programmes targeted at unregulated sex workers have been carried out by DSC Project Streetwalker since 1997 and Project X since 2008. Since the first iteration of this Blueprint, Project X has taken the lead to expand its reach to more locations across Singapore, ensuring that more sex workers have access to essential health services and resources.

In 2023, Project X distributed almost 180,000 condoms, conducted 438 free HIV tests (in collaboration with AfA), and facilitated 331 gonorrhoea/chlamydia tests (in collaboration with DSC Clinic). HIV testing has increased by 170% between 2020 and 2023. Project X ensures linkage to care by assisting sex workers in making clinic appointments and accompanying them.

Project X's regular knowledge, attitudes and practices surveys of unregulated sex workers from 2020 to 2023 also show improvements in sexual health awareness and safer sex behaviours. There have been increases in the proportion of respondents who have been exposed to sexual health programmes (from 50.7% to 71.2%), have ever done an HIV test (from 85.4% to 90.3%), have ever gone for an STI test (62.9% to 88.4%), and used a condom with their last client (from 71.1% to 89.0%). [26,27]

Continued criminalisation and stigmatisation of sex work

The sophisticated legal landscape complicates HIV prevention work due to to de facto criminalisation of unregulated sex workers. Laws that have been used to arrest, detain, and deport sex workers include:

Section 8(3) (e) of the Immigration Act	Sex workers are considered prohibited migrants and are arrested, deported and blacklisted.
Section 146A of the Women's Charter	Criminalises the use of technology to offer or facilitate the provision of sexual services. Sex workers who advertise online are arrested and investigated under this law.
Section 147 of the Women's Charter	Criminalises the management of a place used for "immoral purposes" which effectively results in sex workers being denied apartments to rent for work.
Section 24(1) of the Hotels Act	States that hotels are to exclude sex workers from their premises, which results in many sex workers being put under surveillance and evicted from hotels.
Section 19 of the Miscellaneous Offences (Public Order and Nuisance) Act	Criminalises soliciting in public place, which affects street-based sex workers
Section 5 of the Employment of Foreign Manpower Act	States that no foreign worker shall be in the employment of an employer without a valid work permit. This results in the arrests of sex workers who work out of bars or coffeeshops even if they are not hired by the bars or coffeeshops.

Due to the opaque nature of how regulated brothels operate and the strict criterion that govern them, sex workers who wish to work in regulated brothels often do not know how to sign up to work in regulated premises or may not qualify for the scheme.

The repeated media portrayals of sex workers being arrested, with the police urging the public to report vice activities, increases scrutiny on sex workers. While sex work per se is not illegal, many sex work-related activities are and sex workers have been subjected to various forms of punitive actions which result in driving their activities underground, making them more vulnerable to sexual risks and making it challenging to reach them effectively with prevention interventions.

Stigma remains a substantial barrier for sex workers, particularly those who are transgender or gender-diverse. This stigma not only affects their ability to find alternative employment but also hinders their access to essential healthcare services. The intersectionality of being a sex worker and transgender compounds these challenges, reflecting broader social inequalities that need to be addressed.

Impact of COVID-19 on sex workers

Many sex workers already face economic marginalisation, and COVID-19 made obvious the social inequities faced by sex workers due to the lack of recognition of their labour.[28] COVID-19 led to a loss of income for sex workers, greater food and housing insecurity, increased sexual compromise, and reduced access to medical services for sex workers.

A lack of access to government relief among sex workers exacerbated such conditions. Sex workers were often excluded from government financial aid programmes. The criminalisation of sex work and stringent documentation requirements have made it challenging for many to access longer-term financial support. The financial vulnerability of sex workers who have no safety net leads to increased risk-taking behaviours to compensate for the loss of income. Sex workers report facing pressure from clients to push boundaries, such as having condomless sex, potentially compromising their safety and sexual and reproductive health rights.

Gaps in funding and research support

Securing funding for community-led services and capacity building for community leaders is challenging. Additionally, while Project X has made significant strides in data collection and outreach, there remain substantial gaps in information and knowledge. Further research is needed to understand the full extent of the challenges faced by undocumented sex workers – especially migrant sex workers, who may not have been reached by current interventions.

Recommendations

Our recommendations are aligned with the UNAIDS 10-10-10 targets for societal enablers, which aim for less than 10% of countries to have punitive laws and policies that deny or limit access to HIV services; less than 10% of people living with HIV and key populations experiencing stigma and discrimination; and less than 10% of people living with HIV and key populations experiencing gender inequality and violence.

1. Decriminalise sex work

In line with the goal of eliminating punitive laws and policies, we strongly advocate for the decriminalisation of sex work in Singapore. Decriminalisation would mitigate the fear of discrimination by law enforcement officers and the uncertainty about the outcomes of police reports, which often deters sex workers from seeking help and thereby disenfranchises them.

Decriminalising sex work would:

- ❖ **Enhance access to health services:** enable more effective outreach and distribution of sexual health resources without the risk of legal repercussions
- ❖ **Reduce stigma and discrimination:** create a safer environment where sex workers can report crimes and seek justice without fear of prosecution
- ❖ **Promote human rights:** uphold the dignity and rights of sex workers, ensuring they receive the same protections and support as other people

2. Introduce and improve violence prevention services

In line with the goal of reducing gender inequality and violence, it is crucial to establish comprehensive services for sex workers. Our recommendations include:

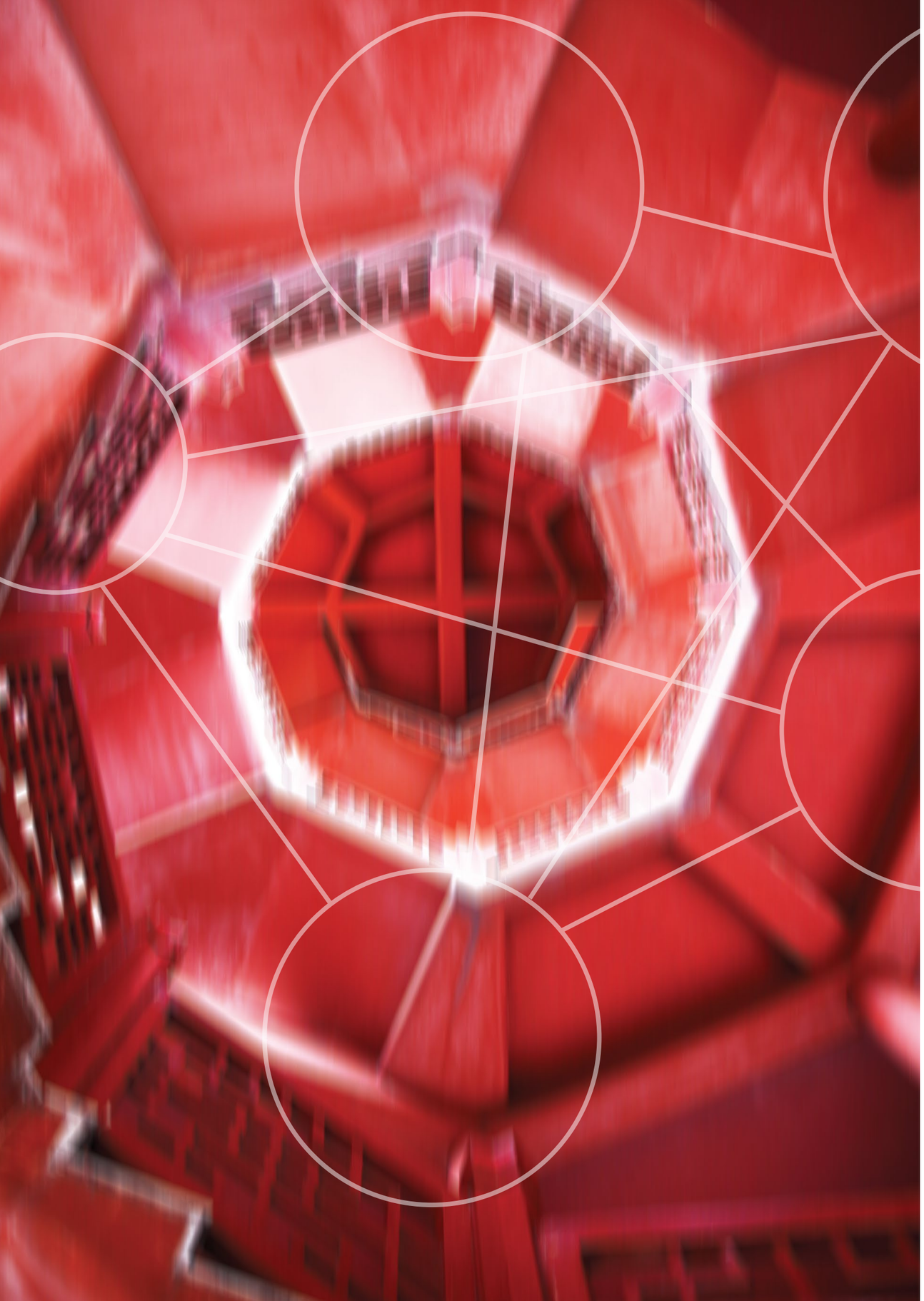
- ❖ **Training law enforcement officers:** Educate officers on the intent of Section 376H of the Penal Code (criminalises the non-consensual removal of condoms) and Section 146A of the Women's Charter (criminalises syndicates who use the internet to facilitate sex work), and ensure that officers understand the importance of protecting sex workers from violence and discrimination.
- ❖ **Non-criminalisation of victims:** Guarantee that law enforcement agencies will not criminalise victims of sexual violence when they report offences, and implement policies to ensure that victims are treated with respect and receive the necessary support.
- ❖ **Victim-centric approach:** Adopt a consistent victim-centric approach for all people reporting sexual crimes, regardless of nationality or profession, and ensure that law enforcement officers prioritise the safety and wellbeing of the victim in all cases.

