

# APACC 2023

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CONFERENCE

**HYBRID CONFERENCE**  
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## Abstract Book



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# **Asia-Pacific AIDS & Co-Infections Conference APACC**

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**Abstracts**

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## What Men Want: Preferences for Pre-exposure Prophylaxis for HIV Among Men Who Have Sex with Men in 16 Countries in the Asia-Pacific: A Discrete Choice Experiment

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### Background:

Scale-up of pre-exposure prophylaxis (PrEP) among men who have sex with men (MSM) in Asia-Pacific has been slow. Tailored PrEP services informed by preferences of potential users could maximise PrEP uptake. We evaluated the drivers of choice for PrEP among MSM in 16 Asia-Pacific countries and forecasted PrEP uptake given different PrEP program configurations.

### Material and Methods:

We included MSM aged >18 years with no prior HIV diagnosis. An online discrete choice experiment (DCE) survey was delivered to participants between May-November 2022 through gay dating apps and local MSM networks. Final attributes included: 1) Type of PrEP (daily oral, on-demand oral, injectable, long-acting oral, implant); 2) Location to access PrEP (hospital, sexually transmitted infection clinic, general practice, community clinic run by MSM, telehealth, pharmacy); 3) cost (free, three additional levels depending on the country); 4) side effects (none, interactions with other medications, mild, rare chance of kidney problems, mild pain from injection); 5) visit frequency (every 2 months, 3 months, 6 months, 12 months); and 6) extra services

(testing for sexually transmitted infections (STI), mental health counselling). We used random parameters logit (RPL) models to estimate the relative importance of attributes in each country and by country-income level, and predict PrEP uptake for different program configurations.

### Results:

Overall, 21,722 individuals were included, with a mean age of 31.7 ( $\pm 9.6$ ), 8% (1,709/21,722) were diagnosed with an STI and 60% (12,955/21,722) reported multiple partners in the last six months. Despite variations in the relative importance of attributes across countries, cost was the biggest driver for using PrEP in all Asian countries. The least preferred PrEP program resulted in a 42% uptake of PrEP in high-income Asian countries (HIC) and 47% in middle-income Asian countries (MIC). This improved to 95% with an optimal PrEP service configuration in HIC and 89% for MIC. The optimal PrEP service configurations in HIC and MIC were similar; cost (free), location (a peer-led community clinic), side effect (none), extra service (STI testing), and visit frequency (annually). But MSM in HIC preferred long-acting oral PrEP, while those in MIC preferred daily oral PrEP. Meanwhile, the least preferred PrEP service configurations in HIC and MIC are type of PrEP (implant), cost (very high), location (telehealth), side effect (rare chance of kidney problem), and visit frequency (every two months). MSM in HIC disliked mental health counselling as an extra service, while those in LIC disliked no extra service.

### Conclusion:

This is the largest DCE globally, providing rich country-level preference data from MSM in the Asia-Pacific region. The DCE demonstrated the need to tailor services to country context, including ensuring affordability, preferred type of PrEP and the need for differentiated services to accelerate uptake.



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## Strength in Diversity: HIV Pre-exposure Prophylaxis (PrEP) Product Interest and Preferences among Transgender Women in 11 Countries in Asia

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### Background:

Providing a range of HIV pre-exposure prophylaxis (PrEP) products has the potential to close prevention access gaps and expedite HIV epidemic control by addressing the diverse preferences and needs of individuals who may benefit from PrEP. The Asia Regional Online PrEP Values and Preferences Study team aimed to determine transgender women's preferences for different PrEP products in Asia.

### Material and Methods:

We conducted an online cross-sectional survey among transgender women across 11 countries or territories in Asia from May to November 2022. After providing informed consent, participants were asked about their interest in use and top preference among current and emerging PrEP products and dosing regimens, including daily oral, event-driven oral (ED-PrEP), long-acting (monthly) oral, long-acting injections (LAI-PrEP), and long-acting implants. Descriptive statistics and bivariate logistic regression were used to examine how participant preferences varied among PrEP-experienced versus PrEP-naïve respondents.

### Results:

Among 1,260 participants, daily oral PrEP (n=526, 41.8%) and LAI-PrEP (n=495, 39.3%) were the most popular options for potential use, followed by monthly pill (n=321, 25.5%), ED-PrEP (n=307, 24.4%), and long-acting implants (n=149, 11.8%). A small number of participants (n=49, 3.9%) specified that they were not interested in using any of these forms of PrEP. Compared to PrEP-naïve participants (n=660, 52.4%), PrEP-experienced participants (n=600, 47.6%) were more likely to express interest in use of daily PrEP (53.7% vs. 30.9%, OR=2.59, 95%CI=2.06-3.26), expressed less interest in monthly pills (22.2% vs. 28.5%, OR=0.72, 95%CI=0.55-0.92) and had comparable interests in ED-PrEP, LAI-PrEP, and implants. Among those interested in using PrEP (n=1149), one-third (n=383) indicated daily oral PrEP as their top preference, followed by LAI-PrEP (n=319, 27.8%), monthly pill (n=192, 16.7%), ED-PrEP (n=186, 16.2%), and implants (n=69, 6.0%).

### Conclusion:

Oral PrEP options were more preferred than LAI-PrEP and implants among transgender women in Asia, with oral daily PrEP being the most preferred option. Despite limited prior exposure to long-acting injectables and implants—which are not yet available in the region—these options were preferred by more than one-third of participants, highlighting the need for a range of choices. Advocacy is needed to make long-acting PrEP options available as a choice in person-centred, differentiated PrEP services for transgender women.

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## Drug-Drug Interaction between Emtricitabine/Tenofovir Alafenamide (FTC/TAF) - Based PrEP and Feminizing Hormones in Transgender Women: Peripheral Blood Mononuclear Cells and Urine Analysis from the iFACT3 Study

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### Background:

We previously observed that plasma tenofovir (TFV) and emtricitabine (FTC) exposures were not significantly different among transgender women when FTC/TAF-based PrEP was administered with and without feminizing hormone therapy (FHT). Herein, we report the impact on the intracellular TFV-diphosphate (TFV-DP) and FTC triphosphate (FTC-TP) concentrations, the therapeutically active forms, in peripheral blood mononuclear cells (PBMCs), and on TFV/FTC urine concentrations.

### Material and Methods:

Twenty transgender women who had not undergone orchiectomy were enrolled between January and February 2022. FHT (estradiol valerate 2 mg and cyproterone acetate 25 mg) was initiated at baseline and prescribed until week 9, while PrEP (FTC 200 mg/TAF 25 mg) was initiated at week 3 and prescribed until the end of study at week 12. PK sampling for drug level measurement was performed at weeks 9 (with FHT) and 12 (without FHT). PBMC samples were collected at 2 and 24

hours after FTC/TAF administration to assess FHT effect on TFV-DP and FTC-TP levels; and a 24-hour urine collection was used to assess FHT effect on TFV/FTC.

### Results:

Eighteen participants completed the PK visits and were included in this analysis. Median (IQR) age and body mass index were 28 (23-32) years and 20.8 (19.9-21.9) kg/m<sup>2</sup>, respectively. The PBMC 2 hour (C<sub>2</sub>) and 24 hour (C<sub>24</sub>) geometric mean ratios (GMRs) (95%CI) at week 9 and week 12 (reference) were as follows: TFV-DP, 1.04 (0.91-1.19, p=0.59) and 0.96 (0.82-1.13, p=0.65); and FTC-TP, 0.97 (0.85-1.10, p=0.61) and 0.91 (0.75-1.10, p=0.33). Urine GMRs for TFV and FTC were 1.05 (0.84-1.32, p=0.67) and 0.92 (0.75-1.13, p=0.42).

### Conclusion:

Intracellular TFV-DP and FTC-TP levels in PBMCs and urine TFV and FTC concentrations were comparable when F/TAF-based PrEP was administered with and without FHT, suggesting no clinically significant drug-drug interaction from FHT towards FTC/TAF-based PrEP. Tissues rectal measurements of TFV-DP and FTC-TP levels are ongoing.



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## Drivers of Pre-exposure Prophylaxis Choice for Transgender Women in 11 Countries in Asia: A Discrete Choice Experiment

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### Background:

Transgender women (TGW) are approximately 66 times more at risk of HIV acquisition than the general population. Thus, designing appealing pre-exposure prophylaxis (PrEP) programs for TGW is urgently needed. We evaluated the drivers of choice for PrEP among TGW living in 11 Asian countries and forecasted their PrEP uptake given different PrEP program configurations.

### Material and Methods:

An online discrete choice experiment (DCE) survey was delivered through trans-networks in each country between May-November 2022. Participants who identified as TGW, age > 18 years and had no prior HIV diagnosis were included. Final attributes included: 1) Type of PrEP (daily oral, on-demand oral, injectable, long-acting oral, implant); 2) Location to access PrEP (hospital, sexually transmitted infection clinic, general practice, community clinic run by MSM, telehealth, pharmacy); 3) cost (free, three additional levels depending on the country); 4) side effects (none, interactions with other medications, mild, rare chance of kidney problems, mild pain from injection); 5) visit frequency (every 2 months, 3 months, 6 months, 12 months); and 6) extra services

(testing for sexually transmitted infections (STI), Hormones prescribed, mental health counselling, ). We calculated the relative importance of each attribute and PrEP uptake prediction using random parameters logit (RPL) models.

### Results:

Overall, 1,522 TGW were included, with a mean age of 28.1 ( $\pm 7.0$ ), 63% (956/1,522) reported multiple partners, 38% (581/1,522) had condomless vaginal sex, and 16% (249/1,522) were diagnosed with an STI in the last six months. The biggest drivers of PrEP uptake were cost (62% relative importance), type of PrEP (10%), location (8%), extra services (8%), visit frequency (7%) and side effects (5%). The most wanted PrEP service (with a predicted uptake of 87%) was: free injectable PrEP with no side effects, accessing PrEP from a peer-led community clinic that provided STI testing, and requiring 6-12 monthly visits. The least preferred PrEP service (with a predicted uptake of 50%) was: PrEP implant with out-of-pocket fees and a rare chance of kidney problems, accessing PrEP from a hospital, no extra services, and requiring 2-monthly visits.

### Conclusion:

Our study, the largest DCE for TGW globally, emphasizes the importance of measuring and incorporating preferences for PrEP services. We found that affordable PrEP injections could accelerate the scale-up of PrEP among TGW in Asia.



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## Mental Health and Pre-exposure Prophylaxis (PrEP) Service Integration in Vietnam: An Important Opportunity for Boosting PrEP Adherence, Continuation, and Service Quality

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### Background:

Mental health issues may limit key populations' (KP) uptake of and continuation on pre-exposure prophylaxis (PrEP) and reduce overall quality of life. The USAID/PATH STEPS Project integrated mental health screening, assessment, and treatment at five KP-led one-stop shop clinics as part of an effort to advance comprehensive and person-centered PrEP services.

### Description:

PrEP users at five OSS clinics are screened for mental health conditions using an online form or provider-led tools including the DASS21, AUDIT-C and Functioning Suicide Risk screening, and ASSIST. Clients are triaged based on their screening results and offered counseling for any mental health conditions identified. Clients with mild- and moderate-level mental health conditions are counselled in-clinic and receive psychoeducation support while clients with severe-level mental health conditions are counselled and referred to expert psychiatric care, while continuing to receive counseling, PrEP, and other health services at the clinics. During follow-up visits, PrEP clients are re-screened and supported with ongoing management of their mental health conditions. PrEP behavior change campaigns incorporate information on mental health to enhance awareness and service uptake among new and current PrEP users.

### Lessons Learnt:

From January to December 2022, 6,298 PrEP clients received mental health screening, of whom 10.6% presented with a mental health condition (7.3%, 7.0%, and 4.6% presenting clinical symptoms of stress, anxiety, and depression, respectively). Mental health morbidity was higher among partners of people living with HIV (18.9%) and transgender people (16.7%) compared to female sex workers (10.8%) and men who have sex with men (9.7%). PrEP clients with mental health conditions were 50% more likely to drop out of PrEP after three months compared to those without mental health conditions (OR = 1.5,  $p < 0.001$ , 95%CI 1.2-1.8). Of 667 PrEP clients with mental health conditions, 235 (48.7%) received follow-up care at least once; of these, 78.7% exhibited a significant reduction in the severity of their mental health symptoms when re-screened.

### Conclusion:

We found significant association between mental health morbidity and reduced PrEP continuation, indicating that integrative mental health and HIV services may play an essential role in improving PrEP outcomes. Further scale-up of mental health services within public and private PrEP sites will be undertaken to support greater quality of PrEP services and AIDS elimination by 2030.



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## “PrEP4U:” How Edutainment, Student Outreach, and Multisector Engagement Are Helping Youth in Vietnam Access HIV Prevention and Sexual Health Care

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### Background:

In Vietnam, students and youth have several risk factors for HIV infection and transmission including poor HIV risk perception and awareness and limited knowledge on sexual and reproductive health (SRH) services such as HIV testing and pre-exposure prophylaxis (PrEP). “PrEP4U” is a behavior change campaign co-created by the USAID/PATH STEPS Project (STEPS) and partners to promote HIV and sexual health care engagement and practices among students in Vietnam.

### Description:

To enhance student/youth knowledge about SRH and safe sex and encourage their use of PrEP and other health services, STEPS, the Vietnam Ministry of Health, and youth leaders generated student insights to design the online-to-offline PrEP4U campaign. PrEP4U targets educational settings in three urban provinces (Hanoi, Ho Chi Minh City, Dong Nai) through talk shows with clinical experts, interactive edutainment games focused on safe sex and sexual health, integration with sex-ed programs at schools, booth exhibitions, and other activities where students can interact with community influencers and staff from community-based clinics and receive HIV testing, PrEP counseling, and referral for other services directly on-site. The campaign also runs across online platforms and leverages a network of PrEP4U Ambassadors and a PrEP4U Facebook page blending informative and

humorous content derived by youth to motivate viewers to seek PrEP/SRH information and services.

### Lessons Learned:

From March to September 2022, 32 in-person PrEP4U events reached more than 8,500 students, distributed 1,096 HIV self-test kits and enrolled 317 individuals on PrEP. The PrEP4U Facebook page has become a hub of trustworthy SRH and PrEP information for students, supporting the campaign to garner over 1.1 million views cross-platform. Targeted edutainment activities centered around principles of choice, equity, and people-centeredness to ensure that PrEP4U messaging and imaging resonated with different youth segments, including gay, transgender, and gender nonbinary individuals.

### Conclusion:

PrEP4U addressed a major gap in youth access to HIV and SRH services by offering these services directly within schools and engaging campaign ambassadors and influencers, and as a result increased health care access and convenience. Drawing from lessons learned, youth-focused PrEP/SRH campaigns will be further scaled and adapted for other settings to bring PrEP and sex education closer to populations in need.





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Abstract number 7 has been withdrawn.

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## Pay-It-Forward to Increase Testing for Hepatitis B and C Among Men Who Have Sex with Men: A Community-Led Randomized Controlled Trial in China

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### Background:

Hepatitis B virus (HBV) and hepatitis C virus (HCV) testing rates remain low in China, especially among men who have sex with men (MSM). Pay-it-forward involves having a person receive a free test with community-generated messages and then asking if those who received a free test would like to donate money or test to support subsequent other people to also receive free testing. This study aimed to evaluate the capacity of a pay-it-forward strategy with active community participation to promote HBV and HCV testing among MSM in China.

### Material and Methods:

We undertook a two-arm superiority cluster-randomized trial led by MSM community-based organizations in two cities in the Jiangsu Province, China. As part of the intervention, MSM peers were actively involved in planning and leading the trial. Enrolled MSM were randomized to the pay-it-forward (intervention) and standard-of-care (control) arms in groups of ten. Men randomized to the pay-it-forward arm received free HBV and HCV testing and were offered a chance to pay-it-forward

by donating money to support the testing of another anonymous person. In the standard-of-care arm, each participant paid for their HCV and HBsAg antibody rapid test at USD \$7.7/test. Only the staff who performed data analyses were blinded. The primary outcome was the proportion of men tested for HBV and HCV. We pre-specified sub-analyses based on substance use, risky sexual behaviors, and people older than 30 years. The trial was registered in the China Clinical Trial Registry (ChiCTR 2100046140).

### Results:

Between March and October 2021, 322 men were randomized to the pay-it-forward (n=160) and standard-of-care (n=162) arms. HBV and HCV rapid testing were notably higher in the pay-it-forward arm (59.4%) than in the standard-of-care arm (25.3%) (proportion difference 34.4%, 95% CI lower bound 25.7%). Sub-analyses demonstrated that the pay-it-forward intervention was effective among men who use substances, men with risky sexual behaviors, and older individuals. Among men in the pay-it-forward arm, 63% donated some amount to future participants, and the total donation amount covered 68% of the test cost in the pay-it-forward arm. The economic evaluation found that the pay-it-forward model was cheaper, considering economic or financial costs per person tested.

### Conclusion:

The community-led pay-it-forward approach improved HBV and HCV testing among at-risk populations in a resource-constrained environment. The pay-it-forward model appeared to be managed successfully in a real-world setting, especially as a part of community-led efforts to reach higher-risk populations.

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## **Incidence and Factors Associated with Hepatitis B Surface Antigen Seroclearance in HIV/HBV Coinfected Patients During Combination Antiretroviral Therapy**

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### **Background:**

Hepatitis B surface antigen (HBsAg) clearance has been proposed as a crucial component of functional cure in hepatitis B virus infection. However, the incidence and predictors of HBsAg seroclearance in human immunodeficiency virus/hepatitis B virus (HIV/HBV) coinfecting patients remain largely unexplored.

### **Material and Methods:**

Between January 1, 2009 and December 31, 2020, HIV/HBV coinfecting patients undergoing combination antiretroviral therapy (cART) were retrospectively reviewed. CD4+ count, HIV load, HBV load, quantitative HBsAg levels, hepatitis B e antigen (HBeAg) status, liver function, HBV and HIV genotype and were assessed. The incidence and risk factors for HBsAg seroclearance were evaluated.

### **Results:**

A total of 1550 HIV/HBV coinfecting patients were included, 86% were male, 96.2% used tenofovir disoproxil (TDF) or tenofovir alafenamide (TAF) - containing cART as the initial therapy. Over a median of 4.7 years of follow-up, 126 (8.1%) patients achieved HBsAg loss and 64 (50.8%) patients were accompanied by HBsAb. The 5- and 10-year cumulative incidence of HBsAg seroclearance was 8.4% and 16.6% respectively, the incidence rate of HBsAg clearance was 1.7 per 100 person-years. Multivariate analysis showed that baseline quantitative HBsAg <1500 IU/ml (aHR, 2.74, [95%CI, 1.48-5.09]), ALT elevation >2ULN during the first six-month cART (aHR, 2.96, [1.53-5.77]) and HBV genotype B (aHR, 3.73, [1.46-9.59]) were independent predictors for HBsAg seroclearance.

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## In Vitro Synergy of Amphotericin B and Flucytosine Against *Talaromyces Marneffei* – Implications for Novel Treatment Approaches Against a Leading AIDS-Associated Mycosis in Southeast Asia

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### Background:

*Talaromyces marneffei* (Tm) is a fungus endemic to Southeast Asia that causes talaromycosis, a leading HIV-associated opportunistic infection. Amphotericin B (AMB) is the most potent antifungal drug against Tm but is toxic, and mortality on AMB is still up to 30%. Flucytosine (5FC) has been shown to exhibit partial synergy with AMB against other fungal pathogens: *Cryptococcus* and *Candida* spp. 5FC has been shown in clinical trials to increase the early fungicidal activity of AMB and reduce mortality compared to AMB alone in cryptococcal meningitis. Here, we evaluate the potential of 5FC and AMB combination therapy for talaromycosis by assessing the in vitro interaction between 5FC and AMB.

### Material and Methods:

We used our lab's novel antifungal susceptibility testing method for Tm to evaluate the interaction between 5FC and AMB in 32 randomly selected Tm clinical isolates. An inoculum of 1 to 5x10<sup>3</sup> CFU/mL Tm yeast was added to microplates prepared with 5FC and AMB in two-fold serial concentrations (0.016 to 1 µg/mL). *Candida krusei* served as quality control per Clinical and Laboratory Standards Institute guidelines. Our method uses a novel colorimetric reagent called alamarBlue™, which enables precise quantification of reduction of Tm growth as measured by optical density (OD) or fluorescence intensity (FI) compared to a positive control. The minimum inhibitory concentration (MIC) endpoint was 90% OD or FI reduction, defined

as the lowest drug concentration inhibiting at least 90% of fungal growth. We calculated the fractional inhibitory concentration (FIC) to characterize drug interactions, with FIC≤0.5 corresponding to full synergy, 0.5<FIC≤1 to partial synergy, 1<FIC≤4 to indifference, and FIC>4 to antagonism, according to the Loewe additivity theory.

### Results:

The geometric means (GM) of the MICs of 5FC and AMB against 32 Tm strains were 0.18 µg/mL (range: 0.03–1) (5FC) and 0.30 µg/mL (range: 0.13–0.5) (AMB). Partial synergy between 5FC and AMB was observed in 21 (66%) strains; indifference was observed in the remaining strains. No strains showed full synergy or antagonism. One strain was tested on four different days to assess inter-assay variability, which fell within the acceptable range of two dilutions. One strain was tested in triplicate on the same day to assess intra-assay variability, and the coefficient of variation was less than 10%.

### Conclusion:

This is the first report to document the synergy between 5FC and AMB in Tm. Combination therapy approaches may offer enhanced fungicidal activity and potentially reduce mortality while offering an opportunity to decrease total body exposure to AMB. Our study provides the foundational evidence of synergy to advance this combination therapy to the clinical trial testing stage for talaromycosis.

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## The Role of a Novel TmPV1 Mycovirus on Talaromyces Marneffeii Virulence and Its Impact on Human Talaromycosis Outcomes

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### Background:

*Talaromyces marneffeii* (Tm) is a thermally dimorphic fungus that causes an invasive mycosis in patients with advanced HIV disease in Southeast Asia, and is a leading cause of AIDS-associated death within its endemic region. A novel double-stranded RNA (dsRNA) mycovirus - TmPV1 - has recently been discovered to infect 12.7% of Tm clinical isolates, and infection was associated with both higher fungal burden and mortality in a Tm murine model. However, the impact of infection with TmPV1 mycovirus on human talaromycosis is unknown. Using our large repository of human Tm isolates and high-quality outcome data of patients who participated in the Itraconazole Versus Amphotericin B for Talaromycosis (IVAP) trial in Vietnam, we seek to determine the impact of TmPV1 mycovirus infection on Tm virulence in humans.

### Material and Methods:

The presence of the dsRNA mycovirus on 269 available IVAP patient Tm isolates was determined by: 1) total RNA extraction and detection on an agarose gel of two dsRNA bands located at 1.6 kb and 1.9 kb, 2) RT-PCR. We assessed the association between presence of TmPV1 mycovirus and patient characteristics (age, sex, injection drug use, geography, CD4 count, baseline fungal colony forming units/ml of blood) using Chi-squared and Student t-tests. We assessed the impact of mycovirus on disease severity at presentation (dyspnea and/or requirement of oxygen) and on

treatment outcomes (incidence of relapse, immune reconstitution inflammatory syndrome, and mortality over 24 weeks) using multivariable logistic regression modeling adjusting for patient baseline characteristics.

### Results:

We identified a dsRNA TmPV1 mycovirus prevalence of 11.2% (30/269) using either the RNA extraction and/or the RT-PCR methods. We found no statistically significant association between presence of mycovirus and patient characteristics nor between mycovirus and disease severity at presentation and treatment outcomes over 24 weeks. Interestingly, we found that presence of mycovirus is highly associated with Tm genetic clade and geography. The prevalence of mycovirus is significantly higher patients recruited from northern Vietnam versus southern Vietnam, 25/129 (19.4%) vs. 5/140 (3.6%),  $P < 0.001$  by Fisher Exact. Whole genome sequencing of Tm isolates harboring mycovirus confirmed that 24/25 Tm strains isolated from northern Vietnam belonged to the Tm northern clade, and all 5 strains isolated from southern Vietnam belonged to the Tm southern clade.

### Conclusion:

We found (1) a similar mycovirus prevalence (11.2%) within our large Tm clinical cohort, consistent with the 12.7% prevalence found by Lau et al; (2) Analyses of human data suggest that TmPV1 mycovirus does not exhibit a clinically evident impact on human disease, or a clinical impact was not evidenced within the IVAP cohort. (3) Further research is needed to elucidate the high propensity of TmPV1 mycovirus to infect Tm northern clade over the Tm southern clade, which may shed light into host pathogen interplay between mycovirus, opportunistic fungi, and human disease.

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## Disability in PLWH in Asia: A Prospective Multi-Centre Case-Control Study

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### Background:

The burden of disability among PLWH varies temporally and spatially. Understanding the burden of disability and the associated factors would improve healthcare support planning to improve quality of life.

### Material and Methods:

We performed a prospective case-control study in five Asian cities. PLWH aged  $\geq 35$  years and age- and sex-matched HIV-uninfected controls were enrolled. We collected demographic and clinical data, and measured frailty, mood (PHQ-9 and DASS-21 for depression, anxiety and stress) and cognitive function (International HIV Dementia Scale/IHDS and Montreal Cognitive Assessment/MoCA).

The primary endpoint was moderate disability, defined as WHODAS 2.0  $\geq 2$ . Secondary endpoints were complex score of WHODAS and domain-specific dichotomous scores. We compared the prevalence of moderate disability and WHODAS score between cases and controls, and determined whether HIV was independently associated with disability using multivariate binary logistic regression and linear regression models. The factors associated with moderate disability among PLWH were identified using binary logistic regression model.

### Results:

We enrolled 695 PLWH and 228 controls. PLWH had a mean ( $\pm$ standard deviation) age of  $53.3 \pm 10.0$  years, 561 (81%) were male, had HIV diagnosis for  $9.3 \pm 7.4$  years, 82% had HIV RNA  $< 50$  copies per mL, and current CD4 was  $520 \pm 296$  cells/mm<sup>3</sup>, 52% was taking integrase inhibitor-based, and 41% non-nucleoside reverse transcriptase inhibitor-based regimens. Compared with controls, PLWH had higher burden of frailty, polypharmacy, depression,

anxiety, stress, and loneliness, and poorer social support.

Moderate disability was present in 357 (51.4%) PLWH and 112 (49.1%) controls respectively ( $p > 0.05$ ). WHODAS complex score was higher in PLWH ( $9.58 \pm 11.93$  vs.  $7.06 \pm 8.25$ ,  $p < 0.001$ ). Among the WHODAS domains, PLWH had a trend of more impairment in participation (75.0% vs. 68.4%,  $p = 0.052$ ).

Moderate disability was independently associated with frailty, PHQ-9 score, stress score, MoCA, and loneliness, after adjusting for age, sex and study site, but not associated with HIV. Complex WHODAS score was independently associated with frailty, PHQ-9, stress and anxiety scores, IHDS, MoCA, and loneliness, but not with HIV, after adjusting for age, sex and study site.

Among PLWH, moderate disability was independently associated with frailty, PHQ-9 score, stress and anxiety score, loneliness, and MoCA.

### Conclusion:

Compared with age- and sex-matched HIV-uninfected controls, PLWH had higher prevalence of frailty, depression, stress, anxiety and loneliness, but not that of moderate disability in Asian cities.



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## Association Between Non-alcohol Steatohepatitis with Significant Activity and Fibrosis and Neurocognitive Impairment and Cardiovascular Disease Risk in HIV

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### Background:

The link between fatty liver diseases and cognitive impairment (CI) and cardiovascular disease among people living with HIV (PLWH) remains unclear. We investigated the association of non-alcoholic fatty liver (NAFLD), advanced liver fibrosis and non-alcoholic steatohepatitis (NASH) with significant activity and liver fibrosis with CI and atherosclerotic cardiovascular disease (ASCVD) risks among well-suppressed PLWH in a Thai cohort.