3. Improve media representation of sex work in Singapore

In line with the goal of reducing stigma and discrimination, we advocate for better representation of sex work in the media. Media portrayals of sex work and sex workers in Singapore tend to be unduly negative, exacerbating stigma and discrimination against sex workers. Coverage often includes reports on police raids targeting sex workers, with at least 11 such stories published in 2023. During these raids, law enforcement frequently allows media personnel to accompany them, resulting in the public exposure of sex workers being arrested. Some images shared in the media are inadequately blurred or not obscured at all.

The forced public identification of individuals as sex workers can have severe consequences, not only for the workers but also for their families and children. Our recommendations include:

- **Stop filming during raids:** The media should refrain from filming sex workers during police raids. Sex workers should be treated as potential victims of a crime, and photographs, even if blurred, should not be published before any legal determination of guilt is made.
- **Focus on syndicate leaders:** If media coverage of raids is deemed necessary to deter vice syndicates, the focus should be on syndicate leaders rather than on the sex workers. This approach would better align media representations with the objectives of the Women's Charter, which is to protect women and girls from violence and exploitation.
- **Adopt comprehensive media guidelines:** There is a need to develop and implement media guidelines that encourage responsible reporting on sex work. These guidelines should prioritise avoiding sensationalism, stigmatisation, and the reinforcement of discriminatory stereotypes against women in the sex industry.



Alaric Tan (The Greenhouse)

PEOPLE WHO USE DRUGS

Background

There are an estimated 3,470 people who engage in intravenous drug use in Singapore.[7] Sexualised drug use (also known as chemsex) has been of concern within the GBMSM population, since this practice carries a higher risk for HIV and STI infection and transmission. Of note, half of all clients at substance use recovery centre The Greenhouse are living with HIV, with the other half at high risk of seroconversion.

Based on a size estimation of 139,000 GBMSM in Singapore[7], with one study establishing 50% prevalence rate of illicit drug use over a lifetime[29] and another study establishing 5% illicit drug use within the past 6 months during sexual encounters[19], we estimate that up to 70,000 GBMSM in Singapore would initiate drug use within their lifetime, with up to 7,000 GBMSM engaging in chemsex.

Those who have ever experienced discrimination are more likely to initiate use, and self-reported using to cope with factors such as loneliness stress, fear, shame and HIV-relatedstigma. Multiple and intersecting layers of marginalisation is positively correlated to increased likelihood of use.[29,30]

Progress and Challenges

Progress

Case notes review of 125 GBMSM clients at The Greenhouse has established that 99% of clients present with at least 1 traumatic experience, with an average of 5 experiences per client. The most commonly reported experiences are family disconnection (62.4%), bullying in school (57.6%), guilt and shame over sexual orientation (53.6%), verbal abuse (52.8%) and neglect or deprivation (48%).[30]

This understanding of factors leading to use allows us to provide targeted interventions delivered within an integrated bio-psycho-social-spiritual framework, which are kept free and anonymous to overcome reported barriers to care. We are able to keep them free-of-charge by training beneficiaries into volunteer peer supporters and counsellors, who go on to train existing healthcare workers and other stakeholders. This targeted and integrated approach has proven to be very effective, with increase in wellbeing across life domains, and up to 80% success rate in drug use cessation during impact measurement studies.[31]

Challenges

GBMSM who use drugs to cope with minority stress and trauma face more barriers to care and are less likely to engage in health seeking behaviours unless they are free and easily accessible. They are less likely to get tested, use preventative measures such as condoms, PrEP or PEP, which drives transmission.

People living with HIV are more likely to initiate drug use over their lifetime to cope with HIV status and stigma, especially if there is underlying trauma which has yet to be identified and addressed (Tan et al., 2021).[29] Drug use compromises treatment adherence, which

may lead to poorer health outcomes, onward transmission, and increased cost to healthcare systems.

LGBT-affirming care that is sex-positive and trauma-informed is both rare and prohibitively expensive in Singapore, even if those who require care overcome barriers to health-seeking behaviours. Clients often report further stigmatisation or re-traumatisation by existing services.[32]

Recommendations

1. Introduce upstream interventions that address factors leading to drug use within populations most at risk of initiation

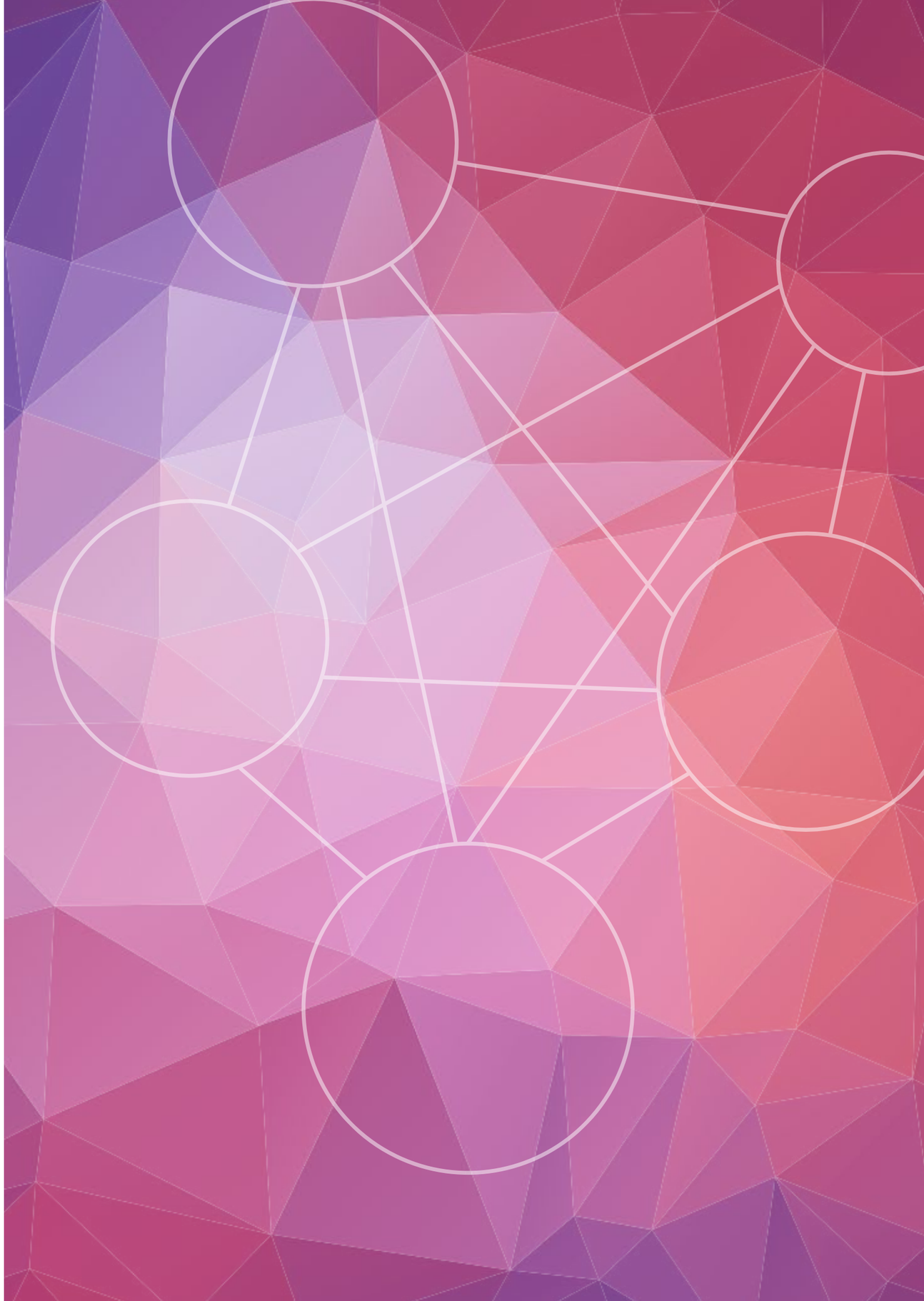
Identify populations most at risk of drug use initiation based on research study findings and provide upstream interventions such as community campaigns that describe and address factors leading to use in an open and non-judgmental manner. HIV care providers should also conduct trauma assessment and provide recovery resources for people living with HIV, regardless of drug use status.