### Material and Methods:

PLWH  $\geq 50$  years old on stable antiretroviral therapy (ART) were included. The Thai-validated version of Montreal Cognitive Assessment (MoCA) was used to evaluate cognitive performance and a cut-off of  $< 25/30$  was used to define CI. 10-year ASCVD risk was categorized as intermediate (7.5%–19.9%), and high ( $\geq 20\%$ ) using ASCVD risk score estimator according to the American College of Cardiology (ACC) and the American Heart Association (AHA) guidelines. Liver stiffness measurement (LSM) and controlled attenuation (CAP) were measured using FibroScan. NAFLD and advanced liver fibrosis was defined as CAP value  $\geq 248$  dB/m ( $\geq 288$  dB/m cut-off was used in the sensitivity analysis), and LSM  $\geq 9.5$  kPa, respectively. The outcome was NASH with significant activity and liver fibrosis which was

defined as FibroScan-AST (FAST) score  $\geq 0.67$ . Multivariable logistic regression was employed to investigate the association of CI with NAFLD, advanced liver fibrosis and FAST score  $\geq 0.67$ .

### Results:

A total of 319 PLWH (63.3% male) with a median age of 54.4 (interquartile range [IQR], 51.7–29.6) years were included. The median duration of HIV was 18.6 (IQR, 15.3–20.9) years, and 98% had HIV RNA  $< 50$  copies/mL. 74 (38%) participants had NAFLD and 33 (10%) had advanced liver fibrosis. FAST score  $\geq 0.67$  was present in 66 (20.1%) participants. As the outcomes of the study analysis, 192 (60.2%) participants had CI, and 103 (32.3%) and 34 (10.7%) had intermediate and high 10-year ASCVD risk. In multivariable analysis, FAST score  $\geq 0.67$  was significantly associated with CI (adjusted odds ratio, aOR=2.11, 95% CI 1.09–3.90,  $p=0.027$ ), after adjusting for age, sex, BMI, employment status, education, income level, smoking, alcohol use, diabetes mellitus and hypertension. After additional adjustment for HIV-related covariates such as CD4/CD8 ratio, HIV duration and ART regimen, FAST score  $\geq 0.67$  was still associated with CI (aOR=2.01, 95% CI 1.02–3.98,  $p=0.04$ ). FAST score  $\geq 0.67$  was also associated with increased risk of high 10-year ASCVD risk ( $\geq 20\%$ ; aOR=2.83, 95% CI 1.11–7.26,  $p=0.03$ ). Additionally, NAFLD alone was associated with increased risk of high 10-year ASCVD risk (aOR=2.94, 95% CI 1.08–7.97,  $p=0.035$ ) in the sensitivity analysis, although the association between NAFLD or advanced liver fibrosis and CI was not statistically significant in both primary and sensitivity analyses ( $p$ -values  $> 0.1$ ).

### Conclusion:

NASH with significant activity and liver fibrosis was associated with lower cognitive performance and high ASCVD risk in a group of virally suppressed PLWH in a Thai cohort, even after controlling for demographics and HIV disease parameters. Additional research is needed to better understand these associations.



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## Frailty Transition Among Older Adults Living with HIV in Thailand: A Five-Year Prospective Cohort Study

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### Background:

We investigated frailty transition among well-suppressed people living with HIV (PWH) in a five-year follow-up Thai aging cohort.

### Material and Methods:

A prospective cohort study was conducted among virologically suppressed PWH aged  $\geq 50$  years from an aging cohort in Bangkok, Thailand. Frailty phenotypes were assessed at baseline and at five years of follow-up. The frailty status was grouped as robust, pre-frail and frail using 5 criteria: weight loss, low physical activity, exhaustion, weak grip strength and slow gait speed. PWH who died before the end of five-year follow-up were classified as frail. A generalized estimating equation (GEE) model was performed to investigate risk factors associated with transition to more severe frailty stages.

### Results:

Overall, 181 PWH (62% male; median age of 54 (IQR, 52-59) years) completed baseline and follow-up frailty evaluations. 11 PWH died during 5 years; 4 were in robust stage at baseline. At baseline, 70 (39%) were robust, 97 (54%) were pre-frail and 14 (7%) were frail. Among 70 PWH in robust stage at baseline, 33 (47%) remained in the same stage, 30 (43%) and 7(10%) transitioned to pre-frail and frail stages, respectively. Among 14 PWH who were frail at baseline, 12 (85%) had reverse transitions to pre-frail or robust stage at year 5. Forty-five 45 (25%) had worsening frailty stage. Weak grip strength was the predominant frailty phenotype characteristic at year 5, while low physical activity was predominant at

baseline. In multivariable analysis, excessive alcohol consumption (adjusted odds ratio [OR]: 3.00, 95% confident Interval (CI): 1.37-6.55,  $p=0.006$ ), longer duration of ART (OR 1.10, 95%CI: 1.02-1.18,  $p=0.011$ ) and NNRTI regimen at baseline (OR 2.71, 95%CI: 1.35-5.44,  $p=0.005$ ; compared to PI or INSTI) were associated with worsening of frailty stage.

### Conclusion:

Nearly a quarter of PWH had transitioned to a more severe frailty stage within 5 years. However, the majority of frail PLH at baseline showed improvements in severity, suggesting frailty can be reversible. More research is needed to investigate the mechanisms of frailty transition, including those which are potentially modifiable.





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## Measuring Intrinsic Capacity: A Screening Tool for Integrated Care in Ageing People Living with HIV

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### Background:

The World Health Organisation (WHO) Healthy Ageing model proposes measuring the construct of intrinsic capacity (IC) to monitor an individual's functional ability. IC predicts adverse health outcomes in studies of older adults in the general population and may be used to identify individuals at high risk of care dependence and disability. Here, we explored the utility of this measure as a screening tool for integrated care in people living with HIV (PLWH).

### Material and Methods:

In this cross-sectional study conducted from October 2020 – December 2022, 155 PLWH under routine follow-up in University Malaya Medical Centre, Malaysia and 89 HIV-uninfected community controls were recruited. The inclusion criteria was age  $\geq 35$  years and no acute illness at the point of recruitment. WHO's Integrated Care for Older People (ICOPE) framework was adapted to derive composite IC scores (ranging 0-6) for each participant. One point was assigned for each deficit encompassing the domains of cognition (assessed by Montreal Cognitive Assessment, MoCA), hearing (Hearing Handicap Inventory for the Elderly, HHIE), vision (Visual Function Index, VF-14), mobility (gait speed), mood (Depression, Anxiety and Stress, DASS-21) and vitality (abnormal in any assessments of grip strength, nutritional intake, hs-CRP level or weight circumference). Higher total scores denoted greater deficits in intrinsic capacity. IC scores in PLWH (adjusted for age) were then correlated with assessments of disability (WHO Disability Assessment Schedule, WHODAS 2.0), quality of life (Control, Autonomy, Self-realisation and Pleasure,

CASP-19), loneliness (De Jong Gierveld Scale), social isolation (Lubben Social Network Scale), self-rated health (World Health Survey), falls (falls questionnaire), depression (Patient Health Questionnaire, PHQ-9), mortality risks (VACS 1.0), number of chronic comorbidities and polypharmacy ( $\geq 5$  medications). Area under the receiver-operator-characteristic (AU-ROC) was calculated to predict frailty assessed using frailty phenotype and frail scale in PLWH.

### Results:

The median (interquartile range, IQR) age among PLWH and controls were 50 (42-56) and 50 (39-59) years, respectively. Majority were males (PLWH=83%, controls=56%) and all PLWH received antiretroviral therapy (ART). Overall, 21% of PLWH reported deficits in two or more domains compared to 10% among controls,  $p=0.035$ . IC scores correlated with chronological age in controls ( $p=0.007$ ) but not in PLWH ( $p=0.194$ ). Higher IC scores (age-adjusted) in PLWH were significantly correlated with increased disability ( $\rho=0.264$ ,  $p=0.001$ ), reduced quality of life ( $\rho=-0.285$ ,  $p<0.001$ ), increased loneliness ( $\rho=0.237$ ,  $p=0.003$ ) and social isolation ( $\rho=-0.195$ ,  $p=0.015$ ), poorer self-rated health ( $\rho=0.204$ ,  $p=0.011$ ), depression ( $\rho=0.334$ ,  $p<0.001$ ), increased number of chronic comorbidities ( $\rho=0.306$ ,  $p<0.001$ ) and polypharmacy ( $\rho=0.256$ ,  $p=0.001$ ). IC scores were however not correlated with falls ( $\rho=0.070$ ,  $p=0.390$ ) and mortality risks ( $\rho=0.116$ ,  $p=0.151$ ). In AUC-ROC analysis, IC scores demonstrated good ability to predict frailty in PLWH (frailty phenotype AUC-ROC=0.871; frail scale AUC-ROC=0.792).

### Conclusion:

Intrinsic capacity provided a good composite measure of the physical, mental and social functioning of PLWH on ART in Malaysia. It represents an opportunity to incorporate functional assessments into routine HIV care to complement chronic disease-based monitoring. Measurements of IC should be validated in larger cohorts of PLWH from diverse settings as a potential tool for integrated HIV care.



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## Significant Blood Glucose Changes and Incidence of New-Onset Diabetes Mellitus in Thai People Living With HIV Receiving Dolutegravir

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### Background:

Emerging data from non-Asian countries showed that integrase strand transfer inhibitors, including dolutegravir (DTG), can lead to hyperglycemia and diabetes mellitus (DM). We assessed blood glucose changes and the incidence of new-onset DM in Thai people living with HIV (PWH) on DTG.

### Material and Methods:

We studied treatment-experienced and ARV-naïve PWH without diabetes who switched to or initiated DTG-based ART from 2019 – 2022, at a HIV clinic in Bangkok, Thailand. Fasting blood glucose (FBG), weight and HIV-related parameters were prospectively evaluated twice a year. New-onset DM was defined as having two consecutive FPG > 126 mg/dL, initiation of a hypoglycemic medication, or a DM diagnosis. Incidence rates were calculated per 1000 person-years (PY) follow-up.

### Results:

Among 637 PWH (62% male) enrolled 368 (58%), 183 (29%) and 86 (14%) were categorized as prior-NNRTI users, prior-boosted PI users and ARV-naïve participants, Among 637 PWH (62% male) enrolled 368 (58%), 183 (29%) and 86 (14%) were categorized as prior-NNRTI users, prior-boosted PI users and ARV-naïve participants, respectively. The median age was 49 (IQR: 39 to 55) years old and median weight 60.5 (53 to 68) kg. At month 24, PWH

in the prior-boosted PI users and ARV-naïve group initiating DTG-based ART had significant increases in FBG than prior-NNRTI users: +4 (-2 to 9) mg/dl and +3 (-7 to 8) mg/dl vs. 0 (-8 to 3) mg/dl. Weight gain was also significantly higher among ARV-naïve (+7; 0.7 to 10.9) kg than prior-NNRTI (+2.7; -0.9 to 5.8) kg and prior-PI (+1.2; -1.1 to 3.4) kg, p<0.001. Over a median follow-up of 1 year, 6 treatment-experienced patients developed new-onset DM, resulting in an incidence rate of 9.7 (95% CI: 4.4-21.7) per 1000 PY.

### Conclusion:

We observed substantial rate of new-onset diabetes, glucose change and weight gain in new DTG users over a median 1-year follow-up. This suggests new DTG users should be routinely monitored for diabetes. Further investigation with larger participant numbers and longer follow-up is needed.

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## Adapting an Artificial Intelligence Sexually Transmitted Infections Screening Tool for Monkeypox Detection: The HeHealth Experience

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### Project:

The HeHealth app is an artificial intelligence (AI)-driven tool to screen for symptomatic sexually transmitted infections (STIs) using a smartphone camera. App users can use their own smartphone cameras to take pictures of their own penises to screen for symptomatic STIs (see Figure 1).

### Issue:

Monkeypox was declared a public health emergency of international concern (PHEIC) on 23rd July 2022. AI applications have shown promise in the management of pandemics and have been used to assist the identification, classification, and diagnosis of medical images, such as in the case of the last PHEIC, COVID-19. In response to the global outbreak of monkeypox, our team needed to develop a digital screening test for symptomatic monkeypox through AI approaches.

### Results:

The AI model was initially developed using 5000 cases and use a modified convolutional neural network (CNN) to output prediction scores across visually diagnosable penis pathologies. Of all the STIs, our tool could diagnose Syphilis, Herpes Simplex Virus, Human Papilloma Virus and Genital Viral Warts with accuracy of 86%, 93%, and 96%, respectively. From June 2022 to October 2022, a total of about 22,000 users had downloaded the HeHealth app, and about 21,000 images have been analysed. We then engaged in formative research, stakeholder engagement, rapid consolidation of monkeypox images, a validation study, and

implementation from July 2022 to develop the monkeypox module. Since July 2022 to October 2022, we had a total of 1000 number of monkeypox-related images that have been used to train the monkeypox screening tool. Our digital diagnostic tool shows accuracy of 87% to rule in monkeypox and 90% accuracy to rule out the symptomatic infection.

### Lessons Learned:

Several hurdles identified, which were subsequently mitigated, included issues of data privacy and security for app users, initial lack of data to train the AI tool, and the potential generalizability of input data. We offer several suggestions to help others get started on similar projects in emergency situations, including engaging a wide range of stakeholders, having a multidisciplinary team, prioritizing pragmatism over research elegance, as well as the concept that 'big data' in fact is made up of 'small data'.

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## Applying Machine Learning Algorithm to Assess Factors Associated with First Virologic Suppression After ART Initiation Among People Living with HIV in Thailand

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### Background:

Viral load suppression is a key indicator to monitor HIV treatment outcome after initiation of antiretroviral treatment (ART). Random Forest is a machine learning algorithm that can be used for both classification and regression problems with a process of combining multiple classifiers to solve a complex problem and to improve the performance of the model. The study aims to assess the factors associated with the first virologic suppression (VS), which is the third target of UNAIDS's 95-95-95 goal, after ART initiation among Thai people living with HIV (PLHIV) under the Universal Health Coverage (UHC) program.

### Material and Material and Methods:

Data of PLHIV aged  $\geq 15$  years at ART initiation through the UHC program from 2014 to 2019 were included in the analyses. VS was defined as viral load  $\leq 50$  copies/mL 6-12 months after ART initiation. We used classification machine learning algorithms as a random forest model consisting of multiple decision trees to assess the best predictors for forecasting VS model that has the highest percentage of feature important score. The Area Under the ROC Curve (AUCROC) was used to assess the model performance. Predictors assessed in the models include age, sex, duration from HIV registration to ART initiation, the first ART regimen, CD4 at ART initiation (pre-ART CD4), region of residence, year of ART initiation, HIV stages, and history of opportunistic infections. Factors associated with the first VS from the fitted machine learning algorithms

were determined from presented as adjusted odds ratio (aOR) and 95% confidence interval (95%CI) by multivariable logistics regression analysis.

### Results:

A total of 176,690 Thai PLHIV data were included, 65% were male. Median (IQR) age was 35 (27-43) years and pre-ART CD4 count was 235 (IQR 82-420) cells/mm<sup>3</sup>. The majority of PLHIV started with non-nucleoside reverse transcriptase inhibitor-based ART regimens (95%). Random Forest algorithm were able to rank the most important predictors based on feature importance: scores pre-ART CD4 (43%), region of residence (18%), age at ART initiation (10%), and duration from HIV registration to ART initiation (10%). The accuracy to predict VS was 61% and the AUROC was 62% (95%CI 61-63). In the multivariable logistic regression model, pre-ART CD4 count  $>500$  cells/mm<sup>3</sup> (aOR 1.75, 95%CI 1.70-1.81), pre-ART CD4 count 350 -  $<500$  cells/mm<sup>3</sup> (aOR 1.73, 95%CI 1.68-1.78), pre-ART CD4 count 200 -  $<350$  cells/mm<sup>3</sup> (aOR 1.58, 95%CI 1.53-1.62) and pre-ART CD4 count 100 -  $<200$  cells/mm<sup>3</sup> (aOR 1.33, 95%CI 1.28-1.37) had higher odds of achieving VS than those with pre-ART CD4 counts  $<100$  cells/mm<sup>3</sup>. Other regions of residences were more likely to achieve VS when compared to Northern region. Additionally, older age at ART initiation also was at a higher odd of achieving VS when compared to aged 15-24 year at ART initiation.

### Conclusion:

Random Forest machine learning algorithm profoundly identified important predictors for VS after ART initiation among Thai PLHIV. Targeted interventions for PLHIV with lower pre-ART CD4 count and initiate ART at younger age should be promoted to drive the third UNAIDS goal in the country by 2025.

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## Construction and Validation of Prognostic Scoring Models to Risk Stratify Patients with AIDS-Related Diffuse Large B Cell Lymphoma

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### Background:

Acquired immune deficiency syndrome (AIDS)-related diffuse large B cell lymphoma (AR-DLBCL) is a rare disease, frequently presenting at an advanced stage at diagnosis and with a high risk of mortality. There is no specific prognostic model for patients with AR-DLBCL. This study aimed to retrospectively analyze and explore the prognostic factors associated with the survival of patients with AR-DLBCL.

### Material and Methods:

A total of 100 patients diagnosed with AR-DLBCL from January 2011 to January 2022 were enrolled in our study. Clinical features and prognostic factors for overall survival (OS) and progression-free survival (PFS) were evaluated by univariate and multivariate analyses. Multivariate logistic regression was performed to construct prognostic models in the training cohort of 84 patients, and these models were then tested in the validation cohort of 16 patients. The area under the curve (AUC), Harrell's concordance index (C-index), the decision curve analysis (DCA) and the Hosmer-Lemeshow test were used to evaluate the prognostic capability.

### Findings:

Central nervous system (CNS) involvement, opportunistic infection (OI) at lymphoma diagnosis and elevated lactate dehydrogenase (LDH) resulted to be independent predictors of OS in multivariate analysis and were further selected to construct the

OS model named GZMU OS model; CNS involvement, OI at lymphoma diagnosis, elevated LDH and over 4 chemotherapy cycles resulted to be independent predictors of PFS in the multivariate analysis were selected to construct the PFS model named GZMU PFS model. The AUC and C-index of GZMU OS and PFS models were 0.786/0.712; 0.829/0.733, respectively. The models we constructed showed better risk stratification than the International Prognostic Index (IPI), age-adjusted IPI (aaIPI), and National Comprehensive Cancer Network-International Prognostic Index (NCCN-IPI). Furthermore, in combined cohort, the Hosmer-Lemeshow test showed that the models were good fits (OS:  $p = 0.8244$ ; PFS:  $p = 0.9968$ ) and the DCA demonstrated a significantly better net benefit.

### Interpretation:

The prognostic efficacy of the here proposed prognostic models was validated in an independent cohort and outperformed the currently available prognostic tools. These novel prognostic models will help to tackle a clinically relevant unmet need.

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## Identifying the Differentiating Characteristics of HIV Treatment Clients With Advanced HIV Disease in Kyrgyzstan

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**Background:** The World Health Organization (WHO) has recommended a package of interventions to screen for, prevent, and treat advanced HIV disease (AHD), but low coverage contributes to preventable illness and death among individuals facing the greatest AHD risks — even after they start HIV antiretroviral treatment. We aimed to identify the differentiating characteristics of HIV treatment clients of the PEPFAR-supported Meeting Targets and Maintaining Epidemic Control (EpiC) Kyrgyzstan project who were more likely to experience AHD to prioritize services for these individuals.

### Material and Methods:

We queried project and Republican AIDS Center electronic databases by confidential unique identifier codes to generate a dataset with information about the sociodemographic and risk characteristics of all HIV treatment clients who received their original HIV diagnosis with EpiC support between September 1, 2020, and December 31, 2021. Individuals were classified as having AHD if they had a documented CD4 cell count <200 cells/mm or a WHO clinical stage 3 or 4 event. We conducted descriptive statistics and bivariate and multivariable logistic regression to explore associations between client characteristics and experiences of AHD.

### Results:

Among 240 supported individuals, 79 (32.9%) experienced AHD. We identified significant or near significant bivariate associations between client experiences of AHD and age  $\geq 30$  years (OR=4.15; CI=1.93–8.92); being widowed or divorced (OR=3.21; CI=1.78–5.78); having secondary level education or below (OR=1.98; CI=0.95–4.11); being diagnosed through index testing (OR=1.74, CI=0.99–

3.05); and being a person who injects drugs (PWID) or a member of a population group (sexual partners of people living with HIV/key populations, female sex workers [FSWs], clients of FSWs, synthetic drug users) other than the men who have sex with men and transgender women who have historically been prioritized by the local project (OR=4.44; CI=2.13–9.25). In a multivariable model that iteratively removed each of these factors that no longer sustained significance, being a PWID or member of a population group not prioritized by the project, being divorced or widowed, and being age 30 or above all remained independent predictors of an increased likelihood of experiencing AHD.

### Conclusion:

Enhanced efforts to link specific client segments to earlier HIV testing — and to AHD prevention, screening, and treatment upon diagnosis — may help to reduce their AHD risks.



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Abstract number 21 has been withdrawn.

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## Preparing for an Outbreak: Lessons Learned from a Community Survey on Mpox for People Living with HIV and Key Populations in the Philippines

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### Background:

In late August 2022, a Filipino national who had no travel history in countries with an mpox outbreak became the fourth confirmed case in the country, prompting the Philippine Department of Health (DOH) to scale up efforts in preparing for a possible outbreak. Immediate priorities included assessing baseline mpox awareness and knowledge and mitigating stigma and discrimination against key population (KP) members with reported cases.

### Description:

To assist the DOH in developing a communication strategy to address community concerns, the USAID-supported Meeting Targets and Maintaining Epidemic Control (EpiC) project in the Philippines collaborated with key community stakeholders to develop a survey for people living with HIV (PLHIV) and KPs. The objectives were to: (1) assess PLHIV and KP awareness and knowledge of mpox, (2) characterize their perceptions of mpox-related stigma and discrimination, and (3) determine preferred mpox information channels and content. Questions were reviewed through a pre-test and a focus group discussion with partners prior to deployment in early September 2022 through the social media pages of 12 organizations working with KPs.

### Lessons Learned:

The survey was completed by 267 respondents including cisgender males (69%), cisgender females (6%), transgender females (6%), nonbinary persons (11%), and others (7%). Most respondents (55%) were aged 25–34.

When asked whether they had heard of mpox, most respondents (95%) expressed awareness; social media (26%), television (20%), and online news

pages (14%) were mentioned as three primary sources among 11 options. However, social media was only trusted by 48% of respondents, compared to 97% who trusted healthcare workers (HCWs). HCWs were also identified as the most mentioned preferred information source (20%).

Most respondents (59%) reported exposure to stigmatizing or discriminatory messaging regarding the high incidence of global mpox transmission among KPs. Those who encountered such messages primarily mentioned social media (29%), television (14%), and government officials and advisories (12%). Almost all respondents (99%) knew that anyone could get mpox. Communication of 'who' can be infected was effective, but messaging could be improved to mitigate stigma and discrimination. Almost all respondents (94%) rated penetrative sex as a moderate to very likely way to transmit mpox, while 85% perceived contact with respiratory secretions as moderate to very likely. Almost all respondents (95%) thought avoiding sex was a moderate to very likely preventive measure against mpox, while 85% thought the use of face masks was a moderate to very likely prevention strategy, highlighting that many understood the 'how' of transmission wherein sexual contact is not the only route.

### Conclusion:

Assessment results were shared with the DOH and relevant stakeholders to tailor subsequent communication strategies. For future outbreaks that may give rise to stigma and discrimination, a two-tiered strategy will be used, focusing on 'how' instead of 'who'. As part of this strategy, messaging, and materials will also be co-developed with the populations concerned for more appropriate targeting. Preferred and trusted channels of information will be used while existing networks and partner organizations will be engaged to increase dissemination reach.



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## Changes in Weight After Switching from Ritonavir-Boosted Protease Inhibitors to Dolutegravir/Tenofovir Alafenamide/Emtricitabine: Results From a Single Arm, Open-Label, Phase 3 Clinical Trial Study (SPIRITED)

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### Background:

Dolutegravir-based regimens are preferred first-line HIV treatments in all guidelines. However, studies suggest it is associated with excess weight gain. We assessed weight changes in virologically suppressed Thai people living with HIV (PLWH) who switched from ritonavir-boosted protease inhibitors (PI/r)-based regimens to tenofovir alafenamide/emtricitabine/dolutegravir (TAF/FTC/DTG).

### Material and Material and Methods:

Thai PLWH with plasma HIV RNA <50 copies/mL were switched from ritonavir-boosted lopinavir (LPV/r) or atazanavir (ATV/r) + ≥1 nucleoside reverse transcriptase inhibitor(s) to TAF/FTC/DTG in this 48-week, single arm, open-label, phase 3 clinical trial. Multivariate generalized estimating equations were employed to assess changes in weight, lipid profiles, and safety parameters after switching to TAF/FTC/DTG.

### Results:

Among 203 participants enrolled (median [IQR] age, 48.9 [38.7–54.4] years; 107 [52.7%] male; median body mass index [BMI], 22.7 [19.9–25.5] kg/m<sup>2</sup>; median antiretroviral therapy [ART] duration, 17.4 [10.3–21.5] years; 180 [88.7%] used tenofovir disoproxil fumarate [TDF] at baseline; 103 [50.7%] switched from LPV/r and 100 [49.3%] from ATV/r), 191/193 (99.0%) maintained viral suppression at week 48. After adjusting for age, sex, ART duration, TDF used, and type of prior PI/r use, weight significantly increased from baseline at week 24 (1.7 kg; 95%CI 1.3 to 2.1, p<0.001) and at week 48 (1.9 kg; 95%CI 1.5 to 2.4, p<0.001). No differences in weight changes were observed based on prior PI/r used. Using the same adjustment variables, triglyceride decreased by -41.7 mg/dL (95%CI -58.2 to -25.3, p<0.001) at week 24 and -47.5 mg/dL (95%CI -64.2 to -30.8, p<0.001) at week 48; estimated glomerular filtration rate decreased by -9.7 mL/min/1.73m<sup>2</sup> (95%CI -12.5 to -6.8, p<0.001) at week 24 and -7.5 mL/min/1.73m<sup>2</sup> (95%CI -10.4 to -4.6, p<0.001) at week 48.

### Conclusion:

Significant weight gain increases, along with significant plasma triglyceride and eGFR decreases were evident in virologically suppressed Thai PLWH after switching from PI/r-based regimens to TAF/FTC/DTG.



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## Efficacy and Changes in Metabolic Parameters of BIC/FTC/TAF Versus DTG Plus 3TC in Naïve PLWH in China: 48 Weeks Analysis

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### Background:

BIC/FTC/TAF and DTG+3TC are both the first-line regimens. This study aims to compare the efficacy and changes in metabolic parameters in naïve PLWH in China.

### Material and Methods:

Prospective, single-center, observational study enrolled ART-naïve PLWH who used BIC/FTC/TAF or DTG+3TC as initial ART regimen. Clinical and laboratory assessments were done at baseline, 4, 12, 24, 36, 48 weeks. VF defined as two consecutive viral loads [VL]  $\geq 200$  copies/mL after 24 weeks on the regimen.

### Results:

147 naïve PLWH were included in the study, 70 with BIC/FTC/TAF and 77 with DTG+3TC. There was no significant difference in gender, age, weight, BMI and coinfection between two groups, most of the PLWH included were young men. The median age is 34 years. The proportion of PLWH had baseline VL  $> 100,000$  c/ml were 50% and 56%, respectively, 16(22.9%) and 20(26%) were higher than 500,000 c/ml. Due to economic reasons, loss of follow-up and other reasons, 18 and 15 PLWH did not complete visit at week 48. In the per-protocol (PP) analysis, BIC/FTC/TAF showed similar virological suppression rates to DTG+3TC at any follow-up visit or in PLWH with baseline VL  $> 500,000$  c/ml. All PLWH achieved viral suppression at week 48. At week 4, average VL decreased 3.49 log and 3.28 log in two groups, which shows no significant difference in early virus elimination. After 48 weeks therapy, there was a significant increase in body weight and BMI between two groups, and BIC/FTC/TAF showed significant growth in HDL-C and LDL-C, which was not showed in DTG+3TC.

### Conclusion:

In this real-life study, BIC/FTC/TAF achieved similar viral suppression rate compared to DTG+3TC as initial regimen. However, BIC/FTC/TAF may increase the metabolic risk of dyslipidemia.

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## Integrase Strand Inhibitors (INSTI) Related Changes in BMI and Risk of Diabetes

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### Background:

Integrase strand inhibitor (INSTI) use in people living with HIV (PLWH) has been associated with increased body mass index (BMI). BMI increases have also been associated with a higher risk of diabetes (DM). This study explored the relationship between INSTI and non-INSTI regimens use, BMI changes, and the risk of DM.

### Material and Methods:

Baseline was latest of cohort entry, combination antiretroviral (ART) use, or first BMI. RESPOND participants were included if they had CD4 and HIV RNA at baseline and at least one follow-up BMI. Those with prior DM, and pregnant women, were

excluded. DM was defined as a random blood glucose >11.1 mmol/L, HbA1c >6.5%/48 mmol/mol, use of antidiabetic medication or clinical diagnosis. Poisson regression analysis was used to assess the association between time-updated log BMI, current INSTI/non-INSTI use, current TAF/TDF use, and their interactions, on DM risk.

### Results:

20,865 PLHIV were included, most were male (74%) and white ethnicity (73%). The median age was 45 years (IQR 37–52) with a median BMI of 24 kg/m<sup>2</sup> (IQR 22–26). Over 107,641 PYFU, there were 785 DM diagnoses, a crude rate of 0.73 (CI 0.68 – 0.78) /100 person years. Log BMI was strongly associated with DM (aIRR 18.2 per log increase, 95% CI 11.7, 28.3; p<0.001). Among INSTI users, 12% were on raltegravir (RAL), 60% on dolutegravir (DTG), 28% on other INSTIs (elvitegravir (EVG), bictegravir (BIC), cabotegravir (CBG)). In univariate analyses, current INSTI use was associated with increased risk of diabetes (IRR 1.58, 95% CI 1.37, 1.82; p<0.001). This was partially attenuated when adjusted for time updated log BMI, sex, natural log of age, HIV risk group, ethnicity, CD4, and current TDF/TAF use (aIRR 1.48, 95% CI 1.28, 1.72; p<0.001). In adjusted analyses, current TAF use had similar DM risk to current TDF (aIRR=0.98, 95%CI 0.79–1.20, p=0.818). There was little evidence of an interaction between log BMI, INSTI and non-INSTI use, and DM (p=0.130).

### Conclusion:

In RESPOND, current use of INSTIs vs. non-INSTI was associated with an increased risk of diabetes which partially attenuated when adjusted for BMI changes and other variables. There was no difference in DM risk between current TAF and TDF users.



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## Low Sarcopenia Index Predicts Mortality and Development of Comorbidities Among People Living with HIV

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### Background:

Sarcopenia is increasingly recognized as a condition associated with a range of age-related comorbidities. The sarcopenia index (serum creatinine/serum cystatin C × 100) is considered a potential marker of sarcopenia. Lower sarcopenia index (SI) indicates sarcopenia, which is associated with higher mortality and incidence of comorbidities in the general population.

### Material and Methods:

We retrospectively analyzed data from the PLWH chronic kidney disease cohort which was surveyed in 2012, assessing baseline risk factors and laboratory findings including sarcopenia index (SI). We followed them to determine the incidence of adverse outcomes, including all-cause mortality, cardiovascular events, new-onset diabetes, end-stage renal disease (ESRD), and malignancies. The low SI group was defined as participants with a SI below the lowest quartile (Q1: SI < 96.4). Kaplan-Meier and Cox proportional hazards models were used to assess the data.

### Results:

Of the 892 participants, the median age was 39 years (IQR: 35-46) and 867 (97%) were men. The median CD4 cell count was 509 /μL (IQR: 385-642), 778 (87%) were receiving antiretroviral therapy, and 245 (31.4% of those on ART) were using integrase strand transfer inhibitors (raltegravir). During a median follow-up of 9.3 (9.2-9.4) years, 28 participants died and 16, 63, 5, 22 participants developed cardiovascular events, new-onset diabetes, ESRD, and malignancies, respectively. Kaplan-Meier estimates showed that the low SI group had significantly higher mortality (log rank test,  $p < 0.001$ ) and higher incidence of new-onset diabetes ( $P < 0.001$ ), ESRD ( $P = 0.004$ ), and malignancies ( $P = 0.001$ ). Cox proportional hazards

analysis evaluated the association between low SI and the outcomes, adjusting for other risk factors (age, body mass index, smoking status, CD4/CD8 ratio, HIV viremia, and hypertension). Low SI was an independent risk factor for all-cause mortality [hazard ratio 4.804 (95% CI 2.021-11.416,  $P < 0.001$ )], new-onset diabetes [hazard ratio 2.374 (95% CI 1.330-4.239,  $P = 0.003$ )] and ESRD [hazard ratio 56.67 (95% CI 3.1-1048.9,  $P = 0.007$ )].

**Conclusion:** Low SI was associated with higher mortality and development of comorbidities in PLWH. Assessment of SI may be useful to identify high-risk groups for the development of these outcomes.

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## Metabolic Outcomes of HIV Patients Initiated on Integrase Inhibitor (INSTI) vs Non-nucleoside Reverse Transcriptase Inhibitor (NNRTI) as First Line Antiretroviral Therapy: A Retrospective, Single-Centre Experience in Malaysia.

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### Background:

Majority of people living with HIV (PLHIV) in Malaysia are started on NNRTI-based therapy despite the international recommendation of INSTI-based regimen as the first line antiretroviral therapy (ART). Upscaling of INSTI in Malaysia has been limited by cost and concerns on excessive weight gain. With widespread use of generic Dolutegravir (INSTI) soon, it is timely to investigate the effects of INSTI use in Malaysia's population.

### Material and Methods:

This was a retrospective, observational review of newly diagnosed adult PLHIVs started on either NNRTI or INSTI with the two same backbone Nucleoside Reverse Transcriptase Inhibitors (Tenofovir disoproxil fumarate/Emtricitabine). PLHIVs who were diagnosed between 1st January 2015 and 31st May 2021 and received treatment for at least 18 months at Infectious Diseases Clinic, University Malaya Medical Centre were included. Metabolic parameters at baseline and 18 months were collected. Primary outcome was the prevalence of metabolic syndrome (MetS). MetS was diagnosed when a sample met  $\geq 3$  criteria by International Diabetic Federation adjusted to Asian population. Weight, blood pressure, dyslipidemia and BMI were analysed as secondary outcomes.

### Results:

Out of 405 patients enrolled, 337 (83.2%) were started on NNRTI-based therapy while 68 (16.8%) were commenced on INSTI. 333 (98.8%) received Efavirenz (NNRTI) and 50 (73.5%) were on

Dolutegravir (INSTI). Majority were male (93.1%), Chinese (46.9%) with median age of 33 (IQR 28-40) years old. Median baseline CD4 cell count was 205 (IQR 41-392) cells/mm<sup>3</sup> with median HIV viral load (VL) at baseline of 174 948 (IQR 44 490-509 322) copies/mL. 168 (41.5%) presented with symptomatic opportunistic infections (OIs).

The prevalence of MetS at 18 months was 74 (22.0%) and 18 (26.5%) in NNRTI and INSTI arms respectively,  $p=0.418$ . At baseline, NNRTI had 25 (7.4%) and INSTI had 4 (5.9%) samples who fulfilled MetS criteria,  $p=0.654$ . Both arms had significant within group rise in MetS rates ( $p<0.001$ ,  $p=0.001$ ) at 18 months of ART. Only age was associated with MetS in regression analysis [Odds Ratio (OR) 1.065 (95% CI : 1.038-1.092),  $p<0.001$ ].

Mean weight change was higher in INSTI group with +7.02 (SD -0.99 to 15.03) kg compared to +3.89kg (SD -3.52 to 11.3) kg for NNRTI,  $p=0.005$ . The proportion of patients who gained  $\geq 10\%$  of baseline weight was higher in INSTI than in NNRTI arm (44.6% vs 30.2%,  $p=0.034$ ). Factors associated with  $\geq 10\%$  weight gain included baseline symptomatic OIs [OR 5.056 (95% CI: 2.507-10.197,  $p<0.001$ )], CD4  $<200$  cells/mm<sup>3</sup> [OR 4.174 (95% CI: 1.982-8.789,  $p<0.001$ )] and HIV viral load  $>100$  000 copies/mL [OR 3.136 (95% CI: 1.490-6.601,  $p=0.003$ )]. In univariate analysis, INSTI use was associated with significant weight gain  $\geq 10\%$  [OR 1.858 (95% CI: 1.037-3.326),  $p=0.037$ ] but this effect was proven to be caused by confounders in multivariate analysis. Overall rate of hypertension at end of observation was alarmingly high at 188 (46.4%).

### Conclusion:

Regardless of NNRTI or INSTI use, the development of metabolic complications was alarmingly high in both treatment arms, suggesting the need to monitor metabolic parameters vigilantly during follow-ups. INSTI had higher mean weight gain compared to NNRTI.

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## Prediction Models for Cardiovascular Disease Risk Among People Living with HIV: A Systematic Review and Meta-Analysis

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### Background:

HIV continues to be a major global health issue. The relative risk of cardiovascular disease (CVD) among people living with HIV (PLWH) was 2.16 compared to non-HIV-infections. The prediction of CVD is becoming an important issue in current HIV management. However, there is no consensus on optional CVD risk models for PLWH. Therefore, we aimed to systematically summarize and compare prediction models for CVD risk among PLWH.

### Material and Methods:

Longitudinal studies that developed or validated prediction models for CVD risk among PLWH were systematically searched. Five databases were searched up to January 2022. The quality of the included articles was evaluated by using the Prediction model Risk Of Bias ASsessment Tool (PROBAST). We applied meta-analysis to pool the logit-transformed C-statistics for discrimination performance.

### Results:

Thirteen articles describing 17 models were included. All the included studies had a high risk of bias. In the meta-analysis, the pooled estimated C-statistic was 0.76 (95% CI: 0.72-0.81, I<sup>2</sup> = 84.8%) for the Data collection on Adverse Effects of Anti-HIV Drugs Study risk equation (D:A:D) (2010), 0.75 (95% CI: 0.70-0.79, I<sup>2</sup> = 82.4%) for the D:A:D (2010) 10-year risk version, 0.77 (95% CI: 0.74-0.80, I<sup>2</sup> = 82.2%) for the full D:A:D (2016) model, 0.74 (95% CI: 0.68-0.79, I<sup>2</sup> = 86.2%) for the reduced D:A:D (2016)

model, 0.71 (95% CI: 0.61-0.79, I<sup>2</sup> = 87.9%) for the Framingham Risk Score (FRS) for coronary heart disease (CHD) (1998), 0.74 (95% CI: 0.70-0.78, I<sup>2</sup> = 87.8%) for the FRS CVD model (2008), 0.72 (95% CI: 0.67-0.76, I<sup>2</sup> = 75.0%) for the pooled cohort equations of the American Heart Society/ American score (PCE), and 0.67 (95% CI: 0.56-0.77, I<sup>2</sup> = 51.3%) for the Systematic COronary Risk Evaluation (SCORE). In the subgroup analysis, the discrimination of PCE was significantly better in the group aged ≤40 years than in the group aged 40-45 years (P=0.024) and the group aged ≥45 years (P=0.010). No models were developed or validated in Sub-Saharan Africa and the Asia region.

### Conclusion:

The full D:A:D (2016) model performed the best in terms of discrimination, followed by the D:A:D (2010) and PCE. However, there were no significant differences between any of the model pairings. Specific CVD risk models for older PLWH and for PLWH in Sub-Saharan Africa and the Asia region should be established.

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## A Narrative Study on Self-Awareness of People Living with HIV Undergoing Supportive-Expressive Group Therapy (SEGT) in Caloocan City, Philippines

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### Introduction:

Self-awareness develops as knowledge from life experiences, such as when a PLHIV receives a positive HIV diagnosis. Studies show that PLHIV can identify factors that influence their life choices and their ability to accept traumatic experiences. However, PLHIV going through socioeconomic challenges (i.e., unemployment) may aggravate mental distress and disrupt self-awareness. As a response, Gabay sa Pulang Laso Inc. (GPLI) provided a Supportive-Expressive Group Therapy (SEGT) for PLHIV reporting mental distress. This study seeks to understand themes of self-awareness among PLHIV undergoing SEGT in Caloocan City.

### Material and Methods:

A 12-session SEGT was administered to 18 PLHIV between August 19 to October 30, 2022, and diary writing was done by participants at the end of every session. The diary had guided questions depending the theme of the session. Thematic analysis on the diaries only focused on the first three sessions on self-awareness, self-compassion, and self-care. Diaries underwent verbatim transcription, thematic analysis, and English translation, accordingly. Qualitative data were analyzed as positive emotion, negative emotion, and ambivalent.

### Results:

Among 18 participants, there were 15 diaries completed and were voluntarily submitted to GPLI for thematic analysis. The age of the respondents ranged between 19-52 years old (mean=32.8, SD=8.5), 14/18 reported ART initiation within the

same year of HIV-positive diagnosis while two started ART a year after diagnosis, one started 3 years after, and one started ARV five years after. Majority of the housemates (15/18) were unemployed at the time of diary-writing.

Diary entries revealed that the participants perceived the importance of self-awareness in developing relationships with themselves, with 12 of the 15 entries emphasizing their personal traits in a positive light, noting that despite their HIV-positive status, they are the same people as everyone else. The experiences detailed in the diaries had four main themes of Self-Awareness: 1) Self-compassion, 2) Meaning of Existence, and 3) Self-expression. Moreover, all 15 entries reflected self-compassion and ideas about acceptance of imperfections (i.e., weight gains, having HIV) as the first step of self-care and reaching an “undetected status”. Family-centric ideas were the center of the respondents’ meaning of existence as mentioned in five diaries, repeating intentions of making their families happy, especially their parents. Themes on self-expression as a form of strategy to improve introspective thinking was also mentioned in 8 diaries, emphasizing self-expression as an opportunity to allow better relationships.

### Conclusion:

In conclusion, the purpose of this narrative study is to identify meaningful relationships with self to those people living with HIV who are undergoing Supportive-Expressive Group Therapy (SEGT). Based on the thematic analysis converted, it can be concluded that participants perceived self-awareness in developing relationships with themselves. Moreover, a community understanding of common life experiences is established through a supportive atmosphere where a person living with HIV shares experiences.

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## Combating Stigma in HIV and Key Populations Programme (Shake-Up): A Pilot Key Population-Led HIV Sensitivity Training Programme for Healthcare Professionals in Singapore

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### Background:

The National Centre for Infectious Diseases (NCID) Clinical HIV Programme (CHP) cares for a diverse group of people living with HIV (PLHIV) in Singapore. However, healthcare professionals (HCP) may lack training in certain areas, such as using correct gender pronouns, because these topics are not widely discussed in Singapore and are not currently covered in the HCP curriculum. This can result in poor care quality, negative attitudes and behaviours from HCP, and a lack of confidentiality and privacy in service delivery. Specific training is required to better equip HCP with knowledge and skills when treating HIV in marginalised populations in order to reduce the stigma and discrimination these patients face when seeking care.

### Description:

The NCID CHP developed an HIV sensitivity training workshop to provide HCP with the communication skills and sensitivity training required to provide high-quality, sensitive, and inclusive care to PLHIV at NCID. The workshop covered topics like gender identity, sexuality, sex work, drug use, and HIV and was facilitated by community groups with experience and expertise in these fields. The workshop aimed for 30 participants (n=30) from various family groups affiliated with the organisation. Small group work and learning was used, with each group including learners and facilitators representing key populations.

### Lessons Learnt:

The pre-workshop survey revealed 16 encounters of staff stigmatising patients. In the post-workshop survey, n=29 agreed that the workshop had increased their understanding of the importance of sensitive communication towards PLHIV. All participants felt more confident communicating with PLHIV after the workshop, citing the need for mindfulness as a key insight. The involvement of community groups and members in the development and delivery of the workshop allowed for the sharing of lived experiences and key lessons that the participants thought enhanced learning value.

### Conclusion:

The workshop is the first of its kind in Singapore. We plan to continue conducting the workshop, increasing our participant capacity, and inviting HCP from all Singapore healthcare facilities that provide HIV care to participate. We can work together to make Singapore's healthcare facilities more welcoming to the LGBTQ community, people who do sex work, people who use drugs, and other marginalised groups. It is time for a SHAKE-UP!



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## Growth and Launch of the Glink Academy, Vietnam's First HIV Peer-To-Peer Learning and Incubation Initiative

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### Background:

Business start-up and growth is a challenge for key population (KP)-led organizations in Vietnam. Glink Academy, initiated by Glink KP-led social enterprise (SE) and the USAID/PATH STEPS Project (STEPS), provides peer-to-peer training, learning, and mentorship to support the sustainable growth KP-led SEs and clinics.

### Description:

Beginning in 2014, the USAID/PATH Healthy Markets Project (2014-2021) supported Glink community-based organization to grow a prominent KP-focused health business through establishing seven clinics, registering as an SE, and initiating models of integrated, person-centered healthcare for LGBTQI+ and other KPs. In late 2021, Glink and STEPS held a series of design sessions to conceptualize and formulate a new initiative, "Glink Academy," focused on further leveraging the Glink platform to inspire the KP community in healthcare sector business development. To initiate this process, STEPS and Glink assessed KP-organization capacity-strengthening needs and identified five key areas of support that Glink Academy could deliver to peer organizations based on these needs: 1) offering tailored trainings and individual coaching/mentoring, 2) convening a business learning forum and mentor network, 3) designing communications activities on diverse business topics, 4) developing start-up resources and tools, and 5) initiating an innovation grant.

### Lessons learnt:

Since its launch in March 2022, Glink Academy has become a leading peer learning and incubation platform for KP-organizations in Vietnam through diverse activities including five "Business Innovation Talks" convening experienced entrepreneurs and

innovators to share their business experiences, three trainings on business strategy, and engagement of over 30 business experts to provide advisory services and mentoring to Glink Academy members. Glink Academy and STEPS also delivered intensive coaching and hands-on support in brand development, legal registration, and business planning to four new KP-led health businesses, including Vietnam's first-ever transgender-owned clinic. These businesses plan to fully open in 2023 and will fill critical gaps in KPs' access to quality healthcare.

### Conclusion:

Though at early stages, Glink Academy exemplifies a transformative KP-led model for peer learning and incubation. Further advancement of the Glink Academy will help diversify and expand a network of community-friendly health organizations in Vietnam that are positioned to deliver high-quality, inclusive health services for the KP community in Vietnam.



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## HÉROS: A Community- And Person-Centered Design of Healthcare Service for GBMSM Engaging in Chemsex in Taiwan

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### Background:

In response to the rise of chemsex globally and in Taiwan, an integrated care model Healing, Empowerment, Recovery of Chemsex Health Center (HERO) was established in the year 2017. It transformed from a model that was located within a regional hospital to a new social enterprise approach of one-stop center (HÉROS) in May 2022. It is now independently located within the community, cooperated with a pharmacy and clinic in an urban neighborhood more accessible for people who engaged in chemsex. HÉROS aimed to provide comprehensive care including sexual health, HIV/STI prevention and treatment, psychosocial therapy, substance use counseling and referral services for people who engaged in chemsex.

### Description:

Integrated medical care was provided by the clinic to reduce physical symptoms and psychological discomforts due to chemsex. The pharmacy provided home delivery services and designed customized-centered consultations helping chemsex users to reduce their craving and maintain their well-being. In addition, HÉROS provided a series of mental health integrated services for chemsex individuals, including psychiatric outpatient clinics, individual psychological counseling, and multiple types of chemsex recovery and supporting groups for people engaging in chemsex. The three major types of groups for chemsex include the early relapse prevention that helps participants to identify triggers and develop skills for early prevention, the 12-step group, and

the interpersonal skills group designed for individuals at the maintenance stage.

**Lessons Learned:** Less than six months after HÉROS was moved to the community in 2022, more than 2000 people visited HÉROS clinic and half of them received pharmacy services. More than 40 chemsex recovery and support groups were held and 70 GBMSM engaged in chemsex have participated. For some GBMSM, chemsex is the results of social isolation and loneliness and can benefit from interventions with a mental health focus provided by psychosocial therapy and support groups.

### Conclusion:

As an integrated one-stop center rooted in the community, HÉROS incorporates a broad array of operational and ideological approaches toward care planning and delivery for people affected by chemsex. HÉROS exists to facilitate differentiated and simplified chemsex care services which emphasizes a person- and community-centered approach of HIV/STIs, PrEP and chemsex care service delivery.



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## Implementing Screening, Brief Intervention, and Referral to Treatment (SBIRT) For Problematic Alcohol Use Among Transgender Women In Thailand: A Pre-Implementation Study Of Acceptability

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### Background:

Problematic Alcohol Use (PAU) may lead to an increased risk of HIV acquisition through risk behaviors and impact treatment adherence. Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based intervention used to identify, reduce, and prevent PAU. Around 90% of Thai Transgender Woman (TGW) sex workers have reported having sex while using alcohol and around one-third of them reported having condomless sex. Addressing PAU as a determinant of high-risk sexual behavior may lead to more effective HIV interventions among TGW. Despite the linkage between PAU and HIV, SBIRT has not been readily adopted in TGW healthcare settings in Thailand. Therefore, this pre-implementation study aimed to explore the acceptability of SBIRT in the Tangerine Clinic, a transgender-led sexual health clinic in Bangkok, Thailand.

### Material and Material and Methods:

TGW participants (N=100) who visited the clinic from September 2022 to November 2022 were invited to participate. They completed self-reported questionnaires assessing demographic data, reason for clinic visit, alcohol use with the Alcohol Use Disorders Identification Test-Concise (AUDIT-C), and acceptability and personal comfort of receiving SBIRT in healthcare setting.

Acceptability items were: 1) 'It would be okay with me if healthcare provider (HCP) asked me at this visit

about my alcohol use'; 2) 'It would be okay with me if HCP provided me with brief counseling at this visit for my alcohol use'; and 3) 'It would be okay if HCP referred me to a treatment program if I have a PAU.' Comfort level was assessed with a fourth item: 4) 'I would be embarrassed if HCP asked me about my alcohol use'. Participants rated their level of agreement with four Likert-scale items (1= completely agree; 4 = completely disagree).

We analyzed descriptive statistics using SPSS. Simple proportions were calculated for each survey item, and an overall acceptability score obtained by averaging all the results. Differences in acceptability by demographic factors were evaluated using Fisher's Exact Test and Analysis of Variance.

### Results:

The average age of participants was 29.4 years (SD=6.25). Hormonal treatment (N=61) and HIV testing (N=59) were the two most cited reasons for visits. Fifty percent of participants were at-risk alcohol users. Almost all participants (>95%) completely agreed or agreed that it would be acceptable to 1) be asked about alcohol use (Mean Likert (SD): 1.48 (0.52)), 2) receive counselling (Mean Likert (SD): 1.58 (0.51)) , and 3) receive referrals (Mean Likert (SD): 1.61 (0.56)). There were no significant differences according to demographic characteristics, alcohol use and overall acceptability (Mean Likert (SD): 1.56 (0.06)). However, thirty-two percent of sample indicated some degree of embarrassment if they were asked about their alcohol use (Mean Likert (SD): 2.67 (0.85)).

### Conclusion:

Our findings suggest that TGW express high levels of acceptability of implementing SBIRT into a transgender-led sexual health clinic. However, approximately 30% of participants indicated some degree of embarrassment about having an alcohol-related discussion with HCP, suggesting that training HCP to approach the topic with sensitivity will be important. Future studies should explore barriers and facilitators of prospective SBIRT implementation in a transgender-led sexual health clinic to develop feasible implementation strategies.

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## Factors Associated with Event-Driven PrEP Use Among Men Who Have Sex with Men (MSM): Results From a Cross-Sectional Survey Across 16 Countries and Territories in the Asia and Australia

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### Background:

Event-driven PrEP (ED-PrEP) is an effective method of preventing HIV among men who have sex with men (MSM) and is included in some clinical guidelines in Asia. While daily PrEP remains the most common method of taking PrEP globally, continued monitoring of ED-PrEP is needed as more people become aware of this method. This analysis of existing PrEP users aimed to assess prevalence of ED-PrEP use and factors associated with ED-PrEP use across the Asia-Pacific region.

### Material and Methods:

We conducted an online cross-sectional survey in 16 countries/territories in Asia and Australia among MSM between May and November 2022. Countries/territories were categorised as low- and middle-income Asian (Cambodia, China (excluding Hong Kong), India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, The Philippines, Thailand, and Vietnam), high-income Asia (Hong Kong SAR China, Japan, Singapore, and Taiwan (China)), and Australia. Participants were asked about current PrEP use and regimen, demographic characteristics, sexual

behaviour, and PrEP awareness. Analyses were restricted to current PrEP users who were MSM. Factors associated with ED-PrEP use were assessed with multivariable logistic regression; we present adjusted odds ratios (aOR) and 95% confidence intervals (CI) for these associations.

### Results:

Among 3,556 current PrEP users; 2,351 (66.1%) were using daily PrEP, 1,126 (31.7%) ED-PrEP, and 79 (2.2%) were taking it another way. The countries/territories with the highest proportion of ED-PrEP users among current PrEP users were Lao People's Democratic Republic (n=18, 72.0%), Taiwan, China (n=253, 69.7%), Japan (n=106, 57.3%), and China excluding Hong Kong (n=134, 46.1%). The countries/territories with the lowest proportion of ED-PrEP users were Myanmar (n=4, 3.0%), Nepal (n=14, 4.1%), Thailand (n=34, 11.0%), and Cambodia (n=31, 19.4%). Most users (n=3,035, 85.4%) had heard of ED-PrEP. ED-PrEP use was positively associated with having a university education (aOR=1.26, 95%CI=1.06-1.50) and ED-PrEP awareness (aOR=2.52, 95%CI=1.94-3.29), and was negatively associated with full-time employment (aOR=0.81, 95%CI=0.68-0.96), being in a relationship (aOR=0.82, 95%CI=0.70-0.95), having >10 sexual partners in the previous 6 months (aOR=0.60, 95%CI=0.49-0.72), recent injecting drug use (aOR=0.67, 95%CI=0.51-0.90), and being diagnosed with an STI in the previous 6 months (aOR=0.61, 95%CI=0.48-0.76). Compared to high-income Asian countries/territories, participants from low- and middle-income Asian countries (aOR=0.25, 95%CI=0.21-0.31) and Australia (aOR=0.29, 95%CI=0.23-0.36) were less likely to use ED-PrEP.

### Conclusion:

A substantial proportion of MSM in Asia and Australia were using ED-PrEP. ED-PrEP users demonstrated different risk patterns than daily PrEP users, with less frequent sex and lower injecting drug use. Efforts must be made to enhance ED-PrEP awareness and ensure that ED-PrEP is offered as an effective alternative to daily PrEP for MSM. Further work is needed to empower individuals to use this method effectively per clinical guidelines and increase PrEP coverage among MSM who would be suitable taking ED-PrEP to reduce HIV incidence in the region.



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## Analyses of the Safety and Effectiveness of Remdesivir in Patients with COVID-19 in Real-World Settings in Japan, South Korea, and Taiwan

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### Background:

As of January 24, 2023, Japan, South Korea, and Taiwan had reported a combined total of 71 million cases of coronavirus disease 2019 (COVID-19), resulting in >114,000 deaths. Remdesivir (RDV), a broad-spectrum nucleotide prodrug that inhibits the RNA-dependent RNA polymerase activity of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the causative agent of COVID-19, has been authorized for use in all three countries. There is minimal real-world effectiveness data for RDV in Asian populations. Here we report safety and effectiveness of RDV from 3 regulatory-mandated, post-authorization surveillance studies conducted in Japan, South Korea, and Taiwan.

### Material and Methods:

Analyses were based on 3 distinct, multi-country studies (197 sites in Japan, 10 in South Korea, and 5 in Taiwan) including hospitalized adult and pediatric patients infected with SARS-CoV-2 who were treated with RDV in accordance with treatment guidelines (data collection period: Japan, May 2020 - April 2022; South Korea interim analysis, January 2022 - July 2022; Taiwan, Aug 2021 - April 2022). Safety and effectiveness data were collected from treatment initiation until 4 weeks after completion or discontinuation using electronic case report forms based on medical records. Treatment effectiveness was based on improvement from baseline scores on a 7-point ordinal scale assessment (OSA).