2. Set up a learning programme to propagate targeted and integrated approaches to care for people who use drugs amongst existing healthcare providers and other stakeholders

This should include increasing HIV prevention, testing and treatment education to people who use drugs (with a focus on providing free prevention mechanisms such as PrEP and PEP), as well as establishing standardised systems and measures (e.g. bio-psycho-social-spiritual framework and WHOQOL survey). Training stakeholders to adopt the bio-psycho-social-spiritual framework will lead to safe, sustainable and effective care across the nation, which can be compared across centres and constantly improved through co-learning, cross-learning and constant learning frameworks.

3. Continue building capacity for community-based and peer-lead programmes

Provide funding to employ those with lived experience of trauma, addiction and recovery to share their stories and propagate these targeted and integrated approaches to care, based on proven outcomes.



Seth Tjia (Transbefrienders)

TRANSGENDER AND GENDER-DIVERSE PEOPLE

Background

Population surveys estimate that around 0.3–4.5% of adults identify as transgender or gender-diverse.[33] Quaye et al.'s estimate of 18,000 transgender people in Singapore[7] is at the lower end of that range, at 0.3% of the resident population.

There is little data about HIV prevalence in the transgender community in Singapore and new infections among transgender people are not tracked or reported by MOH. Global median HIV prevalence among transgender people is 9.2%, ranging from 0% in Samoa to 58% in South Africa.[34] Transgender people make up 2% of new HIV diagnoses in the US.[35]

Progress and Challenges

With increasing politicisation and media attention on transgender topics, there has also been increased interest in policies surrounding transgender healthcare. Many studies and statistics do not account for transgender people, reflecting just the information based on the gender marker stated on people's NRICs. Transgender people who have not undergone procedures to change their genitalia and removal of gametes classified under the sex they were assigned at birth, even if they are undergoing hormone therapy. This idea of a fixed "biological sex" is inaccurate because of the various physiological changes that cross-sex hormones can cause. More importantly, this renders an already small and vulnerable minority even more invisible to healthcare providers and advocacy.

In studies that have considered trans people, they mostly include trans women. In 2022, the relative risk of acquiring HIV was 20 times higher for trans women than for people in the wider population globally.[36] Almost no data exists for trans men as a specific group. Two recent US-based studies show that HIV prevalence may be higher in trans men who have sex with men than people in the general population.[37,38]

We do not have data on transgender people living with HIV in Singapore. However, we can observe data from surrounding Southeast Asian countries that roughly one in ten trans women in Cambodia, Indonesia, Malaysia and Thailand are living with HIV.[39]

Transgender people in Singapore are underserved by HIV testing and prevention services. From a study conducted by TransgenderSG in 2020, over half of respondents (51.6%) avoided seeking reproductive or sexual healthcare (such as a pap smear or HIV test) due to discomfort over how they would be perceived or treated.[40] Trans men were more than twice as likely to avoid these services as compared to trans women. The T Project recently started providing free HIV tests via AfA's Mobile Testing Service, reaching 37 transgender clients (31 trans women, 6 trans men and 1 non-binary person) over two sessions in 2024 so far.

Transgender people will get tested for HIV as part of procedure during gender affirmation surgeries. With more stringent gender dysphoria diagnosis in Singapore, many transgender people, especially trans women, have turned to purchasing hormones from the surrounding countries. Anecdotally, some purchase PrEP during these trips as well.

Recommendations

1. Provide integrated, gender-affirming healthcare

When gender-affirming healthcare practices are provided, trans people will feel safer in reaching out to these places for testing and treatment. The Tangerine Clinic in Bangkok followed this model starting off as a HIV testing facility before branching into gender care services, allowing for more comprehensive testing and harm reduction. By coupling HIV/STI resources along with gender care, there can be improved testing coverage of this community.

2. Increase the visibility and inclusion of transgender people in HIV research

More comprehensive studies on trans people, especially the transmasculine community, is needed in everything from medical/biological studies to behavioural ones. For example, while PrEP use has been established in cisgender people and trans women, not many studies have been done on the efficacy of PrEP on transmasculine individuals. As hormones can change the physiology of genitalia, biological studies on cisgender people may not entirely be accurate when it comes to trans people. Trans people may also face additional barriers such as stigma and discrimination, medication burdens, and access issues that affect the efficacy of HIV interventions and should be studied.

3. Improve prevention education

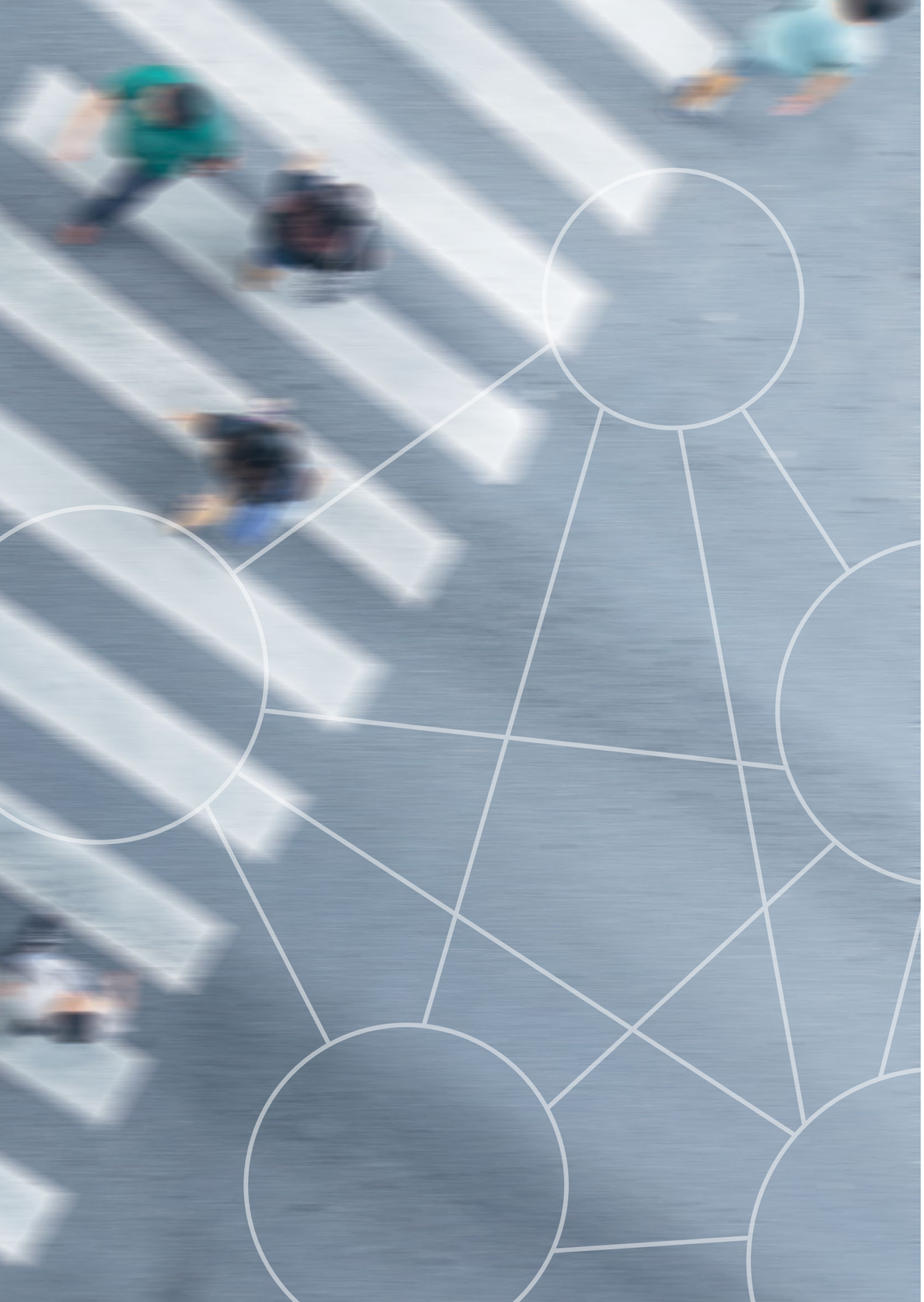
Comprehensive sex education should be tailored for everyone regardless of gender. This should not adhere to a strict binary gender narrative, and it will allow for better understanding of transgender bodies for both the transgender community as well as the healthcare providers.