### Results:

Overall, 2969 participants were enrolled (2701 in Japan, 2128 in the safety analysis set [SAS] and 2127

in the effectiveness analysis set [EAS]; 163 in South Korea, 161 in the SAS and 154 in the EAS; and 105 in Taiwan, 105 in the SAS and 103 in the EAS). Mean±standard deviation age in years was 67±14 in Japan, 56±16 in South Korea, and 59±13 in Taiwan. Most participants were male (≥50% across the 3 countries). The most frequently reported comorbidities at baseline in all 3 countries were cardiovascular disease, hypertension, and diabetes. Adverse events related to RDV treatment (adverse drug reactions [ADRs]; n, %) were reported in 251/2394 (10.5%) participants (Japan: 221/2128, 10.4%; South Korea: 25/161, 15.5%; Taiwan: 5/105, 4.8%). Serious ADRs (SADRs) were reported by 26 (1.2%), 0, and 1 (1.0%) participant(s) in Japan, South Korea, and Taiwan, respectively. Japan reported 5 (0.2%) deaths resulting from SADRs, while South Korea and Taiwan reported no ADRs with fatal outcomes. Japan and South Korea reported 200 and 4 deaths in their respective EAS, with a mortality rate per 100 person-months (95% confidence interval) of 11.1 (9.66-12.75) and 2.41 (0.66-6.18), respectively. Taiwan reported no deaths during the study period. By the end of the observation period, 1461/2384 (61.3%) participants in the EAS across countries were categorized as 'not hospitalized' (OSA Treatment Outcome 7; Japan: 1367/2127, 64.3%; South Korea: 71/154, 46.1%; Taiwan: 23/103, 22.3%).

### Conclusion:

The use of RDV for the treatment of COVID-19 was safe and well-tolerated, with no new safety concerns identified in Asian populations across 3 distinct surveillance studies. Consistent with prior clinical trials, most participants exhibited a clinical improvement following treatment.

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## The Role of the HIV Reservoir and Transcriptional Activity in Incomplete Immune Reconstitution in HIV-Infected Patients

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### Background:

HIV-infected immunological non-responders (INRs) refer to individuals who are unable to restore satisfactory CD4<sup>+</sup> T-cell counts after receiving modern antiretroviral therapy (ART) for two years or longer despite full virological suppression, whereas immunological responders (IRs) refer to those whose CD4<sup>+</sup> T-cell counts rebound to 500 cells/ $\mu$ L or more after a period of ART. INRs are known to have higher mortality and morbidity than IRs. However, the mechanisms underlying incomplete immune reconstitution in INRs remains unclear. This study aimed to explore the underlying mechanisms of incomplete immune reconstitution in HIV infected patients from the perspective of the HIV reservoir.

### Material and Methods:

HIV DNA quantification and HIV cell-associated RNA (CA-RNA) quantification were conducted through Reverse Transcription-Quantitative Real-Time Polymerase Chain Reaction (RT-qPCR) in order to understand the size of, and the transcriptional activity of the HIV reservoir. Transcriptome sequencing of mRNA and bioinformatics analysis were performed in both INRs and IRs to investigate the difference in differential expression genes (DEGs) and potential pathways. Flow cytometry was used to analyze CD95<sup>+</sup>CD4<sup>+</sup> and Ki-67<sup>+</sup>CD4<sup>+</sup> T-cells. CD4<sup>-</sup>, CD4<sup>+</sup>CD69<sup>+</sup>, and CD4<sup>+</sup>CD69<sup>-</sup> T-cells were isolated by using immunomagnetic microbeads.

### Results:

A total of 171 INRs and 171 IRs were recruited for this study. The median HIV-1 DNA count was 741 copies per million (cpm) PBMC in the INR cohort, and the median HIV-1 DNA count was observed to be significantly higher ( $p < 0.01$ ) than that in the IR cohort (389 cpm PBMC). Meanwhile, levels of HIV-1

CA-RNA in the INR cohort (141 cpm PBMC) were significantly higher than in the IR cohort (102 cpm PBMC,  $p = 0.04$ ). Specifically, the CD4<sup>+</sup>CD69<sup>-</sup> T-cells had significantly higher HIV-1 DNA and CA-RNA loads than the CD4<sup>+</sup>CD69<sup>+</sup> T-cells in either IRs (CD4<sup>+</sup>CD69<sup>-</sup> vs. CD4<sup>+</sup>CD69<sup>+</sup>, HIV-1 DNA: 778 vs. 48, cpm PBMC,  $p < 0.01$ ; HIV-1 CA-RNA: 1470 vs. 117, cpm PBMC,  $p = 0.02$ ) or INRs (CD4<sup>+</sup>CD69<sup>-</sup> vs. CD4<sup>+</sup>CD69<sup>+</sup>, HIV-1 DNA: 9172 vs. 1647, cpm PBMC,  $p < 0.01$ ; HIV-1 CA-RNA: 12970 vs. 991, cpm PBMC,  $p < 0.01$ ). GO (Gene Ontology) analysis from DEGs and Gene Set Enrichment Analysis (GSEA) indicated that the interferon alpha/gamma response, oxidative phosphorylation, the inflammatory response, the complement response, and apoptosis were significantly enriched in INRs. The expression of CD4<sup>+</sup>CD95<sup>+</sup> was higher in INRs (Mean Fluorescence Intensity, 8775) compared to IRs (6287,  $p = 0.01$ ), and the expression of CD4<sup>+</sup>Ki-67<sup>+</sup> cells was higher in INRs (1.21%) compared to IRs (0.78%,  $p < 0.01$ ). HIV integrase-mRNA (p31) was overexpressed in PBMCs of INRs compared to IRs, and this was verified via qPCR (INRs vs. IRs, 4.8 vs. 0.7, copies/106 PBMC,  $p < 0.01$ ).

### Conclusion:

Our results indicate that INRs have a larger HIV reservoir and a greater degree of transcriptional activity, particularly in inactivated CD4<sup>+</sup> T-cells, and have enhanced inflammation and anti-viral immune responses, have a higher level of CD4<sup>+</sup> T-cell proliferation and apoptosis, and an overexpression of the integrase-mRNA, HIV-1 p31, implying that the HIV reservoir and transcriptional activity may play a crucial role in mechanisms underlying incomplete immune reconstitution by inducing CD4<sup>+</sup> T-cell proliferation, CD4<sup>+</sup> T-cell apoptosis, and systemic inflammation.

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## Transcriptome Analysis of CD4+ T Cells From HIV-Infected Individuals Receiving ART with LLV Revealed Novel Transcription Factors Regulating HIV-1 Promoter Activity

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Some HIV-infected individuals receiving ART develop low-level viremia (LLV), with a plasma viral load of 50-1000 copies/ml. Persistent low-level viremia is associated with subsequent virologic failure. The peripheral blood CD4+ T cell pool is a source of LLV. However, the intrinsic characteristics of CD4+ T cells in LLV which may contribute to low-level viremia are largely unknown. We analyzed the transcriptome profiling of peripheral blood CD4+ T cells from healthy controls (HC) and HIV-infected patients receiving ART with either virologic suppression (VS) or LLV. To identify pathways potentially responding to increasing viral loads from HC to VS and to LLV, KEGG pathways of differentially expressed genes (DEGs) were acquired by comparing VS with HC (VS-HC group) and LLV with VS (LLV-VS group). Overlapping pathways between these two groups were identified as potential responders to increasing viral loads, from HC, to VS and LLV. Characterization of DEGs in key overlapping pathways showed that CD4+ T cells in LLV expressed higher levels of Th1 signature transcription factors (TBX21), toll-like receptors (TLR-4, -6, -7 and -8), anti-HIV entry chemokines (CCL3 and CCL4), and anti-IL-1 $\beta$  factors (ILRN and IL1R2) compared to VS. Our results also indicated activation of the NF- $\kappa$ B and TNF signaling pathways that could promote HIV-1 transcription. Finally, we evaluated the effects of 4 and 17 transcription factors that were upregulated in the VS-HC and LLV-VS groups, respectively, on HIV-1 promoter activity. Functional studies revealed that CXXC5 significantly increased, while SOX5 markedly suppressed HIV-1 transcription. In summary, we found that CD4+ T cells in LLV displayed a distinct mRNA profiling compared to that in VS, which promoted HIV-1 replication and

reactivation of viral latency and may eventually contribute to virologic failure in patients with persistent LLV. CXXC5 and SOX5 may serve as targets for the development of latency-reversing agents.

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## **TGF- $\beta$ Signaling Promotes HIV-1 Infection in Activated and Resting Memory CD4+ T Cells**

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Understanding the facilitator of HIV-1 infection and subsequent latency establishment may aid the discovery of potential therapeutic targets. Here, we reported the elevated amount of plasma TGF- $\beta$  during acute HIV-1 infection among the men who have sex with men (MSM) and delineated a role of TGF- $\beta$  signaling in mediating HIV-1 infection of activated and resting memory CD4+ T cells using a serum-free system. TGF- $\beta$  could upregulate both the frequency and expression of HIV-1 CCR5 co-receptor, thereby augmented CCR5-tropic viral infection in resting and activated memory CD4+ T cells via Smad3 activation. Production of live HIV-1JR-FL upon infection and reactivation was also increased in TGF- $\beta$ -treated resting memory CD4+ T cells. However, TGF- $\beta$  did not increase CD4 expression or stimulate T cell activation. TGF- $\beta$  also promoted CCR7 expression, a central memory T cell chemokine receptor that facilitates T cell trafficking into lymphoid organs, on activated and resting memory CD4+ T cells. In addition, TGF- $\beta$  increased T cell CXCR3 expression, which was recently reported to facilitate CCR5-tropic HIV-1 infection. In line with these findings, ex vivo CCR5 and CXCR3 expression on total resting and resting memory CD4+ T cells in cART-naïve and treated patients were higher than healthy individuals. Overall, the study demonstrated that TGF- $\beta$  upregulation induced by acute HIV-1 infection might promote latency reservoir establishment by increasing infected resting memory CD4+ T cells and lymphoid organ homing of infected central memory CD4+ T cells. TGF- $\beta$  blockade may therefore serve as a beneficent strategy to HIV-1 functional cure by reducing viral latency.



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## Profiling of P-Selectin Glycoprotein Ligand-1 Expression During HIV-1 Infection Reveals Its Potential Utilization as a Marker for Immune Suppression, Inflammation, And/or Translocation

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### Description:

P-selectin glycoprotein ligand-1 (PSGL-1) has been extensively studied over recent years, and its role as a HIV-1 restriction factor is now well documented. However, the expression of PSGL-1 during HIV-1 infection and its precise role, particularly before antiretroviral therapy (ART) initiation and during highly active antiretroviral therapy (HAART), remains elusive.

In this observational study, newly diagnosed HIV-1 positive patients with no record of ART commencement (New HIV+), and HIV-1 positive patients under HAART [both immunological responders (IRs) and immunological nonresponders (INRs)] were enrolled between September 2021 and February 2022 at Chongqing Public Health Medical Center (Chongqing, China). Each participant had 10 mL of blood collected to determine CD4+ T-cell counts, HIV-1 viral loads, and PSGL-1 expression. Enzyme-linked immunosorbent assay (ELISA) kits were used to determine the levels of plasma markers of inflammation and/or translocation such as sCD163, sCD14, sCD40, lipopolysaccharides, and  $\beta$ -glucans. Spearman's correlation test was used to determine the correlation between PSGL-1 expression and CD4+ T-cell counts, HIV-1 viral loads, and plasma markers of inflammation and/or translocation.

A total of 38 participants [median age (IQR) of 52 years (14)] were enrolled. We noted 28 New HIV+ patients (21 with CD4+ T-cell counts <200cells/ $\mu$ L and 7 with CD4+ T-cell counts  $\geq$ 200cells/ $\mu$ L), and 10 ART-treated adults (6 INRs and 4 IRs). In ART-naïve

individuals, we noted that patients with CD4+ T-cell counts  $\geq$ 200cells/ $\mu$ L expressed PSGL-1 to a greater degree compared to those with CD4+ T-cells <200cells/ $\mu$ L ( $p=0.008$ ). In treated patients, PSGL-1 expression in IRs was significantly reduced compared to INRs ( $p=0.010$ ). Our results indicate that PSGL-1 expression positively correlates with CD4+ T-cell counts in New HIV+ ( $r=0.45$ ,  $p=0.02$ ), and negatively correlates with CD4+ T-cell counts in ART-treated patients ( $r=0.69$ ,  $p=0.03$ ). A negative correlation between PSGL-1 expression and HIV-1 viral load was also observed in New HIV+ ( $r=-0.46$ ,  $p=0.01$ ). In analysing plasma markers of inflammation and/or translocation, we observed that HIV-1 positive adults having a CD4+ T-cell count of less than 200cells/ $\mu$ L displayed significantly elevated levels of markers ( $p<0.05$ ). However, we noted that only ART-treated patients displayed significant ( $p<0.05$ ) and strong correlations between PSGL-1 and the considered plasma markers ( $r=0.86$ ,  $0.79$ ,  $0.79$ ,  $0.74$ , and  $0.86$ , respectively for PSGL-1-sCD163, PSGL-1-LPS, PSGL-1- $\beta$ -glucan, PSGL-1-sCD14, and PSGL-1-sCD40).

### Results:

Our results suggest that PSGL-1 may be a viable marker for immune suppression, particularly in ART-naïve newly diagnosed adults, and a marker of inflammation and/or translocation in ART-treated adults who are either INRs or IRs. Further investigations are required to confirm our observations.

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## Burden of Histoplasmosis in Patients with Advanced HIV Diseases in Vietnam – A Multi-Center Prospective Cohort Study

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### Background:

Histoplasmosis is endemic in the Americas and associated with severe disease in immunocompromised patients. Although skin testing studies have shown substantial exposure to *Histoplasma* in Southeast Asia, little is known about disease burden in this region due to lack of diagnostics. Here we report results of an ongoing multi-center prospective histoplasmosis screening study in patients with advanced HIV disease (AHD) in Vietnam.

### Material and Methods:

The study was conducted at two hospitals in Hanoi and Ho Chi Minh City. Eligibility criteria included all hospitalized HIV-infected adults, CD4 count  $\leq$  100 cells/ $\mu$ L or WHO clinical stage 3 or 4 disease, ART-naive or on ART for  $\leq$  3 months or  $>$ 12 months. All patients received the following tests at enrollment: 1) urine histoplasma antigen (HAg) by IMMY Histoplasma GM EIA, 2) fungal blood culture using Myco/F Lytic system, and 3) conventional microscopy and cultures of skin lesions, lymph nodes, or bone marrow aspirate as clinically indicated. Patients were followed-up monthly for 6 months. A proven diagnosis of histoplasmosis was defined as a compatible clinical syndrome plus culture confirmation. A probable diagnosis was defined as a compatible clinical syndrome plus resolution of HAg levels on antifungal therapy. All

HAg-positive patients with a compatible syndrome received therapy without waiting for culture confirmation.

### Results:

662 patients recruited between February 2021 and January 2023 were included in this analysis. 33/662 (5%) patients had HAg positivity. Among them, 15 (45.5%) had proven histoplasmosis; 10 (30.3%) had probable histoplasmosis; and the remaining 8 (24.2%) did not or have not developed histoplasmosis (follow-up ongoing).

Among the 25 proven and probable histoplasmosis cases, the median HAg EIA unit was 34.7 (IQR, 4.77 – 41.09) compared to 1.76 (IQR, 1.37 – 3.71) in the non-histoplasmosis cases ( $p=0.02$ , Mann-Whitney U). The prevalence of histoplasmosis among patients in southern Vietnam was significantly higher than in northern Vietnam: 20/421 (4.8%) vs 5/241 (2.1%) ( $p=0.004$ , Fisher Exact). The median CD4 count was 20 cells/ $\mu$ L (IQR, 7 - 53 cells/ $\mu$ L). The most common clinical features included anemia (100%; mean hemoglobin: 9.28 g/dL; SD, 1.81), thrombocytopenia (84%; mean platelet count: 98 k/ $\mu$ L; SD, 85.7), fever (84%), weight loss (64%), gastrointestinal abnormalities (64%), hepatosplenomegaly (64%), respiratory abnormalities (56%), lymphadenopathy (48%), skin lesions suspect due to fungal disease (28%). *H. capsulatum* were isolated from blood in 11/25 (44%), bone marrow 8/25 (32%), skin lesions 2/25 (8%), and lymph nodes 1/25 (4%). The median time to culture positivity was shorter in bone marrow than blood: 11 days (IQR, 7 – 16 days) vs. 17 days (IQR, 11 – 19 days) ( $p=0.176$ , Wilcoxon). All but one (96%) patients received deoxycholate amphotericin B induction therapy, followed by itraconazole consolidation and maintenance therapy. 6/25 (24%) patients died by month 6, and 4 patients are still in active follow-up.

### Conclusion:

This is the first report that unveils a substantial burden of histoplasmosis (3.8%) among patients with AHD in Vietnam. Implementation of *Histoplasma* antigen screening and fungal cultures is needed to enable diagnosis and treatment. The mortality remains high (24%) despite prompt and effective antifungal therapy, highlighting the need for earlier diagnosis and treatment.

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## Cryptococcal Antigen Screening and Pre-emptive Fluconazole Therapy in Advanced HIV-Infected Patients: A Multicenter, Retrospective Study in China

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### Introduction:

Screening for cryptococcal antigen (CrAg) followed by pre-emptive antifungal therapy among CrAg-positive HIV-infected individuals to prevent the development of invasive cryptococcal disease is the optimal approach for guiding resource allocation in a public health approach. However, the implementation and effectuation of CrAg screening programs and pre-emptive treatment remains unclear in China.

### Material and Methods:

We performed a multicenter, retrospective study at eight hospitals from 1st January 2019 to 31st December 2020, to evaluate whether CrAg screening programs and pre-emptive treatment are beneficial for saving lives in China.

### Results:

A total of 12768 HIV-infected patients were screened for serum CrAg, of those, 12090 were negative and 678 were positive for serum CrAg. The prevalence of serum CrAg positivity from in our study was 5.3% (678/12768; 95% CI, 4.9% - 5.7%). The prevalence of isolated cryptococcal antigenemia was 1.7% (211/12768; 95% CI, 1.3% - 2.8%). The cumulative incidence of Cryptococcal meningitis (CM) was significantly higher in the no fluconazole pre-emptive treatment group than in the fluconazole pre-emptive treatment group within 12-month follow up (  $p < 0.05$ ). Patients with

fluconazole pre-emptive treatment had 3.0 times increased risk of developing CM and/or death (HR: 3.035, 95% CI, 1.067–8.635;  $P = 0.037$ ) compared to no fluconazole pre-emptive treatment participants. Furthermore, the proportion of negative serum CrAg in the fluconazole pre-emptive treatment group was higher than that in the no fluconazole pre-emptive treatment group ( $p < 0.05$ ). The median time to development of CM in the fluconazole pre-emptive treatment and no fluconazole pre-emptive treatment group was 14 days (IQR=4.5, 26.5) and 27 days (IQR=19.75, 270.5), respectively. In our comparison of pre-emptive fluconazole therapy with initiation doses of 800mg/d and 400mg/d, there was no significant difference distribution of the cumulative incidence of CM and/or cumulative all-cause mortality. However, pre-emptive fluconazole therapy with initiation doses of 800mg/d increases the proportion of serum cryptococcal antigen negativity within one-year follow-up.

### Conclusion:

Cryptococcal antigen screening and pre-emptive treatment are critical to reduce the incidence of CM and/or death, for prolonging the time to development of CM, and for promotion of the conversion of serum CrAg positivity to negativity. Lumbar puncture is a necessary intervention in advanced HIV-infected patients for CrAg positive individual to prevent potential missed diagnosis and mistreatment of CM. However, targeted improvements to pre-emptive antifungal therapy for cryptococcal antigenemia are required to further improve patient outcomes in CrAg-positive severely immunocompromised people with HIV/AIDS.

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## Determinants of Consistent Annual Influenza Vaccination Uptake among People Living With the Human Immune Deficiency Virus in Singapore: A Retrospective Study

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**Background:** Annual influenza vaccination (IV) is recommended for all people living with HIV but the uptake of IV has traditionally been low among people with HIV in Singapore. This study – the first in a Southeast Asian context - aims to identify factors associated with adherence to IV among people living with HIV and to assess strategies that improve IV uptake.

### Material and Methods:

We conducted a retrospective study of factors associated with annual IV among people living with HIV under care of the National Centre for Infectious Diseases (NCID) Singapore. All people living with HIV registered under the clinical programme between 2006 and 2021 were included. Demographic and intervention characteristics independently associated with repeat annual IV were identified in multivariable analysis using logistic regression.

### Results:

Among 4,227 people living with HIV under care, 96% were receiving antiretroviral treatment (ART). While 40% of the cohort received consecutive IV for the duration they were on ART, 73.9% had taken up consecutive IV in the last three years (2019-2021) suggesting that the COVID-19 pandemic did not affect IV in this group. The odds of consecutive IV between 2019-2021 increased with age and people living with HIV aged > 60 years were more likely to have consecutive IV compared to those aged 28-29 years (OR 1.7, 95% CI 1.2-2.4, p= 0.01). Enrolling through a nurse-led vaccination programme (OR

1.21, 95% CI 1.01-1.44, p=0.04) increased the odds of annual IV as did enrolling when government subsidies for IV were introduced in 2017 (OR 1.52, 95% CI 1.21-1.92, p <0.01) compared to enrolment prior to these interventions. Foreign persons living with HIV resident in Singapore (OR 0.24, 95% CI 0.14-0.40, p < 0.01) and permanent residents (OR 0.63, 95% CI 0.46-0.86, p < 0.01) were less likely to have taken up annual IV compared to Singaporean citizens.

### Conclusion:

Nurse-led counselling for vaccination can help to increase IV uptake but financial constraints remain an important disincentive. The resumption of nurse-led IV and expansion of government subsidies to include other key vaccinations for people living with HIV regardless of residency status should be considered to improve overall vaccination coverage.

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## Delayed Active TB Treatment Initiation for People With and Without HIV and Opioid Dependence in a Malaysian Prison - Lessons Learned to Strengthen TB Strategies in Southeast Asian Prisons

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### Background:

As Southeast Asia has one of the highest M tuberculosis infection rates amongst people in prison, particularly amongst people with HIV and substance use disorders, comprehensive implementation strategies are needed to optimize government investments to end the tuberculosis (TB) epidemic in the region by 2035. Although Malaysia's TB incidence rate was 97 per 100,000 in 2021, Malaysian prisons disproportionately carry the disease burden and are often under resourced. Although TB control strategies exist, implementation is sub-optimal. Strengthening implementation can reduce treatment delays which can improve individual outcomes and curtail transmission, and reduce national TB incidence and mortality rates.

### Material and Methods:

People in prison with opioid use disorder (OUD) irrespective of HIV entering Kajang prison in Kuala Lumpur, Malaysia between October 2019 and January 2023 underwent screening for active TB disease including WHO symptom screen, and sputum for Acid-fast bacilli (AFB) smear, culture, and Xpert MTB/Rif. Active TB was defined as a positive AFB smear, culture (BACTEC MGIT 960 liquid culture) or Xpert. After an active TB diagnosis and treatment referral, the prison staff followed standard of care TB guidelines including immediate isolation (within 24hrs), followed by scheduling treatment initiation at the nearest Klinik Kesihatan (Ministry of Health Community Clinic), coordinating

transport logistics, and registering the patient in Malaysia's national case-based TB registry (MyTB). Delay in treatment was calculated as the difference between the date of diagnosis and date of treatment initiation. Descriptive statistics were computed using R Studio Software.

### Results:

Out of 1,052 male participants enrolled with a mean age of 44.7 years, 82 (7.79%) participants were diagnosed with active TB, while 72 (6.84%) had active TB and OUD. Out of the 82 participants with active TB, 10 (12.2%) were with HIV, of which 7 (70%) were on antiretroviral therapy. TB treatment initiation dates were available for 48 (58.5%) of participants to date. In this sub-sample, the median number of days to active TB treatment was 42 (interquartile range (IQR) 17 – 67) from the time of diagnosis. Defining delayed treatment at ten days, only 8.3% of participants received active TB treatment within the first ten days.

### Conclusion:

Initiating active TB treatment after a median of 42 days in prisons can lead to increasing severity of disease and higher rates of TB mortality, particularly for people with underlying co-morbidities including HIV, and implications for transmission to staff and communities. Next steps include advocating for all prisons to serve as TB treatment initiation sites through the Ministry of Health to allow for on-site, same-day treatment initiation. National TB strategies need to review and update existing policies and guidelines to ensure TB treatment initiation is started the same day as diagnosis by reducing administrative barriers, investing in gold standard rapid diagnostic tools to facilitate same-day treatment initiation, and scaling TB preventive therapy. In a broader context, this lesson learned from TB should also be applied for HIV, HCV, and addiction treatment to enable comprehensive and integrated services in prisons to achieve national and regional targets.

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## Prevalence and Associated Risk Factors of Hepatotoxicity on Tuberculosis Prevention Therapy in a Thai HIV Cohort

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### Background:

Tuberculosis Preventive Therapy (TPT) is an important adjunctive strategy to control tuberculosis. Antituberculosis-treatment (ATT) induced liver injury is a common and serious adverse effect of TB-related treatment. However, there is still limited data on ATT-induced hepatotoxicity in Asian people living with HIV (PLWH). We aimed to investigate the prevalence and risk factors associated with ATT hepatotoxicity on TPT in a Thai PLWH cohort.

### Material and Methods:

A retrospective analysis was conducted among PLWH on combination antiretroviral therapy who received  $\geq 7$  days of TPT between 1992-2022, in Bangkok, Thailand. The participants received either nine months of daily isoniazid (9H), three months of weekly rifapentine plus isoniazid (3HP) or one month of daily rifapentine plus isoniazid (1HP) for TPT. Hepatotoxicity was defined as elevated alanine (ALT) or aspartate transaminase (AST) of 3 times upper limit of normal range with clinical symptoms. Multivariable logistic regression was used to assess factors associated with hepatotoxicity.

### Results:

We included 851 PLWH on TPT in the analysis (median age, 31.7 [interquartile range (IQR) 26.2-39.5] years; 80.6% male; median CD4 count 380 [IQR [254-545]cells/mm<sup>3</sup>), 35.4% on efavirenz and 40.8% on dolutegravir. 72(8.5%) participants had hepatotoxicity: 24/272(8.8%) in 9H, 25/287(8.7%) in 3HP, and 23/292(7.8%) in 1HP groups and there was lowest incidence of elevated ALT/AST Grade 3/4 in 1HP group (4/30cases) than another 2 regimens groups (13/30 in both). Those with hepatotoxicity had significant higher AST or ALT levels at the time of TPT initiation than those without hepatotoxicity (median AST: 41.5 [29-81.5] vs 30 [21-44] U/L; median ALT: 32.5 [24-64] vs 25 [20-31] U/L). In multivariable analysis, baseline hepatitis C virus

coinfection (adjusted odds ratio [aOR] 2.3, 95%CI 1.07-2.41,  $p = 0.003$ ), baseline AST levels level of  $>40$  U/L at TPT initiation (aOR 5.7, 95%CI 2.96-10.98,  $p < 0.001$ ) and efavirenz use at the time of TPT initiation (aOR 2.1, 95%CI 1.11-4.00,  $p = 0.02$ ) were associated with hepatotoxicity in patients PLWH receiving TPT.

### Conclusion:

HCV coinfection, efavirenz use, and elevated baseline AST were significantly associated with antituberculosis treatment-induced liver injury. Physicians should carefully monitor PLWH with these risk factors for early signs of ATT-related hepatotoxicity when initiating TPT.



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## Cabotegravir + Rilpivirine Long-Acting Outcomes by Sex at Birth, Age, Race, and Body Mass Index: A Subgroup Analysis of the Phase 3B SOLAR Study

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**Background:** Cabotegravir + rilpivirine (CAB+RPV) is a complete long-acting (LA) every 2 months (Q2M) regimen for maintaining HIV-1 virologic suppression. The Phase 3b SOLAR study demonstrated noninferior efficacy of CAB+RPV LA Q2M vs. continuing daily oral bictegravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF) at Month (M) 12, with 90% of switch participants preferring LA therapy. We present outcomes within key subgroups who received CAB+RPV LA.

### Material and Material and Methods:

SOLAR is a Phase 3b, randomized (2:1), open-label, multicenter, noninferiority study assessing switching virologically suppressed adults to CAB+RPV LA Q2M vs. continuing daily BIC/FTC/TAF. Data from participants receiving CAB+RPV LA were analyzed by sex at birth (female vs male), age (<35, 35 to <49, and ≥50 years), race (White vs non-White), and body mass index (BMI; <30 vs ≥30 kg/m<sup>2</sup>). Endpoints assessed at M12 included the proportion with plasma HIV-1 RNA ≥50 copies/mL and <50 copies/mL (FDA Snapshot algorithm),

incidence of confirmed virologic failure (CVF; two consecutive HIV-1 RNA ≥200 copies/mL), change from baseline in CD4+ cell counts, and three single-item questions exploring how often an individual feared disclosure of their HIV status, how often an individual had anxiety relating to adherence requirements, and how often taking HIV medication was an uncomfortable daily reminder of their HIV status (FAD questions).

### Results:

Overall, 447 participants received CAB+RPV LA (modified intention-to-treat exposed population excluding all 11 participants from one study site with significant and persistent non-compliance to protocol entry requirements); 17% (n=77) were female sex at birth, 19% (n=86) were aged ≥50 years, 69% (n=307) were White, 21% (n=93) had a BMI ≥30 kg/m<sup>2</sup>. At M12, rates of virologic non-response (HIV-1 RNA ≥50 copies/mL) and suppression (HIV-1 RNA <50 copies/mL) with CAB+RPV LA ranged from 0% to 2% and 89% to 92%, respectively, across subgroups. Overall, 2/447 (<1%) participants had CVF; both participants were male at birth, aged <35 years, White, and had BMI <30 kg/m<sup>2</sup>. Mean changes from baseline in CD4+ cell counts were similar between subgroups (range, 25.7-63.6 cells/mm<sup>3</sup>). After 12 months on CAB+RPV LA, the proportion of participants reporting “never”/“rarely” for the three single-item FAD questions increased from baseline across subgroups evaluated (sex at birth and age).

### Conclusion:

Switching to CAB+RPV LA Q2M from BIC/FTC/TAF was efficacious irrespective of sex at birth, age, race, or BMI, while also providing emotional well-being benefits, including alleviation from the fear of disclosure and anxiety surrounding adherence.



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## Optimal Timing of Antiretroviral Therapy Initiation in AIDS-Associated Toxoplasma Encephalitis: a Prospective Observational Multicenter Study in China

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### Objectives:

Toxoplasma encephalitis (TE) is the most frequent cause of expansive brain lesions among acquired immunodeficiency syndrome (AIDS) patients; however, the optimal timing of antiretroviral therapy (ART) initiation in these patients remains controversial.

### Material and Methods:

This was a multicenter prospective observational study, and eligible patients were recruited from eleven treatment centers in China.

### Results:

In total, 87 patients were included, and 38 of them were assigned to the Early ART group (initiating ART within 2 weeks after anti-Toxoplasma treatment initiation), while the remaining 49 patients were allocated to receive deferred ART (initiating ART at least 2 weeks after anti-Toxoplasma treatment initiation). Our results indicated that the incidence of immune reconstitution inflammatory syndrome (IRIS) (2.6% vs. 0,  $p=0.437$ ) and the number of death events (1 vs. 5,  $p=0.225$ ) were not significantly different between the two groups at Week 48. The timing of ART initiation was also found to not significantly contribute to human immunodeficiency virus (HIV) viral load control. The difference in the number of patients who maintained an undetectable HIV viral load of  $<50$  copies/mL in each of the two groups of patients was calculated to not be statistically significant at Week 24 (8 vs. 3,

$p=0.142$ ) and Week 48 (7 vs. 7,  $p=1.000$ ). Meanwhile, median CD4+ T-cell counts were also observed not to reach statistical significance between the two groups, both at Week 24 (155 vs. 91,  $p=0.837$ ) and Week 48 (181 vs. 96,  $p=0.219$ ).

### Conclusion:

In our study, early ART initiation was observed to not confer statistically significant differences in the incidence of IRIS, mortality, and HIV virological and immunological outcomes, when compared to deferred ART initiation.



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## Assessment of the Effectiveness, Safety and Tolerability of Bictegravir/Emtricitabine/Tenofovir Alafenamide (B/F/TAF) In Routine Clinical Practice: The 2nd Analysis of 12-Month Results of the BICSTaR Japan Study

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In clinical studies B/F/TAF is highly efficacious and well tolerated in antiretroviral treatment-naïve (TN) and experienced (TE) people living with HIV-1, with no emergence of resistance. BICSTaR Japan (GS-JP-380-5605) is an ongoing, non-interventional, prospective and retrospective, multi-center cohort study which enrolled 200 adult patients over 5 sites to evaluate the effectiveness, safety and tolerability of B/F/TAF in routine clinical practice. Outcomes included HIV-1 RNA, drug-related adverse events (DRAEs), persistence and resistance with the B/F/TAF regimen. We reported the first analysis last year; this is the 2nd report.

At the time of data cut-off (08FEB2022), 192 individuals (111 TN, 81 TE) reached 48 weeks of treatment and completed 12 months of follow-up. The median age was 34 and 44 years for TN and TE individuals, respectively, and 1.0% were female. In TE individuals the most frequent reason for switching to B/F/TAF was “simplification of ART” (59.3%). At baseline, 67.7% had comorbidities; those with prevalence >10% included hyperlipidemia (15.1%) and neuropsychiatric disorder (12.0%). Four individuals (3 TN, 1 TE; 2.1%) had ≥1 primary mutation at baseline. In the 167 individuals with available HIV-1 RNA data at 12

months, 87/95 (91.6%) TN individuals and 68/72 (94.4%) TE individuals had HIV-1 RNA <50 copies/mL (Missing-as-Excluded Analysis). There were no treatment emergent mutations. Median CD4 (cells/μL) at baseline and week 48 were 297 and 512 for TN, 572 and 532 for TE. Persistence on B/F/TAF at 12 months was high at 97.4%. Three TN individuals discontinued treatment due to investigator’s discretion (1), patient decision (1) and DRAE: vertigo and headache (1) and 2 TE individuals discontinued due to AE. There were no discontinuations due to drug-related renal/bone events.

Interim analysis from the Japan study demonstrated favorable efficacy, safety and tolerability of B/F/TAF in TN and TE patients, which is consistent with the 1st interim analysis reported last year.

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## Determinants of Adherence to Antiretroviral Treatment Among People Living with HIV in Guangdong Province, China

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### Background:

Good adherence to antiretroviral treatment (ART) was crucial for ART success among people living with HIV (PLHIV). This study aimed to understand factors associated with adherence to ART among ART-naïve PLHIV in Guangdong Province, China.

### Material and Methods:

A prospective cohort study was conducted to recruit newly diagnosed PLHIV from six cities in Guangdong Province from May 2018 to June 2019. Participants were followed up from May 2019 to August, 2020. Baseline and follow up data were collected from a questionnaire and the national HIV surveillance system. Center for Adherence Support Evaluation (CASE) index greater than 10 points was defined as good adherence to ART. Multivariable logistic regression was used to identify factors associated with adherence to ART. Multi-order latent variable structural equation model (SEM) was performed to explore the effects of psychosocial factors on adherence to ART.

### Results:

A total of 792 participants completed the follow-up survey among 1071 baseline participants. 737 follow-up respondents initiated ART, but 734 were finally included in this analysis after 3 cases with missing data were excluded, of whom 91.28% (670/734) were with good adherence to ART. Multivariable logistic regression showed that unemployment (aOR=1.75, 95%CI: 1.01-3.02), no reminder to take medication (aOR=2.28, 95%CI: 1.09-4.74), low medication self-efficacy (aOR=2.28, 95%CI: 1.27-4.10), low social cohesion (aOR=1.82, 95%CI: 1.03-3.19), and no social participation (aOR=5.65, 95%CI: 1.71-18.63) were risk factors for poor adherence. Participants who reported no side effect of ART (aOR=0.46, 95%CI: 0.26-0.81) were less likely to have poor adherence. The second-order latent variable SEM demonstrated a linear relationship standard regression coefficient  $\beta=0.43$ ,  $P<0.001$ ) between adherence to ART and the latent psychosocial factor which was formed by the latent factor of medication belief and self-efficacy (medication belief and medication self-efficacy,  $\beta=0.65$ ,  $P<0.001$ ), the latent factor of supportive context (social support and social capital,  $\beta=0.50$ ,  $P<0.001$ ) and the latent factor of negative emotion (depression and HIV-related stigma,  $\beta=-0.38$ ,  $P<0.01$ ).

### Conclusions:

Generally good adherence to ART was observed among ART-naïve PLHIV in Guangdong Province. However, side effects, no reminders to take medication, low medication self-efficacy, low social capital were barriers to good adherence to ART.

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## Rapid ART Initiation with BIC/FTC/TAF and EFV+3TC+TDF in HIV Positive Patients in China: A Randomized Control Trial

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### Background:

Current evidence suggests that rapid initiation of antiretroviral therapy (ART) improves retention in treatment and care, shortens the time to viral suppression. Most guidelines recommend rapid ART for newly diagnosed HIV-1 infected individuals, but associated data remain limited in China. The present study examined the acceptability, feasibility, safety, and efficacy of efavirenz 400 mg + lamivudine 300 mg + tenofovir disoproxil fumarate 300 mg (EFV+3TC+TDF) versus bicitgravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF) in rapid ART initiation after diagnosis.

### Material and Methods:

This was a nationwide, multicenter, open-label, randomized controlled clinical study enrolling HIV-1-infected adult (age ≥18 years) men who have sex with men (MSM) who started ART within 14 days of confirmed HIV diagnosis. The participants were randomized (1:1) to the EFV+3TC+TDF and BIC/FTC/TAF groups. The primary endpoint was the percentage of patients with successful viral suppression (< 50 copies/mL) at 24 weeks. Secondary endpoints included the proportions of patients with successful viral suppression at 12 weeks and 48 weeks, CD4 counts, adverse effects such as liver and renal function anomalies, body mass index (BMI), blood lipid levels, and cohort retention at 12, 24, 36 and 48 weeks. As an interim analysis, results to 24 weeks were included.

### Results:

A total of 258 patients were enrolled, with 126 and 132 in the EFV and BIC groups, respectively, across eight centers in China between March 2021 and April 2022. In the EFV group, 68 (74.7%) patients were retained in care with a 24-week HIV-1 RNA load <50 copies; 13 discontinued the treatment (11.2%) due to adverse effects, death or loss to follow-up. In the BIC group, 101 (93.5%) patients were retained with a 24-week HIV-1 RNA load <50 copies/ml; 1 (0.8%) was lost follow-up. The viral suppression rate was higher in the BIC group than in the EFV group per FDA Snapshot (74.7% vs. 93.5%, p<0.001). No significant differences were found in the incidence of adverse effects between the two groups (51.6% vs. 43.5%, P=0.252), but there was a significant difference in adverse effects potentially associated with study drugs (31.9% vs. 13.9%, P=0.002).

### Conclusion:

At 24 weeks, rapid start with BIC/FTC/TAF was associated with better antiretroviral efficacy than EFV+3TC+TDF. BIC/FTC/TAF was well tolerated, and no participants discontinued the treatment for adverse events, suggesting that BIC/FTC/TAF is acceptable, feasible, safe and effective in rapid ART.

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## HIV Treatment Outcomes After 10 Years on ART in the TREAT Asia Observational Database (TAHOD) and Australian HIV Observational Database (AHOD)

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### Background:

An increasing number of people living with HIV (PLHIV) have been receiving antiretroviral therapy (ART) for many years. This study aimed to assess immunological and survival outcomes among PLHIV from Asia and Australia who have been on ART for at least a decade.

### Material and Methods:

PLHIV enrolled in TAHOD and AHOD, and on ART for at least 10 years, were included. Factors associated with CD4 cell counts during years 11 to 15 post ART initiation were analysed using repeated measure linear regression. Survival after 10 years on ART was analysed using Fine and Gray competing risk regression.

### Results:

We included 4867 PLHIV from TAHOD and 2272 from AHOD. There were 3345 males (69%) in TAHOD, and 2110 (93%) in AHOD. The median lowest post-ART CD4 counts in the first decade was 178 cells/ $\mu$ L (IQR 92-287) for TAHOD and 250 cells/ $\mu$ L (IQR 140-374) for AHOD. Higher CD4 counts after 10 years were observed when the lowest CD4 levels were higher (101-200 cells/ $\mu$ L: difference= 35, 95%CI 18, 51; and >200 cells/ $\mu$ L: difference=125, 95%CI 107, 142) compared to CD4  $\leq$ 50 cells/ $\mu$ L, and

in those who had achieved CD4  $\geq$ 500 cells/ $\mu$ L (achieved  $\geq$ 500 cells/ $\mu$ L then decreased to <500 cells/ $\mu$ L: difference=225, 95%CI 213, 236; and always  $\geq$ 500 cells/ $\mu$ L: difference=402, 95%CI 384, 420) compared to CD4 counts always <500 cells/ $\mu$ L in the previous decade. Prior PI-based regimen (difference=-17, 95%CI -33, -1) compared to no PI, and previous treatment interruptions (TI) of 14 days to 3 months and >6 months were associated with lower CD4 counts after 10 years (difference = -38, 95%CI -62, -15; and difference=-44, 95%CI -61, -27, respectively) compared to no TI. Other factors associated with low CD4 counts were older age, higher viral load, hepatitis B/C co-infection, differing ART regimens, World Bank country income grouping and follow-up time. There was a total of 405 deaths (6%) after 10 years, with a mortality rate of 1.04 per 100 person-years. Controlling for confounders, females had better survival compared to males (sub-hazard ratio=0.65, 95%CI 0.46, 0.91).

### Conclusion:

Sustaining high CD4 levels and minimising TI have far-reaching benefits well beyond the first decade of ART.



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## The Effectiveness and Tolerability of Dolutegravir (DTG) Plus Lamivudine (3TC) In Antiretroviral-Naïve and Experienced Adults Living with HIV at 48 Weeks

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**Background:** The international guidelines indicate DTG/3TC therapy as one of the preferred first-line and switch regimens for people living with HIV (PLWH), due to its observed efficacy in randomized clinical trials. However, the data of real-world cohorts is relatively scarce.

### Material and Methods:

A retrospective single center study of adult PLWH starting DTG/3TC as a first-line regimen or switch regimen before November 30th, 2021. Virological failure was defined as one single HIV RNA viral load (VL) >50 copies/mL at 48 weeks.

### Results:

Of 551 included patients, 20 (3.6%) were antiretroviral-naïve, 42 (7.6%) were experienced viremic and 489 (88.8%) were suppressed PLWH. Three hundred ninety-five (71.7%) were men who have sex with men (MSM), and 96 (17.4%) were injection drug users (IDU). Effectiveness at week 48 was 92.2% (CI95%: 88.1-94.7%) (ITT missing = failure) and 96.4% (CI 95%: 93.4-97.6%) (per-protocol analysis). Of 50 experience viremic patients with viral loads less than 500,000 copies/mL, effectiveness at week 48 was 92.0%; six patients with viral loads greater than 500,000 copies/mL, effectiveness at week 48 was 50.0%. (figure 1) CD4 lymphocyte cell counts increased from 643 cells/μL at baseline to 714 cells/μL at week 48. Twenty four patients (4.4%) discontinued treatment. Four developed confirmed virologic failure due to poor adherence; no resistance-associated mutations emerged. Seven discontinued treatments due to central nervous system side effects, and five due to mild urticaria.

### Conclusion:

In viremic and suppressed PLWH, effectiveness of DTG/3TC therapy was satisfactory at week 48; moreover, DTG/3TC therapy is well tolerated single tablet regimen in naïve and experienced patients, and only few patients discontinued due to adverse effects.

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## Trajectory of Treatment Outcome for Virally Suppressed People Living with HIV on Antiretroviral Therapy in Northern Vietnam Under Health System Transition and COVID-19 Outbreak

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### Introduction:

In Vietnam, HIV treatment delivery system has been in a big transition. Donor-funded delivery system has been shifting to domestic funded system using social health insurance scheme (SHI) since 2016. There was a concern that the system transition may negatively affect antiretroviral therapy (ART) adherence. For example, SHI may require co-payment to receive ART, that could be a barrier to continue ART because ART have been provided free of charge. Also, people living with HIV (PLWH) may be transferred to lower-level hospitals that have limited capacity to provide quality HIV care. Moreover, the recent COVID-19 outbreak caused movement restriction and reduced access to ART. Both situations may impact on HIV treatment outcome of PLWH. In this study, we investigated trajectory of HIV treatment outcome for PLWH in Northern Vietnam since 2019.

### Material and Methods:

We conducted a multicenter, observational study of virally suppressed PLWH on ART (defined as a viral load of <50 copies/mL) from SATREPS cohort from December 2019 to December 2022. Eleven health facilities from district to national level were included in the study. Viral load test was performed every 6 months, and if viral load exceeded 1000 copies/mL (virological failure), genotypic HIV drug resistance tests were performed. Acquired drug resistance (ADR) was defined in accordance with national survey conducted in 2017-2018 in Vietnam. Having low-, intermediate- or high-level resistance by Stanford HIV database were classified as resistant.

Any drug resistance mutation (DRM) was defined as resistance to any nucleoside reverse transcriptase inhibitor (NRTI), efavirenz (EFV) or nevirapine (NVP) and any ritonavir-boosted protease inhibitor (PI).

### Results:

Because of governmental financial support, no co-payment was required to PLWH to receive ART during the study period. A total of 2,298 PLWH on ART were enrolled in the study. Of these, 1,251 (54.4%) were from national level, 622 (30.6%) were from provincial level, and 343 (15.0%) were from district level. Fourteen (0.6%) PLWH died, 61 (2.7%) missed appointment two times consecutively, and 201 (8.7%) were transferred to other health facilities. Virological failure rate ranged from 0.4% to 1.3%. Among those who had virological failure and had successful HIV drug resistance genotype test, prevalence of any DRM ranged from 14.3% to 83.3%. Any DRM prevalence during the follow-up was kept lower than that of the national surveillance in 2017-2018. NRTI prevalence ranged from 7.1% to 61.1%, NNRTI prevalence ranged from 14.3% to 83.3%, and PI prevalence ranged from 0.0% to 16.7%.

### Conclusion:

Low level of virological failure rate and DRM prevalence were maintained in Northern Vietnam during the health system transition and COVID-19 outbreak. Continuous monitoring is needed to further evaluate the impact.

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## Efficacy and Safety of Dolutegravir/Lamivudine Dual Therapy in Antiretroviral Therapy (ART)-Naïve Patients with HIV Infection in China: A Multicenter Cohort Study

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### Introduction:

Real-world data on the implementation of dolutegravir/lamivudine (DTG/3TC) dual therapy for the treatment of human immunodeficiency virus (HIV) infection in Asia remain limited. This study evaluated the efficacy and safety of DTG/3TC in antiretroviral therapy (ART)-naïve people living with HIV (PLWH) in Eastern China.

### Material and Methods:

This was a multicenter, prospective, observational study conducted at 9 clinical centers in Jiangsu Province, China, starting on October 1, 2021. Virological suppression, immune recovery, and adverse events during ART follow-up were analyzed by collecting baseline and follow-up data from enrolled patients. The primary endpoint of the study was the virological suppression rate at week 48.

### Results:

A total of 206 ART-naïve patients were included in the study for screening, with 200 enrolled in the study. Overall, 173 (86.5%) males, 120 (60.0%) homosexuals, 63 (31.5%) aged  $\geq$  50 years, and 57 (28.5%) at WHO clinical stage III or IV. Median time from diagnosis to ART initiation was 15 days [interquartile range (IQR) 7-32], and 82 (41.0%) patients initiated ART without baseline drug resistance testing. Median HIV-1 RNA was 40700 copies/mL (IQR 15500-104700), median CD4+ T-cell count was 285.00 cells/ $\mu$ L (IQR 140.75-433.25) and

CD4+ T-cell count  $<$  200 cells/ $\mu$ L in 67 patients. Until December 20, 2022, 183 patients remained in the follow-up cohort and other 17 had switched, discontinued or died for various reasons. Of the 183 patients, 129 completed the 24-week follow-up with virological suppression rates of 61.18% (52/85), 84.68% (105/124), and 91.89% (102/111) at week 4, 12, and 24 respectively. Of these, patients with a baseline VL  $\geq$  100,000 copies/mL, the proportion of HIV-1 RNA  $<$  50 copies/mL were 52.38% (11/21) at week 4, 60.00% (18/30) at week 12, and 75.00% (15/20) at week 24 respectively. At week 24, the median CD4+ T-cell count 414.00 cells/ $\mu$ L (IQR 317.50-672.50) was higher than the baseline of 285.00 cells/ $\mu$ L (IQR 140.75-433.25), with a statistically significant difference ( $P < 0.001$ ). Moreover, the percentage of CD4+ T-cell count [21.0% (14.0%-27.0%) vs. 16.0% (10.2%-21.8%),  $P < 0.001$ ] and CD4/CD8 ratio [0.48 (0.26-0.73) vs. 0.26 (0.15-0.45),  $P < 0.001$ ] were also higher at week 24 than baseline. During the follow-up period, patients had mildly elevated liver function parameters from baseline (including bilirubin, alanine transaminase and aspartate transaminase), but all were within normal limits. DTG/3TC had a significant effect on early renal function changes after ART in this study, as evidenced by a decrease in estimated glomerular filtration rate (eGFR) from creatinine [116.12 (101.26-133.06) vs. 98.38 (88.64-111.65)], and an increase in creatinine [71.45  $\mu$ mol/L (61.03-80.80) vs. 84.10  $\mu$ mol/L (76.85-93.50)] from baseline to week 12, all with  $P$ -values  $<$  0.01. However, there were no significant changes in eGFR ( $P = 0.771$ ) and creatinine ( $P = 0.935$ ) at week 24 compared to week 12. In terms of metabolism, which was significantly higher at week 24 compared to baseline in weight [67.0 kg (62.0-75.0) vs. 65.0 kg (60.0-70.0),  $P = 0.007$ ], total cholesterol [4.58 mmol/L (3.98-5.24) vs. 3.97 mmol/L (3.11-4.68),  $P < 0.001$ ], and high-density lipoprotein cholesterol [1.27 mmol/L (1.10-1.40) vs. 1.03 mmol/L (0.84-1.27),  $P < 0.001$ ]. Low-density lipoprotein cholesterol ( $P = 0.225$ ), triglycerides ( $P = 0.761$ ), and blood glucose ( $P = 0.365$ ) did not change significantly.

### Conclusion:

Based on the available follow-up data, DTG/3TC had a good clinical performance in terms of virological suppression and immune recovery; however, the patient's renal function and metabolism were also affected to some extent, which required continued follow-up and pooled analysis.

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## Efficacy and Tolerability of Lamivudine Plus Dolutegravir Compared with Lamivudine Plus Lopinavir/Ritonavir of HIV-Infected, Virologically Suppressed Patients

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### Background:

Dual therapies (DT) with Lamivudine (3TC) plus a protease inhibitor or an integrase inhibitor, such as Dolutegravir (DTG) have proven to be equivalent to triple therapy in simplification strategies. Direct comparisons between lamivudine plus Lopinavir/ritonavir (LPV/r) and 3TC plus DTG in virologically-suppressed HIV positive patients are lacking. Therefore, we aimed to compare the virological efficacy, durability of lamivudine plus LPV/r or DTG in clinical practice.

### Material and Methods:

This was a retrospective study enrolling HIV-1-infected, virologically suppressed patients, starting a two-drug regimen with lamivudine plus either LPV/r or DTG in a period ranging from 2017 to 2021. This study analyzes the effectiveness, defined as the capability of the treatment to achieve a viral suppression with a viral load < 50 copies/mL. Changes in laboratory parameters (weight, lipids, and renal function) were also evaluated.

### Results:

One hundred and ten patients were eligible for the analysis: 31 started 3TC plus LPV/r, 79 treated with 3TC plus DTG. Overall, 104 were male, with 42.5 years of median age, six years since HIV diagnosis, and six years on ART. Regimens prior to DT were recorded with 2NRTIs + NNSTI (71.8%), 2NRTIs + NNRTI (13.6%). The most common reason for switching to the dual therapy was renal toxicity (61.8%), followed by request for simplification (26.5%).

At 48 weeks, the proportion of patients maintaining virological suppression were 98.73% and 96.77% in the DTG group and LPV/r cohort, respectively. Absolute CD4 counts significantly increased in DTG

groups from baseline to 48 weeks (+113 cells/ $\mu$ L;  $p < 0.01$ ), with no significant changes in LPV/r cohort (+71 cells/ $\mu$ L;  $p = 0.23$ ). CD4/CD8 increased 0.17 ( $P = 0.22$ ) in DTG groups and 0.11 ( $P = 0.22$ ) in LPV/r groups. LPV/r-based regimen group had increased TC(+1.02,  $p < 0.01$ ), TG(+0.94,  $p = 0.03$ ), HDL-C(+0.21,  $p = 0.33$ ), LDL-C(+0.64,  $p < 0.01$ ) and creatinine(+4.78,  $p = 0.89$ ) after 48-weeks of treatment. In the DTG-regimen group, TG, TC, HDL-C and LDL-C, creatinine did not change significantly compared to baseline. Weight gain averaged 1.1 kg with LPV/r+3TC while weight loss averaged 0.69 kg with DTG+3TC.

The differences in mean change between DTG and LPV/r in TG(-0.94,  $p < 0.05$ ), TC(-1.12,  $p < 0.001$ ), LDL-C(-0.94,  $p < 0.001$ ) were significant at week 48.

### Conclusion:

In real practice, a switch to 3TC+DTG showed similar efficacy to 3TC+ LPV/r, Compared to DTG-based regimens, patients on LPV/r-based regimens had increased dyslipidemia. Our study adds further proof that lamivudine plus dolutegravir could represent a potential optimization strategy in virologically-suppressed patients. The improvement of the blood lipids profile can be considered another advantage of this strategy.



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## Association Between CKD and Liver Fibrosis in Thai HIV Cohort

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### Introduction:

Chronic kidney disease (CKD) and nonalcoholic fatty liver disease (NAFLD) are developing issues among people living with HIV (PWH). Recent research has shown that NAFLD is a risk factor for incident CKD, and the severity of liver fibrosis can increase the risk of CKD in the general population. However, a few studies show the associations between CKD and liver fibrosis in PWH. This study aimed to investigate the risk factors of CKD and the association between CKD and liver fibrosis among PWH in Thailand.

### Material and Methods:

The data from HIV-NAT 006 cohort study between April 2017 to December 2022 were selected and used in the analysis. The CKD was defined as CKD-EPI < 60 ml/min/1.73m<sup>2</sup>. NAFLD was defined as controlled attenuation parameter (CAP) ≥ 248 dB/m, significant liver fibrosis was defined as a liver stiffness measurement (LSM) ≥ 7.1 kPa, and advanced liver fibrosis was defined as LSM ≥ 12.5 kPa. Multivariable logistic regression was used to determine the risk factors associated with CKD. A stepwise selection procedure was used to assess the risk factors to adjust in the multivariable model.

### Results:

Of 2,008 PWH included, 525 (26.2%) were NAFLD, 1,422 (70.8%) were male, the median age was 44.8 (Interquartile range (IQR): 33.0-52.8) years, the median duration on ART was 9.5 (IQR: 2.2-18.9) years, and 1,814 (93.4%) had HIV-RNA ≤ 50 copies/mL. The prevalence of CKD was 89 (4.4%), and the prevalence of CKD was higher among significant liver fibrosis than in those without significant liver fibrosis (7.1% vs. 4.1%, p=0.04). CKD prevalence was also higher in PWH with advanced liver fibrosis compared to those without advanced

liver fibrosis (20.0% vs. 4.2%, p<0.001). In a multivariable, age ≥ 50 years [aOR: 6.00, 95%CI: 2.60-13.85], duration of ART per 1-year increase [aOR: 1.06, 95%CI: 1.02-1.11], triglyceride ≥ 150 mg/dl [aOR: 1.63, 95%CI: 1.01-2.65], diabetes mellitus [aOR: 2.03, 95%CI: 1.19-3.46], hypertension [aOR: 2.61, 95%CI: 1.58-4.31], and advanced liver fibrosis [aOR: 3.36, 95%CI: 1.30-8.70] were significantly associated with CKD.