4. Introduce gender sensitivity training in healthcare settings

Discrimination and outing by healthcare professionals has discouraged trans people from accessing HIV/STI testing and treatment. The implementation of gender-sensitive training for healthcare professionals to create a more inclusive environment in the clinic can help with bringing in more trans individuals to come to the clinic and get tested. Such practices like allowing the use of preferred names, de-linking salutations with legal gender or removal of salutations entirely, and more inclusive gender options on forms are some examples. The Asia Pacific Transgender Network provides training resources (“Towards Transformative Healthcare: Asia Pacific Trans Health and Rights Module”) for healthcare professionals to learn about trans-competent and gender-affirming healthcare.[41]

5. Increase self-administrative options for HIV/STI testing

Due to the mistrust and lack of confidence in healthcare agencies, providing agency for HIV/STI self-testing can help trans people with getting regular screenings. Using self-test kits may alleviate the anxieties of physically going down to a clinic where the healthcare professionals may discriminate or not be sensitive about diverse genders.



Fikri Alkhatib (AfA)

LATE PRESENTERS

Background

Late presenters are people living with HIV who are diagnosed at a late stage of infection, presenting with CD4 count of <200 cells/mm^3 or AIDS-defining opportunistic infections or both. In Singapore, late presenters have made up around 50% of newly reported HIV infections every year since 1994.

Progress and Challenges

While absolute numbers of new HIV notifications have declined, there has been limited progress in reducing the proportion of late presenters since the first iteration of this Blueprint. The figure has hovered at 50-53% yearly with a spike to 62% in 2021[10,42] (which may have been related to a decline in voluntary HIV testing during the COVID-19 epidemic). In a country with as advanced a medical system as Singapore, it is concerning that a significant number of people with HIV are still not benefiting from current prevention and treatment science.

In a study by Ang et al, late presenters were found to be more likely to have never tested for HIV before their diagnosis, compared to those who were diagnosed at an early stage of infection (63.9% vs 29%).[43] Those with no history of HIV testing were more likely to be older, have lower levels of formal education, acquired HIV via heterosexual transmission, and had their infections detected during medical care. Across the board the most common reason cited for not testing was “not necessary to test” (73.7%).[43]

Heterosexuals are consistently less likely to test voluntarily, and consequently are more likely to be diagnosed at a late stage of infection than men who have sex with men. For example, in 2023, only 1.5% of cases attributed to heterosexual transmission were picked up during self-initiated screening, compared to 22.9% of cases among men who have sex with men.[10]

Recent research has shed further light on different demographic groups’ (lack of) testing behaviour.[44,45] In a study by Jain et al, heterosexual men were found to lack information about HIV and to have a low risk perception, and hence did not realise that they needed to test. Gay, bisexual and other men who have sex with men on the other hand, had higher awareness of the importance and availability of HIV testing, but may avoid testing due to denial or fear of stigma, discrimination and criminalisation.

Recommendations

1. Intensify and diversify outreach to at-risk heterosexual men

While heterosexual men remain under-represented in HIV prevent efforts internationally, in Singapore we have the advantage of a strong and established heterosexual outreach programme helmed by AfA. Nonetheless, there is scope to build more trusted channels among

at-risk heterosexual men to improve their sexual health knowledge, as well as more targeted campaigns directed at older Chinese dialect-speaking men and ethnic minorities.

2. Strengthen legal protections and anti-stigma efforts

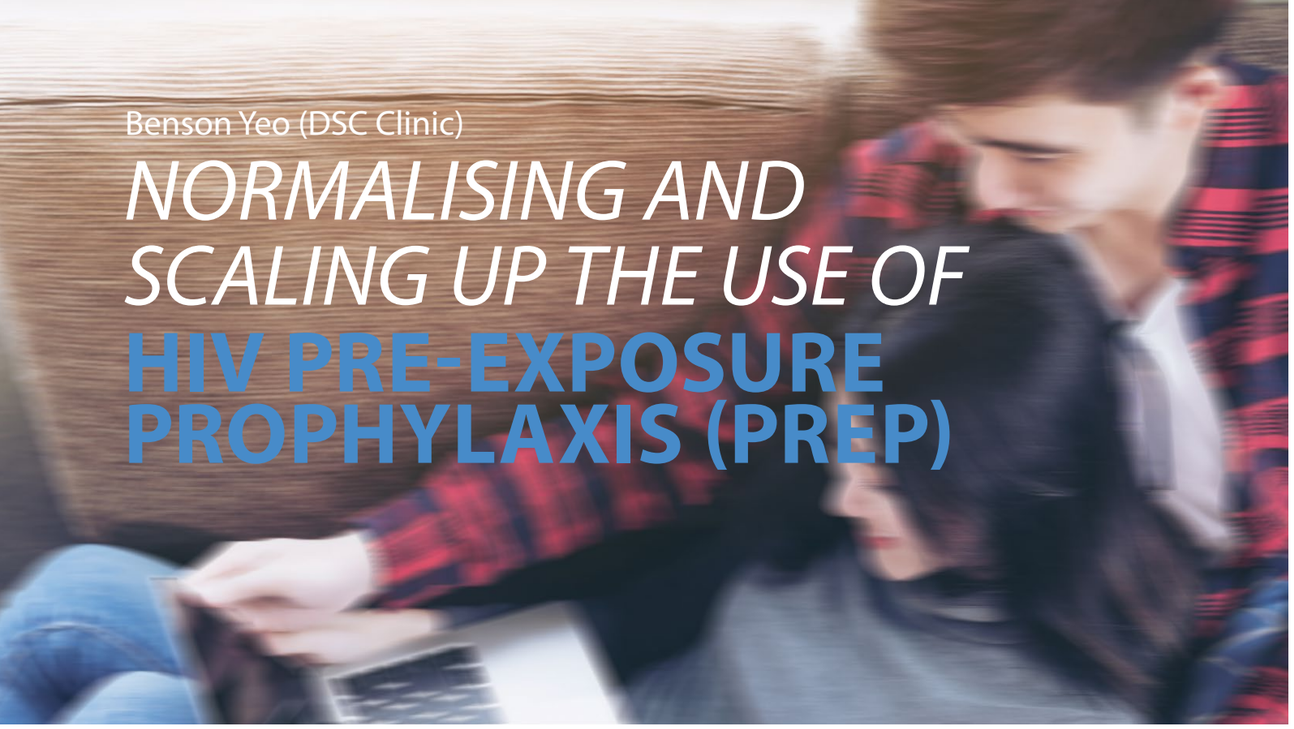
Even when people are aware of the importance of early testing, the fear of a positive diagnosis – whether because of the stigma associated with HIV, or with being a member of a key population affected by HIV – still holds them back from taking that step. The recent repeal of Section 377A and amendments to the Infectious Diseases Act are strong strides in the right direction. However, much more must be done to protect people living with HIV and key populations, including abolishing or at least anonymising the HIV registry, enshrining workplace protections in law, stopping the practice of deporting migrants diagnosed with HIV, and dismantling discriminatory policies against LGBTQ+ people.

3. Accelerate the rollout of HIV self-testing

Making HIV self-test kits available in non-HIV-specific contexts (e.g. mall pharmacies) increases the visibility of and opportunities for testing among people who may otherwise not perceive their risk to be high enough to visit a dedicated testing/healthcare facility. It also mitigates fear of disclosure and stigma. During the pilot, clients who purchased HIV self-test kits at AfA's Anonymous Testing Service were more likely to be older, heterosexual and first-time testers compared to those who did on-site tests.

4. Prioritise HIV testing at primary care sites and other healthcare facilities

There is a significant proportion of people with late-stage HIV infection who will simply never undertake voluntary testing, especially if their risk activities were far in the past. General healthcare workers need to be trained to assess risk and offer HIV testing to more people, especially older heterosexuals. The expansion of anonymous testing to public healthcare facilities could also increase the uptake of testing.