### Conclusion:

PWH with advanced liver fibrosis had higher prevalence of CKD. Advanced liver fibrosis and traditional risk factors were strongly associated with the risk of CKD. Liver fibrosis should be evaluated regularly and its impact on the risk of developing chronic kidney disease and other co-morbidities should be monitored as part of standard HIV care.

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## Effect of Switching to DTG/3TC at Different Stages on the Recovery of Renal Function and BMD among PLHIV

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### Background:

Studies have shown that both chronic kidney and osteoporosis are related to TDF, so it is inevitable to optimize the existing ART regimen containing TDF. DTG/3TC (TFV free), as the first choice for stable switch, have achieved good results in some PLHIV, but there is still very limited data on the impact of switching at different stages on the recovery of renal function and BMD.

### Material and Methods:

A retrospective, single-center cohort study enrolled PLHIV with virus suppressed for >3 months who chose to switch from 3DR containing TDF to DTG/3TC and who were divided into three groups: prevention group ( $T \geq -1$  and  $eGFR > 90 \text{ mL/min}$  at BL), intervention group ( $-1 > T > -2.5$  or  $60 \text{ mL/min} < eGFR < 90 \text{ mL/min}$  at BL) and passive treatment group ( $T < -2.5$  or  $eGFR < 60 \text{ mL/min}$  at BL). The first end point was the proportion of patients who maintained viral inhibition at 12 months, and the second was the change in T or eGFR at 0, 6, and 12 months.

### Results:

Between January 2021 and January 2022, 100 PLHIV were enrolled in the study, whose average age was  $53.1 \pm 11.2$  years old and median duration of TDF use was 5.5 years. 20 patients in the prevention group: 15 elderly patients over 65 years old and 10 patients with diabetes. 40 patients in the intervention group: 20 patients with abnormal eGFR and 20 patients with abnormal BMD. 40 people in the passive treatment group: 20 patients with CKD and 20 patients with osteoporosis. As of the 12th month, all PLHIV have maintained HIV RNA < 50 copies/ml. From the baseline to the 12th month, the T and eGFR of all patients in the prevention group remained at normal levels. The baseline values of eGFR in the intervention and passive treatment groups were  $70.5 \pm 10.5 \text{ mL/min}$  and  $51.1$

$\pm 8.6 \text{ mL/min}$  ( $P < 0.01$ ), and the baseline values of T were  $-1.7 \pm 0.14$  and  $-2.8 \pm 0.19$  ( $P < 0.01$ ). At the 6th and 12th months, the eGFR of the intervention group was  $85.1 \pm 11.5 \text{ mL/min}$  (vs baseline,  $P < 0.01$ ) and  $87.1 \pm 13.7 \text{ mL/min}$  (vs baseline,  $P < 0.01$ ), while the eGFR of the passive treatment group was  $58.7 \pm 12.5 \text{ mL/min}$  (vs baseline,  $P < 0.01$ ) and  $60.4 \pm 14.6 \text{ mL/min}$  (vs baseline,  $P < 0.01$ ), and the T of the intervention group was  $-1.5 \pm 0.15$  (vs baseline,  $P < 0.01$ ) and  $-1.3 \pm 0.11$  (vs baseline,  $P < 0.01$ ), and the T of the passive treatment group was  $-2.7 \pm 0.16$  (vs baseline,  $P < 0.01$ ) and  $-2.5 \pm 0.13$  (vs baseline,  $P < 0.01$ ). At the 12th month after switching, the proportion of patients with eGFR recovering to  $> 90 \text{ mL/min}$  in the intervention group and the passive treatment group was 60% (12) and 5% (1). The T value of 40% patients in the intervention group recovered to  $> -1$ , while the T value of no patients in the passive treatment group returned to normal.

### Conclusion:

DTG/3TC has excellent antiviral efficacy as one of the first options recommended by the guidelines for stable switch. Preventive switching to DTG/3TC can effectively prevent TDF-related bone loss and renal function damage in high-risk PLHIV. Compared with the passive switching to DTG/3TC after reaching the diagnostic criteria of osteoporosis and chronic kidney disease, the intervention conversion can recover eGFR and T more quickly and has a higher probability of complete recovery.

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## Metabolic Syndrome Associated with Metabolism Gene Polymorphisms Among People Living with HIV on Antiretroviral Therapy in Taiwan

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### Objectives:

The aim was to evaluate the polymorphisms (SNPs) of the metabolism gene associated with biomarkers of metabolic syndrome among people living with HIV (PLWH) on antiretroviral therapy (ART) in Taiwan.

### Material and Methods:

We conducted a prospective observational study among PLWH with ART who visited Chung Shan Medical University Hospital (CSMUH) from 2016 to 2022. The typing of the metabolic genes of the patients was performed in 343 patients with randomized blood samples available from BIOBANK at CSMUH. SNPs were determined by real-time PCR with specific primers and sequence-based typing. A structured questionnaire was used to collect data and analysis was performed using SPSS Version 20.

### Results:

Among the 343 PLWH, 328 (95.63%) were men, the mean body weight was 66.1 kg (Mean  $\pm$  SD,  $\pm$  12.31), and 17 (5.04%) body mass index (BMI) was more than 30 defined obesity. 82 patients (23.9%) defined metabolic syndrome. Among them, 56 (16.62%) had higher cholesterol greater than 200 mg/dl, 202 (59.94%) had HDL less than 40 mg/dl, and another 145 (43.03%) had LDL cholesterol greater than 100 mg/dl. And 10 (2.97%) of the patients were type 2 diabetes. Therefore, participants with the ABCB1 rs1045642 allele G were statistically significantly associated with a higher LDL ( $p = 0.0392$ ) and associated with a high risk of metabolic syndrome. Furthermore, ApoE rs429358 (allele T) was significantly statistically associated with obesity ( $p=0.0362$ ).

### Conclusion:

Metabolic syndrome and obesity were more frequently associated with polymorphisms of the ABCB1 and ApoE genes with ART in Taiwan. Therefore, gene polymorphisms were observed to assess notable adverse outcomes in PLWH with ART in the future.

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## Prevalence and Risk Factors for Kidney Dysfunction in Chinese PLWH with TDF Containing Regimens: A Cross-Sectional Study

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### Background:

Kidney dysfunction is an important comorbidity in patients live with HIV (PLWH) , especially in those used TDF containing regimens, and it is associated with poor outcomes of these patients. However, data on kidney dysfunction in Chinese PLWH is scarce. In this study we determined the prevalence of kidney dysfunction in PLWH with TDF containing regimens in Dongguan and explored its associated risk factors.

### Material and Methods:

In the cross-sectional study, we recruited all PLWH currently using TDF containing regimens in the Ninth People's Hospital of Dongguan. Demographic characteristics, clinical information and laboratory variables were collected. Kidney dysfunction was defined as eGFR < 60 mL/min/1.73m<sup>2</sup> or UACR > 30mg/g. We calculated the prevalence of kidney dysfunction and assess its associated risk factors.

### Results:

A total of 3519 Chinese PLWH were enrolled, with 3031(86.1%) male. Median age was 39 (IQR 31-47) years old. Median duration of TDF is 1542(IQR 798-2271) days. 52 (1.5%) PLWH with HBV, 84(2.4%) and 53(1.5%) PLWH had history of hypertension and diabetes, respectively. HIV suppression rate is 96.5% and median CD4 cell counts is 490(IQR 347-645). The prevalence of kidney dysfunction was 13.2%. 2863(81.4%) PLWH had eGFR > 90 mL/min/1.73 m<sup>2</sup> and 34 (0.91%) had eGFR < 60 mL/min/1.73 m<sup>2</sup>, 456 (13%) patients had UACR > 30mg/g. Kidney dysfunction was found to be significantly associated with older age, history of hypertension or diabetes, duration of TDF, lower CD4 cell counts and VL > 50 copies/ml.

### Conclusion:

The prevalence of kidney dysfunction in PLWH with TDF containing regimens in Dongguan is high, especially proteinuria. It is very important to monitor renal function and comprehensively manage the various risk factors in these people. Especially, there is an urgent need to stop using nephrotoxicity antiretroviral drugs to protect renal function of PLWH.

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## Clinical and Prognostic Analysis of R-DA-EPOCH Regimen in HIV-Associated Burkitt Lymphoma: A 5-Year Single-Center Experience in Shanghai, China

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### Background:

HIV-associated Burkitt lymphoma (HIV-BL) is a highly aggressive non-Hodgkin's lymphoma. The efficacy and adverse effects of antiviral therapy (ART) given in conjunction with the R-DA-EPOCH regimen in the Chinese population remain unclear.

### Material and Methods:

A retrospective analysis of 35 HIV-BL patients who attended the Shanghai Public Health Clinical Center and received the R-DA-EPOCH regimen between 2017 and 2022 was conducted to determine clinical characteristics, treatment outcomes, prognostic factors, and adverse effects.

### Results:

The mean age of the patients at the time of BL diagnosis was 45.7 years, and 94.3% (33/35) were male. Thirteen patients (37.1%) had a CD4 count < 200 cells/ $\mu$ L at the time of lymphoma diagnosis. The median follow-up of this cohort was 24 months, with 1-year overall survival (OS) and progression-free survival (PFS) rates of 71% $\pm$ 8% and 66% $\pm$ 10%, respectively. Survival analysis based on BL-IPI stratification criteria showed that the survival 1-year OS rates were 100% and 46.3 $\pm$ 13.4% ( $P < 0.05$ ) and 1-year PFS rates were 100% and 49.8% $\pm$ 13.4% ( $P < 0.001$ ) in the intermediate-risk and high-risk groups, respectively. Multivariate analysis showed that patients with central nervous system (CNS) involvement had lower OS (HR=32.705, 95% CI: 5.302-201.753,  $P < 0.001$ ) and PFS (HR=16.282, 95% CI: 3.656-72.513,  $P < 0.001$ ) than patients without involvement. At initial diagnosis, those with lactate dehydrogenase (LDH) exceeding 3 times the upper limit of normal (ULN) had lower OS (HR=7.497, 95%

CI: 1.557-36.108,  $P < 0.05$ ) and PFS (HR=9.635, 95% CI: 1.929-48.131,  $P < 0.05$ ) than those who did not exceed 3 times. Infections occurred in 91.4% (32/35) of the 35 patients (total cycles = 205) who received chemotherapy, and the most common infection was neutropenia.

### Conclusion:

In HIV-BL patients, ART combined with R-DA-EPOCH regimen chemotherapy improves survival time and is well tolerated by patients. Stratification of HIV-BL patients using BL-IPI was effective in identifying high-risk patients, and CNS involvement and LDH elevation above 3-fold of the ULN at initial diagnosis were independent risk factors for overall and progression-free survival.

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## Cardiovascular Risk Assessment Model Agreement and Fairness in People Living with HIV Over 50 in China: Integrating Data on Social Determinants of Health

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### Background:

As life expectancy increased, people living with HIV (PLWH) experienced an increasing burden of cardiovascular diseases (CVD). Both CVD risk assessment models developed in the general population and HIV-specific models have been validated in PLWH. However, agreements among the available models when utilized in older Chinese PLWH are still unknown. Therefore, we aimed to assess the agreement of seven models predicting 10-year CVD risk in Chinese PLWH who were over 50 years old and to assess model fairness in socioeconomically disadvantaged populations.

### Material and Methods:

A cross-sectional study was conducted between November 2021 and June 2022. PLWH no younger than 50 years old without prior CVD were enrolled. Ten-year CVD risk was calculated using the Data collection on Adverse Effects of Anti-HIV Drugs Study risk equation (D:A:D) (2010), the reduced and full version of D:A:D (2016), the Framingham Risk Score (FRS), the Systematic COronary Risk Evaluation (SCORE) for the low- and high-risk region versions, and the pooled cohort equations of the American Heart Society/American score (PCE). Agreement between CVD risk models was estimated by observed agreement and weighted Kappa ( $\kappa$ ) statistics. Ordinal logistic regression was conducted to identify possible factors for 10-year CVD risk among older Chinese PLWH. Subgroup fairness analyses were conducted according to sex, age, and employment status.

### Results:

A total of 473 individuals with a mean age of 62.03 (SD=7.64) years were included. The mean 10-year CVD risk ranged from 3.90 for SCORE (low) to 18.80 for D:A:D (2010) ( $t=-70.969$ ,  $P<0.0001$ ). Most of the participants had a high risk of CVD, with 89.8% having D:A:D (2010)  $\geq 5\%$ . The observed agreement between D:A:D (2010) was 55% in the case of FRS ( $\kappa=0.167$  [CI: 0.122-0.212],  $P<0.0001$ ), 34% in the case of SCORE (low) ( $\kappa=0.068$  [CI: 0.046-0.090],  $P<0.0001$ ), 57% in the case of SCORE (high) ( $\kappa=0.180$  [CI: 0.131-0.229],  $P<0.0001$ ), and 77% in the case of PCE ( $\kappa=0.376$  [CI: 0.296-0.456],  $P<0.0001$ ). The difference in 10-year CVD risk between the  $<60$  years and  $\geq 60$  years groups assessed with D:A:D (2010) was greater than the difference with other models. The agreement of models did not differ among sex, age, and employment status groups.

### Conclusion:

The agreement between D:A:D and the FRS, SCORE, and PCE, which were developed in the general population, was poor. HIV-specific factors and social determinants of health should be considered in the future development of HIV-specific CVD risk models. Given that previous CVD risk assessment models were developed mainly in white populations, race-specific models for Chinese populations should be developed, validated and tested for fairness.

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## Clinical Programme Audit on the Practices of Physicians Caring for People Living with HIV in Singapore and Prevalence of Non-communicable Diseases within This Cohort

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**Background:** People over the age of 50 living with HIV are at higher risk of multi-morbidity compared to people of similar age without HIV. However, there are no local guidelines on appropriate screening measures for non-communicable diseases (NCD) among older people living with HIV. The objective of this audit is to examine the prevalence of NCD in this cohort and baseline practices among physicians caring for people living with HIV in the largest HIV centre in Singapore.

### Description:

We conducted a retrospective study of people living with HIV who received care from 2019 to 2022 at the National Centre for Infectious Diseases using the in-house clinical database. Multi-morbidity was defined as having two or more of the following: diabetes mellitus, hyperlipidaemia, hypertension, acute myocardial infarction, malignancy, psychiatric illnesses and osteoporosis.

### Lessons:

Among 584 eligible people with HIV under care in the study, median age was 43 years (IQR: 34-53) and 94% were male. The median years from HIV diagnosis was 4 (IQR=; 2-4) and median CD4 count at last visit was 430 cells/mm<sup>3</sup> (IQR=296-630) and all but one were on treatment. The most common antiretroviral treatment (ART) drugs used included abacavir (75%) and integrase inhibitors (63%). Over three quarters of the cohort (77%) had at least one metabolic condition, the most common being

hyperlipidemia (66%) followed by hypertension (38%). Overall prevalence of two or more conditions was 33%, the most frequent combination being hyperlipidemia and hypertension (28%), followed by hyperlipidemia and diabetes (10%). Data on diabetes mellitus and behavioral factors was incomplete for 45-50% of participants. After adjusting for age, gender, ethnicity, weight and treatment, the odds of multi-morbidity in 45-60 year-olds were 3 times that among under 45 years and in over 60 year-olds the odds were 10 times higher. No significant association was found with exposure to ART

### Conclusion:

Screening for NCDs among people with HIV in Singapore seem to vary. Evidence-based guidelines for the screening of NCDs, tailored to local context, are needed to guide practice and improve screening for NCDs in older persons with HIV, especially as this population is expected to grow significantly in the near future.

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## Support Systems for HIV Self-Testing: A Global Scoping Review With Findings from the Asia-Pacific Region

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### Background:

HIV self-testing (HIVST) is a safe and accurate way to increase access to and uptake of testing, particularly amongst key populations. Supporting the use of self-tests and onward linkage to appropriate prevention and care following HIVST remains a critical part of successful implementation. To understand the current landscape of systems and tools supporting HIVST usage and linkage, we aimed to qualitatively synthesise the available global data on HIVST support systems. Here, we focus on findings from the Asia-Pacific region.

### Material and Methods:

We conducted a scoping review following the PRISMA guidance and searched five databases between January 2000 and March 2022. Included studies reported on one or more systems supporting: 1) HIVST usage, 2) interpretation of results, or 3) linkage to follow-up services. We excluded studies where 1) HIVST support systems were not implemented or experienced, or 2) where HIVST was not conducted or simulated. We used thematic analysis to inductively identify themes.

### Results:

We screened 14,385 articles and included 316 for analysis, including 109 (34%) randomised controlled trials. Many included key and priority populations such as men who have sex with men (n=96, 30%), female sex workers (n=24, 8%) and pregnant people (n=20, 6%). Forty-seven studies (15%) were

conducted in Asia-Pacific countries; however, most were conducted in Africa (n=176, 56%).

Across 44 (94%) Asia-Pacific articles, 93 systems supporting self-test use were reported, most commonly: video instructions (20/93, 22%), pictorial instructions (14/93, 15%), and in-person assistance/supervision (12/93, 13%). Use of digital tools such as video conferencing with providers (5/93, 5%, Thailand and Hong Kong SAR) and the WeChat instant messaging app (4/93, 4%, China) to support self-testing have been reported.

Across 24 (51%) Asia-Pacific articles, 34 systems explicitly supporting result interpretation were reported, most commonly: pictorial instructions (11/34, 32%), and in-person assistance (5/34, 15%). Smartphone apps were also found to be used to remotely support interpretation of results in China (4/34, 12%).

Across 41 (87%) Asia-Pacific articles, 192 post-test linkage support systems were reported, most commonly: on-the-spot facility services (26/192, 14%), in-person referrals/counselling (24/192, 12%), and phone helplines (15/192, 8%). In China, Hong Kong SAR, Thailand and Vietnam, professionals and peers have been trained to offer accompaniment for those with reactive results to attend confirmatory testing and care services (n=8/192, 4%). Digital tools noted above were also used for post-test linkage: live video conferencing (21/192, 11%) and instant messaging apps (14/192, 7%).

### Conclusion:

A diverse range of systems to support HIVST implementation are used in the Asia-Pacific region. Whilst digital tools were identified, they remain less common than more popular print and in-person approaches. The effectiveness of HIVST systems used in the region remains to be determined and is an area for further research.





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## Bone Mineral Density Changes in Postpartum Mothers Living with HIV on Art [76/85]

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### Background:

In the IMPAACT PROMISE 1077BF study, we found that postpartum declines in bone mineral density (BMD) during breastfeeding were greater in African women living with HIV (WLWH) receiving TDF-based ART compared to those not on ART. We describe postpartum BMD changes in breastfeeding African women in the PROMISE trial who then enrolled in the PROMOTE observational cohort.

### Material and Methods:

In four African countries, former PROMISE participants were enrolled in the PROMOTE study. Total hip and lumbar spine (LS) BMD were assessed by Dual Energy X-ray Absorptiometry (DXA) after delivery (week 0) and at postpartum week 74 in PROMISE, then at PROMOTE entry. Country-specific Z-scores were created by internal standardization to the PROMISE DXA result at delivery. Linear mixed models adjusted for country were used to estimate the average 5-year change in hip and LS BMD Z-scores after postpartum week 74.

### Results:

At PROMOTE entry, 459 women had available DXA data from PROMISE. Median (IQR) age was 32 (29-36), BMI 24.6kg/m<sup>2</sup> (22.0-29.3), parity 3 (2-4), months on ART in PROMISE 24.8 (14.2-34.7). HIV-1 viral load was <1000 copies/mL in 93%, 92% were on TDF-ART. In the median 3.3 (2.2-3.7) years since postpartum week 74, 19% had a new pregnancy and 13% were still lactating at PROMOTE entry. At entry, mean (SD) BMD was 0.96 (0.12) for LS and 0.95 (0.12) g/cm<sup>2</sup> for hip. LS BMD Z-scores increased by 31% per 5 years (95%CI: 22%, 40%) and hip by 8%

per 5 years (1%, 16%), adjusted for country. Compared to women without, women with new pregnancies had lower annualized rate of change in BMD: mean difference (95%CI) LS = -0.057 (-0.078,-0.035) and hip = -0.032 (0.053,-0.011).

### Conclusion:

Compared to women who had new pregnancies, WLWH who had no new pregnancies had greater LS BMD recovery, but not hip, in the 3 years after week 74 postpartum.



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## PLHIV Who Are Prescribed Testosterone- Are There Additional Adverse Effects?- Data from the PUSH Audit

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### Background:

Androgen deficiency occurs more commonly in men living with HIV (MLHIV) (20-30%), with reports estimating that 10-15% of MLHIV are on testosterone replacement therapy. Testosterone deficiency is also associated with ageing with HIV. Testosterone therapy could be also be associated with additional potential adverse effects (AEs) in MLHIV. Many of these AEs are similar to the co-morbidities of HIV and ageing, so there is concern that MLHIV might experience additional AEs due to their testosterone therapy and Living with HIV. There has been little published about testosterone associated adverse effects in older MLHIV. The PUSH audit, done in Australia, collected data on 213 men who were prescribed testosterone about half of whom were living with HIV. The study looked at both measured and self-reported AEs. We compared these effects between MLHIV and men not living with HIV (MNLHIV) to determine if there was increased prevalence of any AEs in MLHIV. The study had previously found that there was no increased prevalence of several measured outcomes between these groups. This further analysis looks at the self-reported adverse effects of testosterone therapy.

### Material and Methods:

The PUSH! Audit was a cross-sectional study conducted in Australia, in 9 clinics across 5 cities between May 2019 and May 2021. Demographic data, measured outcomes and self-reported outcomes were collected in the audit.

The self-reported adverse effects data was compared using fisher 2 tail test.

### Results:

We compared prevalence of the following self-reported adverse effects - polycythaemia, abnormal

liver function, balding, acne, gynaecomastia, testicular shrinkage, aggression, depression, abscess, infertility and ongoing testosterone suppression. Apart from the lower prevalence of polycythaemia, there were no statistically differences in all other self-reported AEs.

### Conclusion:

In this further analysis, there was no increase in the prevalence of self-reported adverse effects in the MLHIV who were on testosterone therapy. This finding in combination with the previously reported outcomes from measured adverse effects (hypertension, abnormal liver function, polycythaemia and hyperlipidaemia) show that in the population in the PUSH Audit, MLHIV on testosterone therapy did not have an increased prevalence of measured or reported AEs compared to MNLHIV.

This study provides some reassurances that testosterone therapy can be used safely with the normal expected AEs that need to be monitored and managed, but despite the additional co-morbidities associated with HIV and ageing, there does not appear to be any additional risks with testosterone therapy.

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## MSM as a Determinant of Sarcopenia Among People Living with HIV Aged Above 50 Years in Taiwan

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### Objectives:

During the accelerated ageing process, sarcopenia is an emerging health issue in people living with HIV (PLWH) because it is a precursor of frailty and leads to adverse health outcomes. However, the study of sarcopenia among PLWH is lacking in Taiwan.

### Material and Methods:

This is a cross-sectional study by self-administrated structured questionnaire of Medical Outcome Survey (MOS-HIV) and sarcopenia assessment. Sarcopenia was determined using The Asian Working Group for Sarcopenia (AWGS) 2019 criteria by SARC-CalF, and we calculated Veterans Aging Cohort Study (VACS) index, BMI, CD4/CD8 ratio and CD4 count. We aim to analyse the participants' sarcopenia and associated factors.

### Results:

Among 115 participants, 89% were male, and the mean age was  $57.3 \pm 7.6$  years (IQR 51.8-62), duration of HIV diagnosis was 17.2 (IQR 14-21) years. In total, 20.9% of the participant were probable or sarcopenia by SARC-CalF score. The prevalence of probable and sever sarcopenia in male and female was 18.4% and 41.7%, respectively. The VACS index, risk of 5 years of mortality, lower BMI, pain, and health distress were significantly high in the sarcopenia group. By multivariant analysis, age was associated with increased odds of sarcopenia ( $p < 0.01$ ), while the MSM group, BMI, and physical component were associated with decreased odds of sarcopenia ( $p < 0.02$ ,  $< 0.01$ ,  $< 0.01$ ), respectively.

### Conclusion:

Sarcopenia increases the risk of falls, physical disability and premature death; therefore, it has been recognized as an emerging issue. Factors associated with sarcopenia in people with HIV differ by MSM group, which should be considered when

establishing comprehensive geriatrics care for other groups. The recognition and management of related risk factors will help to mitigate the development of sarcopenia. However, more studies are needed to explore other determinants, such as drug-related and sociodemographic factors for the PLWH in Asia.

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## Prevalence and Risk Factors of Frailty in Chinese People Living with HIV

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### Objectives:

With the widespread introduction of modern antiretroviral therapy (ART), the life expectancy of people living with HIV (PLWH) has increased considerably and their overall quality of life has substantially improved. However, the development of frailty in this population has come to attention in recent times. Studies in countries outside of China have observed that the prevalence of frailty in PLWH can reach up to 15.4%, whereas data originating from China remains scarce. The present study aimed to investigate the incidence and risk factors of frailty among PLWH in China.

### Material and Methods:

This was a cross-sectional study conducted at Chongqing Public Health Medical Center from August 2021 to August 2022, and the study participants were patients 35 years or older, with a confirmed diagnosis of HIV infection. A questionnaire was used to collect demographic data, and the Fried Frailty Phenotype questionnaire was used to assess frailty status. Multivariate logistic regression was used to analyze the contributing factors for frailty in PLWH.

### Results:

A total of 377 PLWH participated in this study, having a mean age of 57.42±9.61 years, and a median CD4+ T-lymphocyte count of 260 cells/μL (IQR: 140-405). Of the entire study population, 261 patients (69.2%) were men, 116 patients (30.8%) were women, 144 participants (72%) were married, and 95 individuals (47.5%) had a smoking habit. The prevalence of frailty was observed to be 10.3%, and of pre-frailty 52.8%. The prevalence of frailty in participants aged <50 years, 50 years - 59 years, 60 years - 69 years, and ≥70 years was calculated to be 7.0%, 9.9%, 10.5, and 17.9% respectively. Univariate analysis indicated that gender, age, BMI, smoking status, drinking status, duration of HIV infection, CD4+ T-lymphocyte count, CD4/CD8 ratio, and HIV

viral load were factors influencing frailty. Multivariate logistic regression analysis results inferred that CD4+ T-lymphocyte count <200 cells/μL (OR=3.360, 95%CI:1.340-8.429) and HIV RNA level >50 copies/ml (OR=5.915, 95%CI:2.073-16.884) were the main risk factors for frailty.

### Conclusion:

Our results showed that Chinese PLWH have a high prevalence of frailty and pre-frailty, and that low CD4+ T-cell counts and high viral loads are major risk factors for frailty, thus highlighting the importance of early recognition and intervention for frailty in PLWH.

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## Long-Term Treatment Outcomes of Antiretroviral Therapy in Children and Adolescents: The IeDEA Asia-Pacific Cohort

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### Background:

HIV has become a manageable chronic condition for children who have had access to effective diagnosis, treatment and care. Limited data exist on their long term outcomes. We describe rates and risk factors for death and loss to follow-up (LTFU) from five years after initiation of combination antiretroviral therapy (cART) in a regional Asian paediatric cohort.

### Material and Methods:

We analysed data from children and adolescents (aged 10-19 years) who initiated cART between January 2003 and December 2016 within the TREAT Asia Pediatric HIV Observational Database (TApHOD) of the IeDEA Asia-Pacific network. Children and adolescents were followed from five years after cART initiation until their 25th birthday, last visit, death, or LTFU. Deaths that happened in the year following the last clinic visit before age 25 were included. We used Cox regression analysis to identify risk factors associated with death and competing risk regression to identify factors associated with LTFU (death as a competing event). Age, cART switch, CD4 cell count, HIV viral load, and AIDS diagnosis were included as time-updated covariates.