Benson Yeo (DSC Clinic)

NORMALISING AND SCALING UP THE USE OF HIV PRE-EXPOSURE PROPHYLAXIS (PREP)

Background

PrEP involves the use of antiretroviral drugs by HIV-negative people to prevent transmission. PrEP has been available in public healthcare clinics in Singapore since 2016. As of 2024, both Truvada (TDF/FTC) and Descovy (TAF/FTC) are licensed for use as oral PrEP in Singapore, though generic formulations are still not available locally. Injectable PrEP (long-acting cabotegravir or lenacapavir) are also not yet available.

Progress and Challenges

After a decade of stagnant HIV annual incidences of between 300-500 from 2009 to 2019, the average annual cases have reduced to 250 cases in the last three years.[10] The decrease is multifactorial, including treatment-as-prevention and increase in PrEP uptake in at-risk populations. However, late-stage presentation still accounts for more than half of new cases and is more prevalent among heterosexual men than among GBMSM.

Prescription numbers at DSC Clinic as well as the quantity of imported generic PrEP have increased since the first Community Blueprint in 2019. From 2018 to 2021, the number of PrEP prescriptions at the DSC Clinic rose more than 9 times, from 70 to 659. Regular surveys done by Action for AIDS among at-risk GBMSM showed an increase from 2020 to 2024 in the proportion of respondents who were currently on PrEP (from 6% to 34%), who had ever used PrEP (from 13% to 39%), and whose partners were on PrEP (from 10% to 24%).[18,19]

Only a small percentage (less than 5%) of PrEP prescriptions were for heterosexual men, which poses a significant challenge for HIV control in Singapore. This underrepresentation suggests that many heterosexual men, who may also be at risk of HIV, are not receiving adequate prevention support. The low uptake of PrEP in this group could lead to missed opportunities in reducing new HIV infections, particularly if they are unaware of their risk or perceive PrEP as only relevant to other populations. Expanding PrEP education and outreach to heterosexual men is crucial for achieving broader HIV prevention goals and ensuring that all at-risk groups are adequately protected.

The National HIV Programme conducts annual workshops for doctors and publishes national guidelines on PrEP prescription to enhance the knowledge and confidence of PrEP prescribers.[6]

However, these efforts alone have not been sufficient to significantly increase PrEP prescriptions. Some doctors remain hesitant to prescribe PrEP due to a lack of interest, confidence, or awareness of its importance, while others may perceive it as commercially non-viable due to the low demand in certain populations. This gap highlights the need for more robust efforts to engage healthcare providers and integrate PrEP as part of routine care, while also increasing public awareness to drive demand.

The cost of Truvada for PrEP in Singapore, exceeding $400 for a month's supply, remains prohibitively expensive for widespread use, limiting access for many people. With no generic options available for direct sale in the country, most PrEP users are forced to obtain their medication from overseas sources, which creates significant barriers, especially for at-risk populations. This reliance on external suppliers adds logistical challenges, potential delays, and additional costs, making it harder for those who need PrEP to maintain consistent use.

Recommendations

1. Encourage and facilitate businesses that are interested in registering affordable generics

Healthcare professionals and community organisations can provide clinical evidence of its safety and effectiveness and share their knowledge and experiences to highlight the need for more affordable options. By emphasising the public health benefits of increasing access to HIV prevention, our collective voices can help push for faster regulatory approvals and greater availability of generic PrEP.

2. Integrate PrEP delivery as a routine part of other health services to streamline access and reduce stigma associated with HIV prevention

By offering PrEP alongside services like sexual health screenings, contraception counselling, and routine check-ups, healthcare providers can normalise its use and ensure more people are aware of and have access to this preventive measure. This approach also allows for more comprehensive care, where patients can address multiple health needs in one visit, improving overall health outcomes and reducing new HIV infections.

3. Introduce PrEP education earlier in medical school curricula, rather than waiting for post-graduate training or workshops, to ensure that future healthcare providers are well-versed in HIV prevention from the start of their careers

This early exposure allows medical students to gain a deeper understanding of PrEP's role in preventing HIV, its clinical indications, and how to integrate it into routine patient care. It also helps normalise discussions around sexual health and HIV prevention, equipping doctors with the knowledge and confidence to recommend PrEP effectively in various healthcare settings, improving patient outcomes.

4. Demedicalise PrEP programmes[46]

Restricting PrEP provision to doctors alone can limit outreach, especially in underserved populations. By integrating PrEP services into community-based settings — such as pharmacies, sexual health clinics, and through trained non-physician healthcare providers — we can reach more individuals at risk. This approach can reduce barriers to access, increase adherence, and normalise

preventive care, thereby supporting broader public health goals in reducing HIV transmission.

5. Reduce medical and laboratory costs

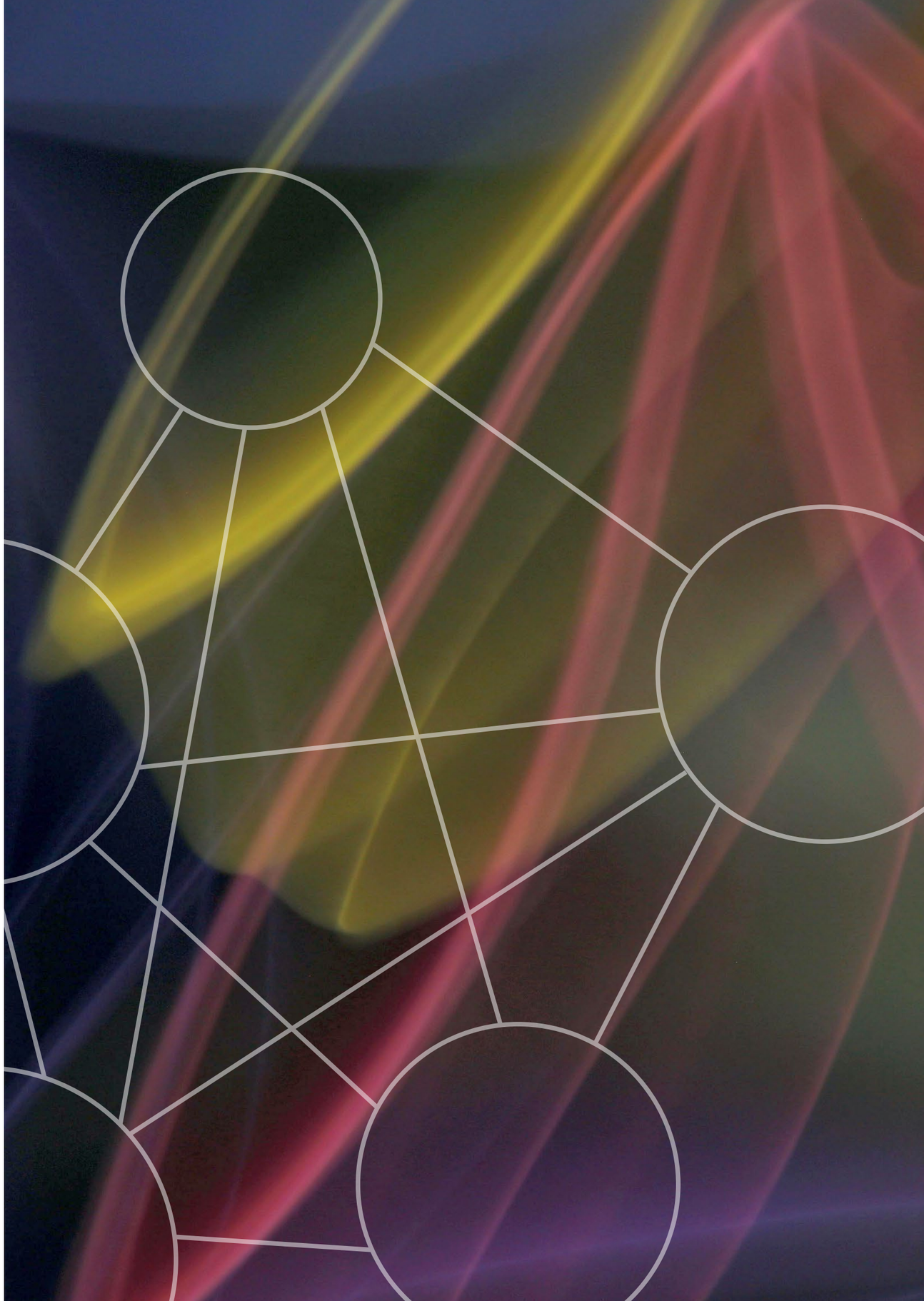
High consultation and testing fees often deter access. A cost-saving approach is to pool samples for bacterial STI detection from exposed sites, such as urine, oral, cervical, and rectal specimens.[47] Pooling samples for PCR testing can significantly reduce the expense associated with individual tests, making routine screening more affordable and accessible, thereby supporting broader PrEP uptake and sexual health management.

6. Increase outreach to at-risk heterosexual men

Heterosexual men may not recognise their HIV risk or may lack awareness of PrEP as a preventive option. Targeted education campaigns, community outreach, and partnerships with healthcare providers can help raise awareness about HIV risks within this group and the benefits of PrEP. By normalising conversations around sexual health and offering tailored resources, these outreach efforts can encourage more heterosexual men to consider PrEP as part of their HIV prevention strategy, helping to reduce new infections in this underserved population.

7. Adopt the updated PrEP on-demand regimen for heterosexual men

While traditionally used for men who have sex with men, the on-demand regimen, which involves taking PrEP around periods of sexual activity rather than daily, has shown promise for heterosexual men at risk of HIV.[48] This approach can improve adherence, reduce costs, and offer greater flexibility, encouraging more individuals to engage in HIV prevention efforts.



Rayner Tan (NUS Saw Swee Hock School of Public Health)

TACKLING HIV-RELATED STIGMA AND DISCRIMINATION

Background

Beyond the HIV treatment or care cascade, UNAIDS declared in its 2021 Political Declaration on HIV and AIDS a new set of 10-10-10 targets to be attained by 2025.[3] These targets refer to addressing 'societal enablers' to reduce inequalities and end HIV, in which:

- ❖ less than 10% of countries should have legal and policy environments that limit or deny access to services;
- ❖ less than 10% of people living with HIV and key populations affected by HIV will experience stigma and discrimination; and
- ❖ less than 10% of women, girls, people living with HIV, and key populations will experience gender inequality and violence.

By doing so, we also reduce HIV-stigma and discrimination which remains a key barrier to health access among people living with HIV band key populations affected by HIV.

Progress and Challenges

Since the Blueprint was first developed in 2019, Singapore has made marked progress in tackling HIV-related stigma and discrimination,especially through the repeal or amendment of legislation that directly stigmatise or discriminate against people living with HIV, or key populations affected by HIV.

- ❖ In November 2022, Section 377A of the Penal Code, which criminalises sexual relations between men, was repealed.[49]
- ❖ In March 2024, the Infectious Diseases Act was amended to exempt people living with HIV who have achieved viral suppression from the need to disclose their HIV status and educate their sexual partners on the risk of acquiring HIV through them.[50]

The intersectional nature of stigma conflates HIV with sexual identity, and many still believe that HIV is a terminal disease without any possibility of treatment. These legislative changes will challenge such conceptions of HIV, and directly address stigma and discrimination.

National campaigns have also sought to normalise HIV testing in the general population, recommending that everyone should test for HIV at least once in their lifetime.[6,10] Furthermore, national campaigns have sought to promote education around the role of viral suppression in eliminating the risk of acquiring HIV through sexual transmission (i.e. U=U or undetectable = untransmittable). These campaigns have played an important role in normalising HIV testing as well as challenging old ways of looking at HIV as a deadly, infectious, and fatal disease.

The establishment of the National HIV Programme has also fostered ongoing collaborative efforts between government, clinical, and community partners in addressing HIV-related stigma and discrimination. This has also ensured that community partners are given a seat at the table in the development of HIV prevention guidelines (e.g. guidance for the prescription of HIV PrEP). Sensitivity training workshops, community engagement forums,

capacity-building programmes and other collaborative endeavours have also highlighted the central role that communities play in our local HIV response.

The launch of a demonstration project for HIV self-testing also holds promise for reducing the impact that HIV-related stigma and discrimination has on HIV testing.

Despite progress in the last few years, many challenges remain that prevent us from more effectively addressing the stigma and discrimination that people living with HIV or who are at risk of acquiring HIV face.

HIV-related stigma and discrimination undermine the success of HIV education efforts, and act as a barrier to the treatment, care and support of people living with HIV

Research has shown that stigma and discrimination associated with HIV undermine prevention efforts by discouraging individuals from seeking sexual health information and services lest these actions raise suspicion about their HIV status.[51] In addition, studies on stigma and discrimination and health-seeking behaviours show that people living with HIV who perceive high levels of HIV-related stigma are more likely to delay treatment until they are very ill.[52] The fear of stigma and discrimination, which can also be linked to fear of violence, has been shown to discourage people living with HIV from disclosing their status even to family members and sexual partners, and undermines their willingness to access and adhere to treatment.[53]

Policy and legislation that perpetuate stigma and discrimination in Singapore include:

- Employment restrictions on non-Singaporeans living with HIV
- Mandatory notification of HIV infection
- Blood donation guidelines that exclude donation by men who have sex with men
- Lack of laws that protect people living with HIV, LGBTQ+ people, and other key populations affected by HIV against discrimination
- Continued criminalisation of HIV non-disclosure by people living with HIV who are not virally suppressed

Stigma and discrimination from healthcare providers and within healthcare settings

HIV-related stigma and discrimination remain pervasive in many healthcare services in spite of medical advances. People living with HIV and healthcare professionals have reported how people living with HIV are still being refused medical treatment, and also encounter discriminatory behaviours and micro-aggressions in healthcare settings.[23]

In addition, inconsistent approaches towards the handling of people living with HIV's confidential medical information and privacy have been reported in healthcare settings. The inadvertent disclosure of HIV status to family members may occur when medical files are left in plain view and if there are unnecessary protective precautions taken when handling and interacting with patients.

Support system for people living with HIV remains fragmented

The existing support system for people living with HIV, including access to healthcare professionals (comprising social workers, nurses, and mental and sexual health workers) and their immediate support network (comprising friends, families, employers and colleagues) remains fragmented.

At the interpersonal level, the fear of loss of relationships discourages people living with HIV from reaching out to friends and family for support or disclosing their status. At the institutional or community level, while several hospitals and community groups organise support groups for people living with HIV, low attendance rates and/or poor programme follow through by people living with HIV are cited as reasons for not running these groups more regularly. These issues highlight how stigma and discrimination, as well as the fear of disclosure of one's HIV status to others in one's own personal networks or group settings, negatively impact access to such support services. Research in other contexts has shown that attendance in support groups has decreased following the introduction of antiretroviral therapy[53], and that heterosexual men living with HIV are not keen on participating in HIV-related support groups and often feel more marginalised in such spaces relative to MSM living with HIV.[54,55]

HIV-related stigma and discrimination directly impact the quality of life of people living with HIV

A study conducted in Singapore found that people living with HIV not only face direct discrimination through laws or policies but also anticipate stigma and discrimination in many areas of their lives.[23] This negatively impacts their well-being in multiple areas of life, including:

Employment. Discriminatory hiring practices such as pre-employment screening, unlawful termination, segregation and hindered promotion continue to negatively impact people living with HIV. No formal legislation had been enacted to protect people living with HIV against workplace discrimination based on HIV status or key population membership.

Health and rights. People living with HIV are excluded from many forms of health insurance. This has been the status quo despite rapid and groundbreaking advances in HIV science and medicine. Furthermore, people living with HIV are not allowed to take up employment or residency in Singapore. In many cases, migrant workers who acquire HIV in Singapore are subsequently deported, and many families remain separated as a result of these laws.

Meaningful participation of people living with HIV in programme planning and implementation remain suboptimal

While we have seen progress in the inclusion of people living with HIV in Singapore's HIV response, much more can be done to ensure that they continue to play an active role in programme planning and implementation. People living with HIV are not involved in all forms of guideline development (e.g. involvement in HIV PrEP guidelines, but not in the HIV primary care guidelines).

Representation of people living with HIV across all levels of decision-making process is also often treated as an after-thought, rather than part of a meaningful involvement and engagement practice.

People living with HIV require training and capacity building to effectively and meaningfully participate in these processes; little to no programmes exist to build their capacity to do so.

Recommendations

1. Establish baselines to develop programmes to reduce stigma

While some research has sought to explore the impact of HIV-related stigma and discrimination on people living with HIV and key populations affected by HIV, more can be done. We recommend expanding on current research to establish a baseline for people living with HIV's quality of life, including mental health, and issues related to access and retention in care. The research can be based on the contextualised HIV stigma index, and used as a guideline for improving resource allocation, programme planning and implementation. Research must also be undertaken periodically

to measure knowledge, attitudes and behaviour of the general public as well as healthcare workers towards people living with HIV.