### Results:

Of 6050 children and adolescents who started cART at least five years prior to the site-specific data transfer date, 4488 (74%) who had at least one clinic visit after five years of cART were included in the current analysis. At cART initiation, median age was 5.2 years (IQR 2.5-8.2); median CD4 count was 168 (IQR 36-349) cells/ $\mu$ l. At year 5, the median CD4 cell count was 843 (IQR 597-1138) cells/ $\mu$ l, and 870 (19%) were on at least second cART regimen. There were 107 (2.4%) deaths and 271 (6.0%) were LTFU over a median follow-up time of 5.2 (IQR 2.8 -7.8) years. Median age was 15.8 years at death (IQR 11.9-17.9), and at last visit for patients LTFU was 16.6 (IQR 13.3-19.5) years. At last clinic visit, 34% of those who died and 63% of those who were LTFU had VL <400 copies/mL.

In multivariate analysis, risk factors for higher hazard of death were: cART switch (adjusted hazard ratio [aHR] 1.52, 95% confidence interval (CI) 1.15-2.02 vs no cART switch), HIV viral load  $\geq$ 10000 copies/mL (aHR 3.51, 95%CI 2.13-5.77 vs <400 copies/mL), and an AIDS-defining diagnosis (aHR 1.71, 95%CI 1.23-2.38). Higher hazard of LTFU was observed among those aged 20-24 years (adjusted sub-hazard ratio (asHR) 2.37, 95%CI 1.11-5.05 vs age 5-9 years), with viral load  $\geq$ 10000 copies/mL (asHR 1.85, 95%CI 1.03-3.33 vs <400 copies/mL), in care in rural settings (asHR 3.94, 95% CI 2.04-7.63 vs urban settings), and starting cART after 2005 (highest asHR for 2010-2016: 4.97, 95%CI 1.95 to 12.65).

### Conclusion:

Routine viral load monitoring of children, adolescents, and youths is critical to identify those at highest risk of death and LTFU, especially for those who switch cART regimens. The greater risk of LTFU among those receiving care in rural settings raises concern for efforts to decentralize care in the

*Abstract*

Asia region, and highlights the need for ongoing capacity-building of healthcare providers in adolescent HIV treatment management.

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## A Randomized Controlled Trial of (5R)-5-Hydroxytriptolide in HIV INRs Receiving ART

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### Background:

Therapeutic approaches to HIV-suppressed immunological non-responders (INRs) remain unsettled. We previously reported the efficacy of Chinese herbal *Tripterygium wilfordii* Hook F in INRs. Its derivative (5R)-5-hydroxytriptolide (LLDT-8) on CD4+ T cell recovery was assessed.

### Material and Methods:

The phase II, double-blind, randomized, placebo-controlled trial was conducted in adult patients with long-term suppressed HIV infection and suboptimal CD4 recovery, at eight hospitals in China. The patients were 1:1:1 assigned to receive oral LLDT-8 0.5mg or 1mg daily, or placebo combined with antiretroviral therapy for 48 weeks. All study staff and participants were masked. The primary endpoints include change of CD4+ T cell counts and inflammatory markers at week 48. This study is registered on ClinicalTrials.gov (NCT04084444) and Chinese Clinical Trial Register (CTR20191397).

### Results:

A total of 149 patients were enrolled from Aug 30, 2019, and randomly allocated to receiving LLDT-8 0.5mg daily (LT8, n= 51), 1mg daily (HT8, n= 46), or placebo (PL, n= 52). The median baseline CD4+ T cell count was 248 cells/mm<sup>3</sup>, comparable among three groups. LLDT-8 was well tolerated in all participants. At 48 weeks, change of CD4+ T cell counts was 49 cells/mm<sup>3</sup> in LT8 group (95% confidence interval [CI]: 30, 68), 63 cells/mm<sup>3</sup> in the HT8 group (95% CI: 41, 85), compared to 32 cells/mm<sup>3</sup> in the placebo group (95% CI: 13, 51). LLDT-8 1mg daily significantly increased CD4+ T cell count compared to placebo (P=0.036), especially in participants over 45 years old. The mean change of serum interferon- $\gamma$ -induced protein 10 (IP-10) was -72.1 mg/L (95% CI -

97.7, -46.5) in the HT8 group at 48 weeks, markedly decreased compared to -22.8 mg/L (95% CI -47.1, 1.5, P=0.007) in the placebo group. Treatment-emergent adverse events (TEAEs) were reported in 41 of 46 (89.1%) participants in the HT8 group, 43 of 51 (84.3%) in LT8, and 42 of 52 (80.7%) in the PL group. No drug-related SAEs were reported.

### Conclusion:

LLDT-8 enhanced CD4 recovery and alleviated inflammation in long-term suppressed INRs, providing them a potential therapeutic option.



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## (5R)-5-Hydroxytriptolide Inhibits Immune Activation in SIV-Infected ART-Treated Rhesus Macaques

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### Background:

Chronic immune activation significantly contributes to HIV pathogenesis and disease progression, while the available interventions are limited. Triptolide has been identified as the primary active ingredient of *Tripterygium wilfordii* Hook F (TwHF), which has shown promising clinical benefits in PLWH. Here, we investigated the efficacy of (5R)-5-hydroxytriptolide (LLDT-8), a novel triptolide derivative, to reduce immune activation in rhesus macaques (RMs).

### Material and Methods:

8 RMs were infected with SIVmac239 and ART was initiated 14 weeks after infection. At the same time, RMs were randomly allocated to receive daily LLDT-8 (Shanghai Pharmaceuticals Holding Co., Ltd., Shanghai, China; 0.2 mg/kg, n= 4) or placebo (n= 4) in alliance with continuous ART. During the 24-week follow-up, T cell subsets, SIV RNA, and SIV DNA were measured to monitor treatment efficacy. PBMCs were collected to conduct transcriptomic analyses by RNA-seq.

### Results:

Following SIV infection, the CD4+ T cell percentage significantly decreased from 26.2% (15.7, 39.9) to 6.5% (3.5, 9.5) and the co-expression of CD38 and HLA-DR on CD8+ T cells also increased from 1.4% (0, 5.8) to 14.4% (10.4, 21.5) of all RMs at 12 wpi. LLDT-8 treated RMs experienced a much faster-descending percentage of HLA-DR+CD38+CD8+ T cells than the placebo group (wk16-wk 12: LLDT-8, -

9.5% vs. placebo, 1.5%; P= 0.029). The RNA-seq results showed that LLDT-8 treatment significantly inhibited immune activation and proliferation-related pathways, including the E2F targets, the G2M checkpoint, and the mitotic spindle, the spermatogenesis, and the IFN- $\alpha$  response pathways. The expression of MKI67 was continuously differentially expressed at different time points throughout the LLDT-8 treatment, and significantly correlated to CD8+ T cell activation level (Pearson's  $r= 0.23$ , 95%CI 0.04-0.41, P= 0.017). These results were validated in human PBMCs, LLDT-8 significantly suppressed the expression of Ki-67, CD38, and HLA-DR on CD8+ T cells in a dose-dependent manner in vitro.

### Conclusion:

LLDT-8 treatment significantly inhibited CD8+ T cell activation in SIV-infected RMs and human PBMCs, providing a potential therapeutic option for PLWH.





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## Missed Opportunities with Symptom-Based Testing of Chlamydia and Gonorrhoea among Men Who Have Sex With Men and Transgender Women Attending Key Population-Led Clinics in Thailand

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### Background:

Many resource-limited settings, including Thailand, have implemented symptom-based screening for Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG). However, the potential for asymptomatic anorectal and oropharyngeal CT and NG infections limit the usefulness of this practice. We studied the proportions of CT and NG infections which would be missed if symptom-based screening was implemented among men who have sex with men (MSM) and transgender women (TGW) attending key population (KP)-led clinics for HIV testing and pre-exposure prophylaxis (PrEP) services.

### Material and Methods:

From July 2020 to September 2021, Thai MSM and TGW aged  $\geq 18$  years, with at least one reported HIV risk in the past six months (condomless sex,  $>5$  sexual partners, history of bacterial sexually transmitted infections (STIs), and/or substance use), were enrolled at KP-led clinics and followed up every 3 months for 12 months. STI symptoms were recorded at every visit before specimen collections. Pooled urine, pharyngeal, and rectal samples from each participant were obtained for molecular Xpert CT/NG tests.

### Results:

We enrolled 1,427 MSM and 138 TGW with a median (IQR) age of 28 (23-34) years. 196 were HIV-positive, 892 started/continued PrEP and 477 refused PrEP. CT was detected in 526/4,074 (12.9%) visits and NG in 359/4,074 (8.8%) visits. STI symptoms were only reported in 23/526 CT-positive visits (4.4%) and in 15/359 NG-positive visits (4.2%). Urethral symptoms were most common (82.6%), followed by rectal (13.0%), and oropharyngeal (4.4%) symptoms among symptomatic CT infections. For symptomatic NG infections, symptoms most commonly appeared at the urethra (86.7%), followed by oropharynx (13.3%), and rectum (6.7%). STI symptoms were also reported in 21/3,548 CT-negative visits (0.6%) and in 29/3,715 NG-negative visits (0.8%).

### Conclusion:

Among MSM and TGW clients of KP-led clinics in Thailand, those exposed to high risk of STIs, CT and NG infections were detected by molecular test in around 10% of their clinic visits. Symptoms were only presented in less than 5% of these CT and NG infections. Use of symptom-based screening would result in 95% missed diagnoses. Integrating regular STI testing, regardless of symptoms, into these KP-led clinics has high potential as an entry point for STI test and treat strategy aiming at ending STIs by 2030.



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## HIV Self-Testing in Real-World Use, a Tool to End HIV in Thailand

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### Background:

Although the use of HIV self-tests (HIVST) is a key strategy fully endorsed by the National AIDS Committee to end AIDS in Thailand, progress towards its wide-scale implementation has been extremely slow. We aimed to investigate the uptake, reactive testing yield, and linkages to antiretroviral treatment (ART) and pre-exposure prophylaxis (PrEP) of a real-world online HIVST service in Bangkok, Thailand.

### Material and Methods:

In May 2022, with the support from USAID EpiC program, Pribta-Tangerine Clinic – a private sexual health clinic in Bangkok, Thailand, distributed free blood-based HIVST kits. Online demand creation began one month before service availability, linking potential clients to clinic staff for risk assessment through telehealth. Clients received an HIVST via mail, and were able to submit their result to the clinic electronically. Clients with non-reactive results were offered PrEP, those with reactive results were linked to confirmatory testing. Same-day ART initiation was offered to those with confirmed HIV-positive status.

### Results:

From May-November 2022, the clinic distributed HIVST kits to 320 clients, 106 (33.1%) were first-time HIV testers. Test results were submitted by 251 (78.4%) clients, of which 18 were reactive. Of these, 11 were confirmed positive and all initiated same-day ART, three were negative upon confirmation testing, and four did not confirm their result. Overall confirmed HIV-positive rate was 4.4%. Among 233 non-reactive clients, 41 (17.6%) accepted PrEP services and 27 (11.6%) received sexually transmitted infection (STI) screening. Among 77 first-time HIV testers with returned results, 3 (3.9%) were confirmed positive.

### Conclusion:

HIVST delivered through telehealth successfully engaged clients with HIV in treatment, including those who never had an HIV-test before. Furthermore, non-reactive clients who otherwise might not enter prevention services, were linked to PrEP and STI services. Scale-up of this online HIVST service model is needed to optimize its potential in ending HIV in Thailand.



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## Applying Client Risk Segmentation to Improve the Focus of HIV Testing Services for Men Who Have Sex with Men in Jakarta, Indonesia

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### Background:

The USAID- and PEPFAR-supported EpiC Indonesia project implements HIV testing services (HTS) for men who have sex with men (MSM) through community partners in Jakarta. We analyzed routine program data to identify the characteristics of HTS clients who were more likely to experience reactive test results and applied these profiles to improve the focus and impact of HTS.

### Material and Methods:

EpiC conducted chi-squared tests on routine program data to assess bivariate associations between client characteristics and reactive HIV test results in the project's community-based outreach database. We then constructed a multivariable logistic regression model incorporating variables with significant bivariate ( $p \leq 0.05$ ) relationships with testing results to calculate adjusted odds ratios (AOR) reflecting the likelihood of receiving reactive test results based on distinct client characteristics.

### Results:

During the annual reporting period from October 2019 through September 2020, 8,744 previously undiagnosed MSM participated in HTS, with 1,223 (14%) receiving reactive results. We identified six client characteristics with bivariate ( $p \leq 0.05$ ) associations with a positive test result and incorporated these in the multivariable model. Predictors of the likelihood of reactive results in the multivariable model were reporting tuberculosis signs or symptoms (AOR=3.36,  $p<0.001$ ), reporting ever sharing needles (AOR=2.28,  $p=0.029$ ), being reached by a community supporter vs. a peer (AOR=1.98,  $p<0.001$ ), reporting sex without a condom (AOR=1.70,  $p=0.021$ ), and age in years (AOR=.99,  $p=0.028$ ). The odds of receiving a reactive result were significantly greater for those reached in Central Jakarta (AOR=1.93,  $p<0.001$ ) and East

Jakarta (AOR=1.43,  $p<0.001$ ) than those reached in South Jakarta.

### Conclusion:

We applied the model to predict the likelihood of reactive results based on client characteristics to help community partners focus services to engage individuals with these profiles. Community partners subsequently prioritized HTS referrals for screened MSM exhibiting these characteristics and intensified outreach services in Central and East Jakarta. From October 2020 through September 2022, EpiC-supported civil society organizations identified 4,536 new MSM—a 74.1% increase in case finding from the previous two-year programming period.

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## Forecasting the Number of New Human Immunodeficiency Virus Infections in Thailand: A Mathematical Modelling Study

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### Background:

Thailand has made considerable progress in the HIV epidemics with increased testing and treating earlier. The stages of HIV infection can be divided into early asymptomatic stage, symptomatic stage, and acquired immune deficiency syndrome (AIDS). We aimed to estimate and predict the trend of the new HIV infections in Thailand from 2019 to 2030 using a mathematical model.

### Material and Material and Methods:

Data of Thai participants aged 18 years and older with confirmed HIV infection between 2008-2019 were included in the model to predict HIV new infections using system of ordinary differential equations (ODEs) and Monte Carlo simulation for estimation parameters based on the database of HIV testing through the Universal Health Coverage (UHC) program in Thailand. We categorized the new HIV infection into 3 stages: 1) asymptomatic stage, 2) symptomatic stage and 3) AIDS, for forecasting the trend by integrating the updated national treatment guidelines. We also classified the time periods based on the treatment guidelines which suggested initiation of antiretroviral therapy (ART) with CD4 levels condition in the years 2008-2013 and starting ART at any CD4 levels or treat-all in the years 2014-2019. We fitted the mathematics model for estimating the number of new infections in years 2008-2013, years 2014-2019, and then forecasted the trend of the number of new HIV infection until 2030. The mean absolute percentage error (MAPE) was used to evaluate the accuracy of the estimated values from the model.

### Results:

A total of 246,953 participants were enrolled in UHC program between 2008 and 2019, and 147,833 (60%) were male. The median age at HIV diagnosis was 35 (IQR 27-43) years. The majority were at asymptomatic stage: 126,820 (51%), followed by symptomatic stage: 61,329 (25%) and AIDS: 58,804 (24%) at HIV diagnosis. We found that 28,439 (12%) [13,072 (46%) in asymptomatic, 7,667 (27%) in symptomatic, 7,700 (27%) in AIDS] with HIV infection in 2008, 19,337 (8%) [9,786 (51%) in asymptomatic, 4,808 (25%) in symptomatic, 4,743 (25%) in AIDS], in 2014 and 15,972 (6%) [9,688 (61%) in asymptomatic, 4,050 (25%) in symptomatic, 2,234 (14%) in AIDS] in 2019. The estimated parameters indicate that improvement of treatment guideline in 2014-2019 increased by 28-fold from the period of 2008-2013 with a MAPE of 2%. The forecasted number of new infections in 2014-2019 for symptomatic, AIDS and asymptomatic stages will be decreased by 21%, 61% and 7%, respectively, in 2030. Comparison model simulations with 2014-2019, the results show that there was significant impact of the treatment guidelines change on the reduction of the number of new HIV infections with symptomatic and AIDS stages.

### Conclusion:

Changes in HIV treatment guideline as treat all HIV infections since 2014 had greatly impacted on the trends of new HIV infections with symptomatic and AIDS stages in Thailand, when compared to the eras of starting ART with CD4 thresholds using mathematical model. Increased in uptakes of HIV testing and prompt treatment after diagnoses can reduce new HIV infections with advanced stages and HIV transmission.

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## Understanding Treatment Continuity among PLHIV Receiving Different Antiretroviral Therapy Dispensing Methods in DKI Jakarta, Indonesia

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### Introduction:

Antiretroviral (ARV) multi-month dispensing (MMD) has been proven globally to maintain treatment continuity for people living with HIV (PLHIV) and to reduce burden on health facilities. The Jakarta Provincial Health Office partnered with the USAID Meeting Targets and Maintaining Epidemic Control (EpiC) project to increase the proportion of PLHIV receiving more than one month of ARV medication through facility- and home-based antiretroviral therapy (ART) provision. To illustrate the efficacy of MMD and decentralized drug distribution, we conducted a program data analysis documenting PLHIV treatment continuity at 12 months for PLHIV receiving one-month, two-month, three-month, or home-based ARV provision during the 2020 program period.

### Description:

We reviewed patient records for 17,084 PLHIV at 70 Jakarta health facilities. Among this group, 48.4% of individuals (n=8,265) received a two-month supply of ARVs; 41.7% (n=7,121) received one month of medication; 8% (n=1,370) received home-based antiretroviral therapy (ART); and just 1.9% (n=328) received three months of medication. Treatment continuity rates at 12 months following ART initiation were 70% among individuals receiving one month of ARVs; 89% among those receiving two months of medication; 72% among people receiving home-based ART; and 95% among people receiving three months of ART.

### Results:

Individuals receiving two-month or three-month ARV dispensing had 3.71 (OR=3.71, 95% CI: [3.53–4.03]) and 7.53 (OR:7.53, 95% CI: [6.42–12.14])

times the rate of treatment continuity, respectively, of those receiving one month of medication. PLHIV receiving home-based ART had a slightly higher — but still significant — degree of treatment continuity compared to those receiving one-month dispensing (OR: 1,12, 95% CI [1.02–1.27], p-value<0.001).

### Lessons Learned:

Illustrating treatment continuity through routine program data is indispensable for MMD and decentralized drug distribution scale-up in Jakarta and throughout Indonesia. In December 2020, the Jakarta PHO formally endorsed home-based ARV delivery within a provincial circular, and they instructed facilities to routinely provide PLHIV with two-month of ARVs throughout the COVID-19 pandemic despite insecure ARV supplies. Treatment continuity information from this exercise further informed the creation of the Ministry of Health National MMD Technical Guidance that will be rolled out across the country in 2023.

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## Pilot Implementation Program of 2-Monthly Long-Acting Injectable Cabotegravir/Rilpivirine (2M ILA CAB/RPV) For People Living with HIV (PLWH) In a High HIV Caseload Inner-City Brisbane General Practice: Key Lessons Learnt

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### Background:

In Australia, 35-55% of PLWH access full HIV management in a community (non-hospital) setting. Uptake of 2M ILA CAB/RPV has been slow and inconsistent in this setting. The gap between Phase 3 recruitment and real world uptake in this arena has reduced access to a highly effective treatment option.

### Description:

A pilot program initiating 2M ILA CAB/RPV for eligible PLWH was run in a high HIV caseload inner-city Brisbane General Practice from 01 April 2022 to 31 August 2022. 10 eligible PLWH were recruited over that period. Education and clinical counselling was provided to all participants regarding 2M ILA CAB/RPV, the program protocols and procedures. Stakeholders in the program were identified as the participants, the administration team, the practice nurse, the clinicians and the local/HIV pharmacists. All stakeholders undertook targeted education programs specific to their roles.

An audit of the pilot program occurred after 31 August 2022 via qualitative interviews with 20 stakeholders (10 participants, 3 administration team members, 1 practice nurse, 4 clinicians and 2 local/HIV pharmacists).

### Results:

Of the 10 participants, 4 (40%) initiated the switch (client-led) from oral antiretroviral therapy (ART) to 2M ILA CAB/RPV, while 6 (60%) consented to switch from oral ART after discussion with the clinician (client-centred). Overall, 7 (70%) participants

commenced treatment with 2M ILA CAB/RPV after clinical counselling.

### Key lessons learnt:

- 1) The participant:
  - a) client-led care produced a positive outcome in recruitment
  - b) needed to understand injection timing protocols with the use of 2M ILA CAB/RPV
- 2) The administration team:
  - a) required awareness of program implementation, and basic education on overall program protocols
  - b) required intimate knowledge of injection timing restrictions to make or change appointments appropriately for participants
- 3) The practice nurse:
  - a) needed to understand overall program protocol, and learn injection techniques and procedures of 2M ILA CAB/RPV
  - b) required education to support participants in management of side/adverse effects e.g. injection site reactions
- 4) The clinician:
  - a) improved uptake of 2M ILA CAB/RPV with application of client-centred care provision
  - b) required to apply stringent participant selection criteria to reduce risk of therapeutic failure
  - c) needed to coordinate and support stakeholders on implementation of program
- 5) The local/HIV pharmacy:
  - a) needed to know that 2M ILA CAB/RPV was utilised at the clinic
  - b) required to set up and organise supply chain and have cold storage facilities to maintain cold chain for the medication.

### Conclusion/Next Steps:

Client-led or client-centred care increased the recruitment of participants in this pilot implementation program of 2M ILA CAB/RPV. Identified stakeholders required targeted education regarding their distinct role to ensure programmatic success. A team approach was vital for successful implementation of the program. Clinicians in community settings needed to be key agents of initiating change to new treatment models. These key lessons can be used to inform, and be applied to, other similar community settings to

*Abstract*

improve the implementation of 2M ILA CAB/RPV amongst eligible PLWH.

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## Factors Associated With Antiretroviral Therapy Adherence among Stable People Living with HIV in Cambodia: A Baseline Survey of a Quasi-Experimental Study

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### Background:

Understanding context-specific determinants of antiretroviral therapy (ART) adherence is crucial for developing tailored interventions for improving health outcomes and achieving the UNAIDS' last two 95-95 targets by 2025. Little is known about ART adherence levels and associated factors among stable people living with HIV. This study explores factors associated with ART adherence among stable people living with HIV on ART in Cambodia.

### Material and Methods:

We used baseline survey data from a quasi-experimental study conducted in mid 2021. The participants were recruited from 20 ART clinics in the capital city and nine provinces for face-to-face interviews using tablet-based. Data were stored in Research Electronic Data Capture (REDCap). Key variables included sociodemographic characteristics, treatment adherence, perceived ART self-efficacy, mental health, quality of life, and HIV-related stigma and discrimination. We conducted a multiple logistic regression analysis using a backward stepwise method. The National Ethics Committee for Health Research (NECHR), Ministry of Health, Cambodia approved the study.

### Results:

Of the total participants (n=4,101), 41.4% were male, and 68.6% were between 40 to 59 years old. Most participants (86.5%) reported adhering to ART in the past two months. After adjusting for other

covariates, the odds of adherence to ART were significantly higher in participants who were aged greater or equal to 40 compared with those aged 15-29 years, without elevated cholesterol (AOR 1.61, 95% CI 1.16, 2.23), exhibited strong self-efficacy in health responsibility to maintain life (AOR 1.83, 95% CI 1.51-2.22), experienced lower internal HIV-related stigma (AOR 1.39, 95% CI 1.14-1.70) and discrimination (AOR 1.87, 95% CI 1.38-2.54), and scored higher in the mental health component of the quality-of-life scale (AOR 1.60, 95% CI 1.28-1.99) than their reference groups. The odds of adherence to ART were significantly lower in participants earning >300 USD per month (AOR 0.49, 95% CI 0.37-0.66) than in those earning less than or equal to 100 USD.

### Conclusion:

The ART adherence rate found in this study is consistent with previous studies in Cambodia. The results suggest the need for public education to reduce stigma and discrimination and strategies to improve the self-efficacy and mental health of people living with HIV. Additional efforts are needed to promote adherence among adolescents and young adults.



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## Long-Term Persistence Rates of Daily Oral Pre-exposure Prophylaxis Among Adolescent Men Who Have Sex with Men and Transgender Women At-Risk for HIV in Thailand

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### Background:

HIV pre-exposure prophylaxis (PrEP) with once daily tenofovir disoproxil fumarate/emtricitabine (TDF/FTC) is recommended for adolescents and young adults (AYA) at high risk of HIV. This study aimed to assess PrEP persistence up to 36 months after initiation among AYA in Thailand.

### Material and Methods:

A study was conducted in AYA aged 15-24 years at high risk of HIV acquisition, defined as multiple sex partners and/or inconsistent condom use at a youth-focused health service (CU Buddy Clinic). During the first 6 months, clinic visits or telephone contact occurred monthly. Thereafter, 3-monthly clinic visits for PrEP refill occurred. Service was free of charge for PrEP medications and HIV testing through Thailand's National AIDS Program. A data comparison was made between adolescents (ages 15-19 years) and young adults (ages 20-24 years). Data was analyzed as of 31 December 2022.

### Results:

Between March 2018 and June 2022, 450 clients were initiated on PrEP, 222 adolescents (49%) and 228 young adults (51%). There were 393 (87%) were men-who-have-sex-with-men (MSM) and the remaining 57 (13%) were transgender women (TGW).

At 6 months, 279 (62.0%) of participants came for PrEP refill visits; 59.5% of adolescents and 64.5% of young adults, ( $p < 0.001$ ). At 12 months, only 149 participants (38.4%) came for PrEP refill; 26.1% of adolescents and 52.5% young adults ( $p < 0.001$ ). The

overall percentage of participants returning for PrEP refill at 24 and 36 months was 30.4% and 23.2% respectively.

Eight clients, all in the adolescent group had HIV seroconversions (7 MSM and 1 TGW), at a median (range) of 7 (3-34) months after PrEP discontinuation. Median (range) CD4 at time of HIV diagnosis was 439 cells/mm<sup>3</sup> (235-1053). The HIV viral suppression rate at 6 months was 75%.

### Conclusion:

Despite AYA at risk of HIV being initiated on PrEP at an adolescent-friendly clinic, adolescent PrEP persistence rates at 12 months were significantly lower than in young adults, and subsequent seroconversions were seen. At 3 years, PrEP persistence was seen in only one-quarter of clients. Differentiated care and engagement for adolescents taking PrEP is needed to improve the PrEP cascade to have real world impact of PrEP as part of an effective HIV prevention package.

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## PrEP Use Behaviors and Sexual Health in China During COVID-19 Lockdowns

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**Background:** Longitudinal monitoring of HIV pre-exposure prophylaxis (PrEP) use, sexual health and sex behaviors in Chinese men who have sex with men (MSM) are limited. Here we reported self-reported PrEP use patterns, newly diagnosed sexually transmitted infections (STIs) and sex behaviors among MSM PrEP users living in China prior to the ease of COVID quarantine policies, and identified potential influence from study sites, PrEP provision modes, and dosing strategies.

### Material and Methods:

MSM in Guangzhou and Wuhan were recruited by online ads, clinic flyers, and community referrals. Behavioral survey data were collected at baseline and quarterly follow-ups over 6 months. All MSM were prescribed oral PrEP with the autonomy to choose to pick up the medications at the study clinic or to receive by mail delivery. Univariate and multivariate logistic regressions with Firth's correction were conducted in Stata 15.0. Notably, the 3-month follow-up in Wuhan took place in October-November 2022 during the city's widest COVID-19 lockdown since early 2020.