2. Review current HIV care services, programmes and policies

A systematic review of current programmes and policies needs to be undertaken to (i) identify gaps in services for people living with HIV, caregivers and support networks and (ii) identify those that perpetuate stigma and discrimination so that steps can be taken to mitigate or eliminate them. Other matters that should be reviewed include regulations that concern the unnecessary disclosure of HIV status to employers, the automatic repatriation of migrants diagnosed with HIV, and the requirement for HIV screening for long-term visas and permanent residency applications.

3. Improve acceptance of people living with HIV within healthcare settings

Healthcare providers and the community workforce at large must be able to provide a safe, non-stigmatising and accepting space for people vulnerable to HIV to learn about HIV prevention methods and make use of HIV testing and prevention services. Information delivery in all stages of the prevention, testing and treatment cascade has to be done in a person-centred, non-judgmental and non-discriminatory manner. At all times members of the community workforce have to protect privacy, prevent discrimination and promote tolerance.

Since the last version of the Blueprint, there have been efforts to promote uniformity in competence, methods, procedures and communication methods. These programmes must continue to be sustained and scaled up to healthcare providers in a variety of settings.

4 Organise a national network of people living with HIV

We should form and develop the capacity of a national network of people living with HIV to (i) act as a collective voice to support people living with HIV, (ii) actively engage with stakeholders in policies and decision-making that impact people living with HIV, (iii) undertake HIV research, (iv) encourage partnership with, participation in and ownership of programmes, and (v) conceptualise, implement and review programmes. Conscious efforts must be made to ensure women and ethnic minority groups are also represented at all stages of HIV programme and policy design, implementation and review.

5. Tackle discrimination against people living with HIV at the workplace

Singapore National Employer Federation's framework to establish good policies pertaining to the management of HIV at workplaces consists of three tiers, leading with implementing workplace education to achieving a supportive environment and ultimately, implementing policies that promote equality, and provide sufficient protection to persons living with HIV.[56] This should be continued and expanded, and more employers engaged to provide people living with HIV with gainful employment and provide a safe and non-discriminatory work environment.

There is also need to identify and address systemic factors that perpetuate stigma and discrimination against people living with HIV, including hiring policies and laws that have an adverse impact on key populations. For example, HIV status should remain confidential and be provided directly by employees to health insurance providers, bypassing the employer.

6. Build sustainable support networks and improve individual quality of life for people living with HIV

We should develop stigma reduction or resistance strategies and interventions that build resilience and self-acceptance among people living with HIV, while reducing shame and guilt associated with living with HIV. Where possible, mental health and psychosocial programmes should be integrated for people living with HIV (especially when newly diagnosed) to reduce cost and barriers. We should also start support programmes for caregivers including healthcare providers, social workers, and friends and families of people living with HIV.

7. Strengthen and improve awareness in the general population about HIV

In recent years, there have been greater efforts to increase HIV awareness among the general population. This should be continued and expanded, including:

- ❖ Engaging communications specialists to design integrated campaigns targeting community settings e.g. community centres, streets, transit and immigration points, educational institutions, employers, mainstream media and online channels
- ❖ Large-scale broad-based campaigns to run once every 3 years to educate, raise awareness and develop acceptance of people living with HIV
- ❖ Smaller, context-specific campaigns to run in the off years for workplaces, healthcare settings and local support networks

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THE COMMUNITY WORKFORCE:

GENERAL PRACTITIONERS

Background

There are about 1,800 GP clinics, which meet about 80% of Singapore's total primary care demand.[57] While HIV testing is in principle available at any medical service provider in Singapore, not all healthcare providers are equipped to initiate HIV-related care including testing, prevention, and treatment. There is significant potential to increase the capacity for HIV-related care among this community workforce.

Progress and Challenges

Relative Paucity of Facilities Offering Anonymous HIV Testing

Diagnosis is the first key step in the care cascade. To link at-risk individuals to testing services, we need to increase awareness, reduce barriers to testing, and ensure sufficient and easily accessible testing facilities. As of 2023, only 15% of HIV cases were detected from self-initiated screening and 51% of HIV cases are diagnosed in a late stage.[10]

Resources for anonymous and more dedicated HIV testing currently comprise: Action for AIDS' Anonymous/Mobile Testing Services and nine private GP clinics designated as anonymous HIV testing sites by MOH. No additional anonymous testing sites have been added since 2015. The limited number of such clinics remains a challenge.

To encourage more GPs to initiate or expand HIV testing services at their clinics, a guidance document for the implementation of HIV screening services for private GP clinics was published in 2023 in the Singapore Family Physician journal.[58] It provides a consolidated source of information for GPs who wish to initiate HIV testing services in their clinics. The document complements the existing national guidelines on HIV testing.[6]

A pilot program for HIV self-testing (HIVST) was launched on 1 August 2022 and has been concluded. The study found that HIVST was safe, feasible, effective and accepted. Through careful implementation it has the potential to positively influence the HIV care continuum in Singapore by offering those at risk of infection the opportunity for early diagnosis and linkage to care. While sales of HIVST kits were piloted at Action for AIDS and DSC Clinic, it should be expanded to include GPs to increase access.

Relative Paucity of Facilities Offering HIV PrEP

PrEP is an effective tool in reducing the risk of HIV infection and is an integral component of Singapore's combination HIV prevention strategy. It can be prescribed by any licensed medical practitioner in Singapore. NUH, NCID and DSC have well-established PrEP clinics. PrEP is also available at several GP clinics.

Decentralisation and demedicalisation of PrEP programmes, and the reduction of the cost to the patient are crucial to improving access to PrEP (*see section on PrEP*).

To encourage more GPs to offer PrEP, the National HIV Programme has been conducting the PrEP prescriber course annually since 2022. Topics covered include updates on the science behind PrEP, counselling and referrals to PrEP services, the latest updates in the national PrEP prescribing guidelines, sexual health, monitoring and evaluation of PrEP services. To further improve PrEP accessibility, initiatives being considered include introducing GPs to PrEP prescription via remote consultation and medication delivery with the use of HIV self-testing for monitoring. Also, more support to patients will be given by building the capacity of clinical staff and lay providers to provide sexual health counselling, PrEP adherence counselling and risk assessment.

Recommendations

1. Increase the number of clinics designated to be HIV anonymous testing sites to a total of 15 over the next 3 years (an increase of 5)

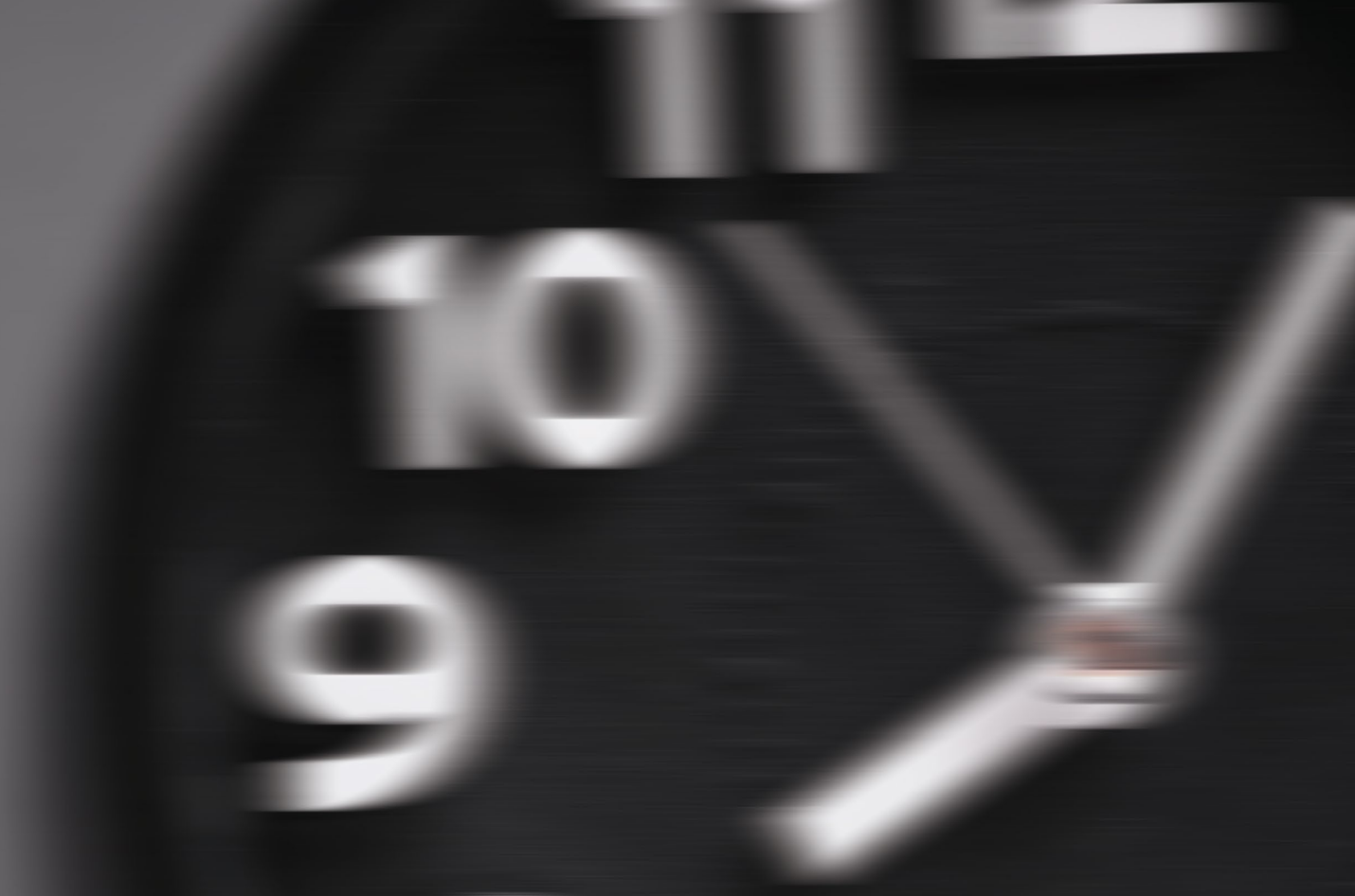
2 Continue to provide and expand on formal and structured training for more GPs to be able to screen for HIV, dispense PrEP and co-manage people living with HIV with their specialists

3. Provide formal and structured training for clinical staff and lay healthcare workers to provide sexual health counselling, PrEP adherence counselling and risk assessment

4. Increase the number of GPs trained and able to co-manage people living with HIV with their specialists, reducing the patient load on public sector hospitals and improving accessibility to follow up and treatment.

Paul Ananth Tambyah (NUS Department of Medicine)

MONITORING AND EVALUATING *HIV PREVENTION PROGRAMMES*



Progress and Challenges

Researchers and programme managers face challenges in the monitoring and evaluation (M&E) of HIV prevention programmes because they are increasingly complex, multi-pronged and often highly context-specific. Researchers, in general, tend to emphasise measurable outcomes while funders and service providers tend to focus on process measures in the evaluation of prevention programmes.

Furthermore, there has been a lack of involvement of programme participants and beneficiaries in the M&E process. The current socio-cultural and political environment also hampers access to information on many target populations especially among the marginalised communities.

The evaluation of national education programmes for the general population has tended to focus on knowledge and misconceptions rather than on attitudes and behaviours. Consequently, there is a lack of completeness in regular M&E even in the limited monitoring that is done.

Qualitative research is also not well developed in M&E of programmes.

Recommendations

1. Planning for Monitoring and Evaluation Programmes

It is important for policymakers and programme managers to have a clear understanding of the factors that contribute to the success or failure of an intervention programme. This would facilitate the adoption and scaling up of successful programmes, and the redesign of those that fail to achieve the desired outcomes.

Programmes should be regularly monitored and evaluated based on both process and outcome measures. These could include range of coverage, participation levels and any obstacles in the implementation process so that timely corrective action can be taken where required.

Programmes should also be evaluated based on measurable and comparable data prospectively identified at the time of initiation or grant writing. This should include the perspectives of beneficiaries and the target populations.

There should be more emphasis on qualitative data to inform the M&E process.

In addition, programme fidelity (that is, whether the relevant programme was implemented as planned) should be checked. This is useful in case programmes are deemed to have not succeeded, in such cases it can be determined whether the failure to achieve the targeted outcome was attributable to operational failure or poor programme quality or other extraneous factors. Both programme implementation processes and outcomes should be evaluated to better interpret the impact of the programme and to critically evaluate the need for continuation or revision.

2. Funding for Monitoring and Evaluation of Programmes

Adequate funding should be provided for regular and sustained M&E of HIV programmes to maximise the impact of new and existing interventions. It is increasingly commonplace for funders to request that M&E plans be built into grant proposals.

Just as beneficiary and community representation and participation is important in the planning process, it is also important to involve them in the evaluation process. This could be done through qualitative research methods, and each monitoring exercise or group needs to have at least one or two people living with HIV and/or members of key populations on board.

3. Administrative Perspectives of Monitoring & Evaluation of HIV Prevention Programmes

❖ *Coordination of efforts*. The National HIV Programme is the logical focus for coordination and integration of M&E activities, with Saw Swee Hock School of Public Health providing input on the technical aspects of evaluation, and other stakeholders (e.g. Health Promotion Board, Ministry of Health) providing input based on their areas of expertise if needed. Community organisations play a critical role in maximising and sustaining programme effectiveness. These organisations have on-the-ground knowledge to implement interventions. The government and funding agencies should provide funding and training in core evaluation skills so that they could conduct some aspects of the evaluation themselves and/ or provide input to the technical evaluation team. Given the complexity of the interventions, where many risk factors at multiple levels must be addressed; a unified, integrated approach should be used that must involve as many relevant stakeholders as possible in planning for the evaluation.

❖ *Community-based participatory research.* Community-based organisations and community members from key populations should be engaged to provide input and help evaluate interventions. This would help to gain maximum insight on the interventions, particularly regarding their acceptability and feasibility. They need to be formally inducted into monitoring and evaluation committees from the outset. Community-centred M&E reports will help ensure that the programmes are meaningful, helpful and relevant.

❖ *Information sharing*. Evaluation findings should be routinely disseminated to the community to strengthen interventions and to stakeholders and programme managers to influence decisions and inform policy on a regular basis.

4. Technical Perspectives of Monitoring & Evaluation of HIV Prevention Programmes

Ideally, new interventions such as HIV self-testing could be evaluated using a design such as a randomised controlled trial or quasi-experimental design. However, not all HIV prevention interventions can or needs to be assessed using experimental designs because of a lack of experimental conditions in the real world, resource constraints or other practical reasons. In such situations, mixed methods studies involving both quantitative and qualitative studies could be used to evaluate the main components of programmes. However, time is of the essence and delays in rolling out new programmes may result in late adoption and the programme "missing the boat" in controlling HIV in a timely manner.

CASE STUDY: MSM HIV SEROPREVALENCE STUDIES (2007–2024)

These have been done since 2007 on a regular basis initially under the oversight of the DSC Clinic. AfA has been conducting the studies at various venues/events popular among MSM. The surveys initially involved questionnaires on demographic information as well as HIV testing history and had sample sizes in excess of 1000 individuals. Behavioural questions were introduced in later rounds of the study. Oral fluid point-of-care HIV tests were used initially, then replaced by 4th generation finger-prick blood tests in 2020. The same year, point-of-care syphilis testing was also introduced to chart the expanding epidemic of syphilis in the target population.

The seroprevalence data generated from the surveys was able to document a high initial HIV seroprevalence of around 3% which dropped significantly in 2014. According to the latest survey in 2024, this has dropped even further to below 1%. Positivity rates have mirrored the decrease in new HIV infections diagnosed at AfA's anonymous test site as well as the national HIV notification rates. They serve as additional data points that monitor the HIV epidemic among MSM in Singapore.

The Seroprevalence Studies have been refined and expanded over the years and have incorporated new elements in addition to the earlier important behavioural risk factor profiles. These have included attitudes towards, knowledge of and use of PrEP, the practice of chemsex, as well as levels of stigma and discrimination.

To reflect the broader scope of the survey, the most recent Round 10 of the MSM Seroprevalence Study has been renamed the "10th Integrated Biological-Behavioural Surveillance (IBBS) among men who have sex with men (MSM)". Reports from the surveys are presented at meetings which are open to all stakeholders and have been used in planning national HIV policy as well as targeting programmes.

The Seroprevalence Studies are an example of successful collaboration between the community and government agencies that has been maintained for over 15 years. Longitudinal statistics from are essential to monitor the epidemic and our response.

This approach could be both broadened to include other key affected populations and widened to include more stakeholders. The importance of regular and ring-fenced funding is needed to ensure the sustainability of such programmes that can yield reliable and accurate data which can inform policy and make an impact on monitoring and evaluation of the HIV response.

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Published in November 2024 | Version 1.0