### Results:

From September 2021 to December 2022, 775 MSM were enrolled and initiated PrEP (mean age=28.4, SD=6.0). About 76% of the participants self-identified as gay men and 17% self-identified as bisexual. Overall, 57 (8.6%) participants dropped out, including four cases due to adverse events and one case of HIV seroconversion. A total of 520 participants completed Month 3 follow-ups (316 in Guangzhou, 204 in Wuhan), and 232 completed Month 6 follow-up (Guangzhou only). Regarding study-site effects, we detected significant between-

city differences in PrEP use and condom use habits at Month 3: Compared to Guangzhou, participants in Wuhan reported a lower rate of newly diagnosed STI since baseline assessment (2.4% vs. 8.9%,  $p=0.003$ ) and higher prevalence of "never using condoms in sex" at Month 3 (8.3% vs. 3.5%,  $p=0.02$ ). Multivariate analyses indicated MSM in Wuhan were more likely to choose mail-delivered PrEP (81.9% vs. 19.2%,  $aOR=18.5$ , 95%CI: 11.2-30.7) and to choose on-demand dosing strategy (72.5% vs. 24.6%,  $aOR=7.7$ , 95%CI: 4.7-12.8). Among participants with complete follow-up data from baseline to Month 6 ( $n=232$ , Guangzhou only), the prevalence of having sex under substance influence slightly decreased from baseline but remained common at Month 6 (57.8% vs. 48.7%). Neither PrEP dosing strategies nor PrEP medication provision modes were found significantly associated with the occurrence of newly diagnosed STIs, never using condoms in sex, or sex under the influence of substance use over time.

### Conclusion:

Remote PrEP is highly promising in facilitating PrEP scale-up in China, especially among individuals with limited access to healthcare during the COVID-19 era, as overall study retention remained high with infrequent dropouts. Neither mail-delivered PrEP nor on-demand dosing was found significantly increased risks of STIs or sex behavioral changes. Nevertheless, ongoing HIV/STIs testing among PrEP users remains critical in controlling the epidemic.



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## Evaluating Pre-exposure Prophylaxis Uptake, Adherence and Persistence Outcomes Among Adolescents and Young Adults Aged 10-24: A Global Systematic Review, Meta-Analysis, and Meta-Synthesis.

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### Background:

Pre-exposure prophylaxis (PrEP) is a highly effective intervention for preventing HIV infection. This review aimed to synthesize evidence related to PrEP care cascade outcomes among adolescents and young adults (AYA, 10-24 years old) to inform the development of tailored HIV prevention interventions within this population.

### Material and Methods:

We searched six databases for peer-reviewed English articles published from January 1, 2010, to February 11, 2022, with no geographic limitation. Quantitative and qualitative studies that reported PrEP care cascade outcomes among AYA were eligible for inclusion. Studies were grouped by stage of the PrEP care cascade (uptake, adherence, and discontinuation and re-initiation) and pooled in a random effects model using R. We conducted a thematic meta-synthesis of data from qualitative studies using MAXQDA software.

### Results:

Out of 4545 de-duplicated studies screened, 87 were included. 62% (n=54) of the studies were from high-income countries (HICs), 27% (n=24) of studies targeted adolescent and young MSM (AYMSM), and 25.3% (n=22) engaged adolescent girls and young women (AGYW). Overall, PrEP adherence was lower in lower/middle income countries (LMICs) than HICs (36% vs. 66% adherence rate at 6 months,

respectively). By population type, the pooled PrEP adherence rate at six months was lowest among AGYW (33% adherence) compared to AYMSM (72%) and mixed populations (53%). Seven studies explored factors associated with PrEP discontinuation and eight studies assessed daily oral PrEP persistence. PrEP providing relief from fear of HIV infection and perceived HIV risk were the most explored facilitators of PrEP uptake and adherence. In contrast, lack of parental support, low perceived HIV risk, stigma, and fear of side effects were the most cited barriers.

### Conclusion:

AGYW in LMICs have the worst PrEP outcomes. This may be due to a disproportionate allocation of PrEP resources to LMICs relative to HIC, and current programs being centered on sexual and gender minority youths in most LMICs. More tailored strategies that involve parents/guardians and stigma-reduction interventions are needed to scale up PrEP cascade outcomes among AYA, especially among AGYW, in LMICs.



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## A Community-Based Organization HIV Pre-exposure Prophylaxis (PrEP) Service Delivery in Kuala Lumpur, Malaysia; From Demonstration to Implementation

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### Introduction:

Community-based organizations (CBOs) are untapped potential differentiated PrEP service delivery models in Malaysia. A pilot PrEP demonstration project (MyPrEP) conducted in 2018 showed the feasibility of PrEP delivery in the Community Health Care Clinic (CHCC) of Pink Triangle (PT) Foundation, one of the largest CBOs in Klang Valley with high acceptability and retention rates over 12 months. This audit was conducted to document and evaluate PrEP uptake, retention and cessation in a CBO led PrEP service delivery model offering reduced cost PrEP.

### Material and Methods:

This was a descriptive single-center study which included all clients who initiated PrEP in CHCC from January 2019 to December 2022. We collected data on baseline socio-demographics and clinical characteristics of clients who initiated PrEP and 6 monthly PrEP care continuum variables including PrEP initiation, retention and cessation from electronic medical records. In our CBO model, all clients are seen initially by a doctor at PrEP initiation while subsequent visits will be conducted by trained community healthcare workers based at CHCC with clinical oversight from doctors.

### Results:

Out of 576 clients who ever received PrEP, the majority (94.8%) were men who sex with men (MSM) of Chinese ethnicity (57%) with a median age of 31 (27-37) years at PrEP initiation. At initial stage

(January – December 2019), a median of 13 (IQR 10 - 20) new PrEP clients/month received PrEP from CHCC but this reduced to 5 (IQR 4 – 9) clients/month during the peak of COVID-19 pandemic (January 2021 – June 2022) in our country. The PrEP initiation rate improved to a median of 20 (17 – 27) new clients/months for the last half of 2022. The retention rates were 56%, 81%, 68% and 53% respectively after 3, 6, 12 and 24 months of PrEP initiation. There were 26 episodes of recorded PrEP cessation, 10 due to adverse events, 9 due to perceived low risk, 3 due to not being able to access PrEP due to COVID lockdowns and 1 due to financial issues. There were two cases of HIV seroconversions; one in a patient who stopped PrEP for 3 months due to low HIV risk perception while another case occurred during the first month of PrEP initiation although the baseline point-of-care HIV fourth-generation test was negative. Both were referred to public healthcare facilities for further HIV management in view of financial issue.

### Conclusion:

CBO-led PrEP service delivery models are able to potentially reach more PrEP clients than traditional health care service delivery models. There remains ample opportunities to improve retention rates by addressing adverse events and changing HIV risk perception earlier to prevent discontinuations. This audit served as the baseline information for quality improvement of CBO-led PrEP service in CHCC.

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## Preliminary Learnings from TelePrEP – Vietnam’s First Large-Scale Pre-exposure Prophylaxis Telehealth Program

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### Background:

Pre-exposure prophylaxis (PrEP) services were first introduced to Vietnam in 2017 and have since been scaled to reach over 60,000 individuals. During the 2021 COVID-19 Delta surge, the Ministry of Health (MOH) Vietnam Administration for HIV/AIDS Control (VAAC) and partners rapidly adopted remote PrEP delivery approaches to ensure continuity of HIV preventive care. During this period, 81% of clients indicated desire to continue receiving remote PrEP services. This provided a foundation for initiating Vietnam’s first large-scale telehealth PrEP program, “TelePrEP,” to address barriers to in-person delivery of PrEP.

### Description:

The USAID/PATH STEPS Project assisted VAAC to design the TelePrEP pilot program through (1) formulating a TelePrEP pilot protocol and securing MOH approval; (2) developing technical requirements for providers/clinics; (3) creating standard operating procedures for TelePrEP service delivery; (4) developing an application for client-provider interaction and module on the national PrEP reporting system; (6) training providers and managers; (7) organizing demand generation events to promote TelePrEP; and (8) evaluating the pilot program to inform scale-up. In June 2022, STEPS supported VAAC to pilot TelePrEP at four key population-led private clinics (Glink and Galant in Ho Chi Minh City; Glink and Alo Care in Dong Nai Province) and one public clinic at the Dong Nai Center for Disease Control. Current PrEP clients are

reached through TelePrEP, mobile-PrEP or facility-based PrEP depending on preference.

**Lessons Learned:** From June—December 2022, 3,490 PrEP clients at the five sites were offered the option of transferring to TelePrEP. Of these, 218 (6.2%) have transitioned to TelePrEP (91% aged <35 years old). In preliminary feedback, clients cited increased convenience, reduced travel times, and improved adherence to PrEP as key benefits of the model, and indicated that TelePrEP should also be offered to new PrEP users to reach more clients who cannot regularly access in-clinic PrEP services.

### Conclusion:

The initial results from TelePrEP mark a milestone in Vietnam’s efforts to increase the accessibility of PrEP, which historically has been difficult for certain populations to access, including those who live far from clinics or face other barriers to attending in-person visits. Evidenced-base scale-up of TelePrEP, alongside other differentiated PrEP models, will be essential for ending AIDS in Vietnam by 2030.



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## Temporal Change of PrEP Use and Adherence in MSM: Pill Fatigue or COVID-19 Effect?

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### Background:

Pre-exposure prophylaxis (PrEP) is an effective HIV preventive measure for MSM. However, PrEP usage and adherence may change over time due to pill fatigue, and/or the impact of circumstantial influences, notably the prevailing COVID-19 epidemic.

### Material and Methods:

A PrEP implementation study was conducted in Hong Kong with 1-year follow-up (free Truvada pill refill and consultation) the timing of which clashed with the COVID-19 epidemic. Monthly survey data of MSM participants were analyzed in generalized estimating equation (GEE) models for each outcome variable (schedules: daily, on-demand, alternating, no PrEP; high adherence). Reported high PrEP adherence referred to not missing doses for anal sex for on-demand regimen, or above 90% for daily use in the month. Months from baseline and COVID-19 epidemic waves (wave 1: 1 Jan-19 June 2020; wave 2: 20 June-23 October 2020; wave 3: 24 October 2020-30 December 2021; wave 4: 31 December 2021-7 July 2022) were separately included in GEE models.

### Results:

Among 312 MSM (median=30, IQR=26-38 year-old) recruited in January 2020 – June 2021, 42% were PrEP-experienced at baseline. Since the first PrEP visit (1475 monthly surveys from 286 MSM), the adopted monthly schedule was 43%-77% for daily PrEP, 12%-40% for on-demand PrEP, 0%-10% for alternating schedule, and 1%-8% without PrEP. There was a declining proportion of MSM on daily PrEP (OR=0.90, 95%CI=0.88-0.93 for months from baseline; OR=0.45, 95%CI=0.27-0.76 for wave 4 comparing with wave 1), but increasing proportion with on-demand schedule (OR=1.13, 95%CI=1.08-1.18 for months; OR=2.71, 95%CI=1.14-6.43 for wave 4 comparing with wave 1) or no PrEP (OR=1.20, 95%CI=1.04-1.38 for months). High

adherence was associated with later waves (wave 1 as reference, OR=5.42 for wave 2, OR=3.59 for wave 3, OR=2.25 for wave 4) but not months. For MSM reporting missed doses, the main reasons were omission or busy (monthly range=39%-68%) and forgetting to bring pills along (monthly range=5%-38%).

### Conclusion:

PrEP adherence was associated with epidemic wave but not fatigue over time, while PrEP usage pattern was associated with both wave and months. Preoccupation with daily activities as affected by COVID-19 epidemic might play a role.



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## Use Patterns of Pre-exposure Prophylaxis (PrEP) among Transgender Women at a Transgender-Led Health Clinic in Thailand

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### Background:

The Tangerine Clinic is a transgender-led health clinic, which integrates gender-affirming care into HIV and sexual health services in Bangkok, Thailand. HIV pre-exposure prophylaxis (PrEP) is routinely offered as part of combined HIV prevention strategies for transgender women exposed to HIV risk. We assessed PrEP use patterns among transgender woman clients in our real-world clinic setting.

### Material and Methods:

We collected demographics, behavioral risk characteristics, and clinical data from transgender woman clients who initiated PrEP at the Tangerine Clinic between June 2020–November 2022 and had at least one month up to three months of follow-up. We categorized PrEP use patterns into those who did not return, discontinued (no refill after 30 days of finishing PrEP), continued to refill, and restarted (started after discontinuation). Baseline characteristics were compared between those who continued the refills and those who restarted, using Pearson's chi-squared test and Exact probability test.

### Results:

Of 791 transgender women, mean (SD) age was 27.2 (5.9) years; 41.3% had >1 partner; 17.1% participated in group sex; and 26.4% used substances. Among them, 420 (53.1%) did not return; 146 (18.5%) discontinued PrEP; 139 (17.6%) continued the refills; and 86 (10.8%) restarted PrEP.

Median (IQR) days between the first two PrEP cycles was 166 (86–326), and 104 (88–226) between the next two cycles. There was no HIV seroconversion among transgender women who continued the refills or restarted PrEP. PrEP restarters were more likely to participate in group sex (28.6% vs. 5.0%,  $p < 0.001$ ) and to have no-to-low HIV self-perceived risk (28.0% vs. 12.9%,  $p < 0.001$ ) than those continuing refills.

### Conclusion:

Transgender women demonstrated variable patterns of PrEP use in our real-world clinic setting in Bangkok. Although less than one-fifth of clients used PrEP continuously, over ten percent returned to restart following a gap. Risk contexts may vary over time and therefore result in different PrEP use patterns. Healthcare providers should make support available for various PrEP use patterns and empower their clients to make informed decisions effectively tailored to their own lifestyles.



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## Trend in HIV Prevalence among Thai Men Who Have Sex with Men and Transgender Women after Implementing Pre-exposure Prophylaxis and Treat All in National HIV Guidelines: An Interrupted Time Series Study

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**Background:** Thai National HIV Guidelines have adopted policies to recommend pre-exposure prophylaxis (PrEP) for key population mainly men who have sex with men (MSM) and transgender women (TGW) and antiretroviral treatment initiation at any CD4 count (Treat All) since 2014. We estimated changes in HIV prevalence following Treat All and PrEP implementation in Thailand in 2014 and free PrEP in 2019 using our National Voluntary Counselling and Testing (VCT) Database under the country's Universal Health Coverage (UHC) system.

**Material and Methods:** HIV testing data from the VCT Database were retrieved from MSM and TGW individuals aged  $\geq 15$  years from 2008-2022. HIV prevalence was calculated by dividing the total number of confirmed HIV-positive cases by the total number of HIV testing by quarterly. We used the segmented regression to assess changes in levels and trends of HIV prevalence before and after Treat All and PrEP implementation in 2014 and also after free PrEP in 2019.

### Results:

A total of 79,407 participants, consisted of 76,393 (55%) MSM and 3,014 (4%) TGW. The median age at HIV testing was 23.9 (IQR 19.6, 30.7) years. The overall HIV prevalence was 23.1% (95%CI 22.8, 23.4%) with 23.2% (95%CI 23.0, 23.6%) in MSM and 18.3% (95%CI 16.8, 19.9) in TGW. The HIV prevalence decreased from 80.5% to 22.6% in the period before Treat All and PrEP implementation

and after implementation, respectively. Median (IQR) CD4 count at HIV diagnosis among MSM was 253 (86-415) cells/mm<sup>3</sup> and 239 (81-447) cells/mm<sup>3</sup> in TGW. Immediately after Treat All and PrEP implementation, there was a 43.2 (95% CI -52.8 to -33.6) percentage point decrease in the predicted value of HIV prevalence, with a subsequent decrease of 1.26 (95% CI -1.87 to -0.65) percentage points per quarter. At the end of the study period, HIV prevalence was 1.36 percentage points (95% CI -1.79 to -0.93) with a reduction in HIV prevalence throughout the period of implementation trend. After adjusted with Treat All and PrEP implementation in 2014 and free PrEP in 2019, there was a 40.0% (95% CI -48.5 to -31.6) percentage point decrease in the predicted value of HIV prevalence, with a reduction trend of 1.9% (95% CI -2.6 to -1.2) percentage points per quarter. The overall trend of HIV prevalence decreased steadily from 2% (95% CI -2.6 to -1.4) to 3.5% (95% CI -5.0 to -2.0) after the impact of Treat All and PrEP implementation in 2014 and offering free PrEP in 2019 under the UHC at the end of study period, respectively.

### Conclusion:

Overall HIV prevalence among MSM and TGW decreased gradually over time since the recommendation of Treat All and PrEP in Thai National Guidelines. Treat All and PrEP must continue to be available without cost under UHC as key strategies to reduce the risk of HIV transmission and acquisition among these groups.



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## Enrollment and Discontinuation of PrEP in China: Results from a Demonstration Trial

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### Background:

Limited evidence is available for PrEP persistence in China. This study investigated the PrEP uptake and discontinuation among Chinese PrEP users during 2021-2022.

### Material and Methods:

A PrEP demonstration trial was conducted in Guangzhou and Wuhan, China, providing PrEP-eligible people with 12-month dosages of daily Truvada<sup>®</sup> for free. We adopted a hybrid community-clinic-partnership model for recruitment, medication delivery, and follow-up, where participants can complete all study procedures online except for lab/clinical examinations. Here we reported the PrEP uptake, retention, and PrEP discontinuation (defined as loss-to-follow-up, voluntary stop using PrEP, or quitting PrEP due to adverse events).

### Results:

We enrolled 849 people, and 776 people initiated PrEP (91.4 %, median age= 29.2, range 18.5-59.6). 99.5% (765/766) were males, and 94.5% (724/766) self-identified as gay or bisexual. Over 70% are working, and about 60% earn ≥700 USD per month. 43.5%(n=338) received PrEP through the mail (mean delivery time= 1.67 days). 88.8% (447/503), 84.4% (196/232), 81% (120/148), and 27.6% (21/76) completed in-person or remote follow-ups at 3, 6, 9, and 12 months, respectively. A total of 57 participants (7.3%) discontinued PrEP before the study ended, of whom 52.6% discontinued within the 1st month, and another 19 (33.3%) discontinued within 3 months . No statistically significant differences were detected between participants who discontinued PrEP and those who retained on

age, gender, and monthly income. Common reasons for discontinuation include moving (n=12, 21.1%), low perceived risk of HIV infection (n=14, 24.6%), and limited mobility during the pandemic lockdowns (n=5, 8.8%). Overall, 17 participants (2.2% of the total sample) reported adverse events, and 4 (7% of discontinuations and 0.5% of the total sample) discontinued PrEP due to adverse events. The most frequently reported events were skin rash (n=5), nausea (n=5), and diarrhea(n=2).

### Conclusion:

Our project demonstrated the feasibility and safety of PrEP in China with high persistence after 3-6 months. However, persistence remains a challenge due to both individual and structural factors. Disruptions from the COVID-19 pandemic and related public health responses may have increased the risk of discontinuation among PrEP users in China. Diversifying modalities of PrEP provision is also highly warranted in the PrEP care continuum.

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## HIV Pre-exposure Prophylaxis Awareness, Use and Continuation Cascade among Transgender Women in 11 Countries in Asia

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### Background:

Transgender women in Asia have a substantially higher risk of acquiring HIV compared to other population. HIV pre-exposure prophylaxis (PrEP) could reduce new HIV infections among transgender women, but few data are available on transgender women's awareness, use, and continuation of PrEP in Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Philippines, Thailand and Vietnam.

### Material and Methods:

We analyzed cascade data on PrEP awareness, use and continuation among transgender women respondents from an online cross-sectional survey conducted in 11 Asian countries between May-November 2022. Multivariable logistic regression was used to identify factors associated with PrEP awareness.

### Results:

Among 1,250 transgender women, 77.6% were aware of PrEP. Of these, 60.8% had used PrEP,

18.4% did not want to, and 20.8% wanted to but had not (top reasons: 42.6% concerned about PrEP side effects, 34.2% did not know where/how to get PrEP, and 27.7% unavailability of PrEP).

Of those who had used PrEP, 78.1% were still using it, while 19.5% had discontinued PrEP (top reasons: 30.4% not having too much sex, 27.8% not wanting to take pills, and 26.1% were concerned about PrEP side effects). In addition, 2.4% stopped using PrEP permanently (top reasons: 35.7% monogamous relationship, 35.7% unavailability of PrEP, and 28.6% concerns about PrEP side effects).

Knowing HIV status (aOR=1.81, 95%CI=1.19-2.75), living in a capital/major city (aOR=1.57, 95%CI=1.16-2.14), having a romantic relationship (aOR=1.60, 95%CI=1.19-2.16), engaging in sex work in the last six months (aOR=1.98, 95%CI=1.44-2.73), having condomless intercourse in the last six months (aOR=1.47, 95%CI=1.10-1.97), and living in a country with relatively wide access to PrEP (aOR=1.48, 95%CI= 1.08-2.03) were associated with PrEP awareness.

### Conclusion:

Three-quarters of transgender women in Asia were aware of PrEP. However, 20% had not used it although they wanted to. Implementation strategies to facilitate PrEP availability and access to PrEP service tailored to transgender women are urgently needed.



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## Overcoming Barriers: Enabling HIV Self-Testing, Remote Initiation, and Demedicalized Delivery in a Peer-Led Pre-exposure Prophylaxis (PrEP) Program for Men Who Have Sex With Men (MSM) In the Philippines

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### Background:

Since its introduction in 2017, the uptake of HIV PrEP in the Philippines is still considered low. Barriers include challenges to PrEP service access, further highlighted by limited mobility caused by COVID-19. More convenient ways of accessing PrEP are urgently needed. Here we introduce a peer-led PrEP program using a demedicalized approach, and remote initiation and follow-up with HIV self-testing.

### Description:

MSM clients who messaged the online, unassisted HIV self-testing program of LoveYourself (SelfCare) were offered their interest in PrEP. A blood-based self-test kit is sent to their delivery address. Clients are guided with the use of the kit and are instructed to report their results. Once marked HIV non-reactive, a self-assessment tool is sent to them to determine their sexual behavior and the presence of the following: acute retroviral syndrome, kidney-related morbidity, and supplementation. Their answers are then validated and clients are provided PrEP information and counseling by a trained peer via telemedicine. Their answers are then checked by a physician. Once marked eligible, a prescription is issued, and the client is sent one PrEP bottle, another self-test kit, and a QR code for their refill instructions delivered via courier within 3 days. For follow-ups, the client uses the received self-test kit and reports the results. Once marked HIV non-reactive, the client is sent one self-test kit with PrEP bottles relative to the number of their visit.

### Lessons Learned:

Between August and December 2022, 187 clients marked their interest to take PrEP through this process. 175 clients reported their results, marked eligible, and were enrolled in the PrEP program. For follow-up visits, 53 clients have completed their first refill (issued 2 PrEP bottles), and 15 clients with their second refill (issued 3 PrEP bottles). Ten clients decided to stop using PrEP after their first bottle.

### Conclusions/Next Steps:

This program provides evidence that a demedicalized approach, remote initiation, and integration of HIV self-testing in a peer-led PrEP program are possible. Further demand-generation activities will be done to increase awareness and enable access to more clients.

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## Daily PrEP Use Patterns among Clients of Key Population-Led Clinics in Thailand

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### Background:

Pre-exposure prophylaxis (PrEP) is highly effective for preventing HIV when taken as prescribed by individuals with risks. PrEP use may be non-continuous with cyclical use patterns. We studied real-life PrEP use patterns among men who have sex with men (MSM), transwomen, female and male sex workers (FSW, MSW), and people who inject/use drugs (PWID/PWUD) in key population-led clinics in Thailand.

### Material and Methods:

Demographic and clinical data were collected between June 2019 to October 2022 from ten key population-led clinics in Thailand. Kruskal-Wallis equality-of-populations rank test and Pearson's chi-squared test were used for data association. PrEP use patterns were categorized into No Return (after PrEP initiation), Discontinuation (>30 days after scheduled visit), Continuous Refill, and Restart (returned after discontinuation).

### Results:

Of 16,288 new PrEP clients (12,375 MSM, 2,223 transwomen, 322 FSW, 453 MSW, and 27 PWID/PWUD), 93.7% used daily PrEP while 6.3% using event-driven PrEP. Among daily PrEP users, 22.8% of clients did not return for PrEP refills after initiation, 18.4% discontinued by not returning for their refill appointment 30 days after finishing PrEP, 35.2% continuously refilled their prescriptions, and 23.6% restarted after a gap.

More than half of transwomen (37.3% No Return/20.9% Discontinuation) and FSW (32.4% No Return/21.2% Discontinuation) dropped-off PrEP. Drop-off was lower among MSW (16.9% No Return/26.3% Discontinuation) and MSM (20.7% No Return/17.7% Discontinuation), and lowest among PWID/PWUD (15.4% No Return/0 Discontinuation). PWID/PWUD (80.8% vs. 3.8%), FSW (36.0% vs. 10.4%), and MSM (38.4% vs. 23.2%) practised Continuous Refill more than Restart. MSW (48.6% vs. 8.2%) and transwomen (22.6% vs. 19.2%), however, preferred Restart to Continuous Refill. Median (IQR) days off PrEP after the first cycle was 159.0 (86.0-263.0) and was 123.0 (87.0-221.0) after the second cycle.

### Conclusion:

Different PrEP use patterns were seen among key populations in a real-life setting in Thailand. Transwomen and FSW had the highest drop-off and how they preferred PrEP continuation seemed to vary. Support for different PrEP use patterns must be made available to allow an informed health decision to be made based by key populations on their life contexts.



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## Impact of Thailand Test and Treat Contest on CD4 Level and Rapidity of ART Initiation at Provincial and Country Levels

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### Background:

Thailand provided free HIV testing twice a year and antiretroviral therapy (ART) initiation at any CD4 level to all citizens since 2014 under its Universal Health Coverage. Median CD4 count at HIV diagnosis, however, only slightly increased from 121 in 2014 to 187 cells/mm<sup>3</sup> in 2021. 52% of newly diagnosed clients in 2021 still had CD4 count below 200 cells/mm<sup>3</sup>. We studied the impact of Thailand Test and Treat Contest (TTTC) on CD4 count at HIV diagnosis and the rapidity of ART initiation at provincial and country levels.

### Material and Methods:

TTTC was launched in December 2021 to encourage the implementations of service innovations, including partnerships between local civil society organizations (CSO) and government offices, to enhance early HIV testing and same-day ART initiation at a provincial level. Median CD4 count at diagnosis, proportion of newly diagnosed clients with CD4 count <200 cells/mm<sup>3</sup>, and weighted ART initiation score were compared pre-intervention (July-December 2021) and post-intervention (March-September 2022). Weighted ART initiation score was calculated using number of clients initiating ART on a particular day; the highest weight (11) given to same-day ART initiation, lower weight given on the following days, and the lowest weight (1) given on ART initiation >28 days after diagnosis. CD4 count and ART initiation data were retrieved from the National AIDS Program Database.

### Results:

Thirteen provinces joined the contest. There was no significant improvement post-intervention in median CD4 count (207.5 vs. 226.0 cells/mm<sup>3</sup>, p=0.101) and proportion of CD4 count <200 cells/mm<sup>3</sup> (49.3% vs. 46.6%, p=0.051) at diagnosis. The overall weighted score of rapidity of ART initiation significantly improved post-intervention (3.9 vs 4.2, p<0.001). At provincial level, significant improvement was seen only in Bangkok, Phitsanulok, and Amnat Charoen. CSO-government partnerships (13 provinces) and formal establishment of same-day ART initiation flow in hospitals (11 provinces) were the most commonly implemented provincial strategies.

### Conclusion:

TTTC served as a catalyst to boost provincial actionable plan to implement service innovations. Rapidity of ART initiation could be achieved in short period. However, more serious CSO-government partnerships may be needed to reach and test individuals earlier. TTTC will continue its next phase in January-June 2023.

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## Diversification of Modalities Expands Understanding and Confidence in the Use of Motivational Counseling Skills in Vietnam

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### Background:

Motivational interviewing is effective for behavior change in HIV programs. Since 2020, the USAID-funded Meeting Targets and Maintaining Epidemic Control (EpiC) project in Vietnam has trained HIV providers in six project-supported provinces on motivational counseling (MC), an adaptation of motivational interviewing techniques. Understanding the significance of MC, the Vietnam Administration of HIV/AIDS Control (VAAC) and EpiC are partnering to train health staff from an additional 55 provinces. Interest outpaced funding, so online and offline trainings were used. The online program was created by an instructional design firm that converted the offline training curriculum.

### Material and Methods:

From September 2022 to January 2023, EpiC collaborated with the VAAC to train 192 HIV health staff from provincial centers for disease control, regional and national institutes. They were divided into three regional cohorts for the Southern, Central, and Northern provinces, respectively. Each cohort participant then attended either a two-day offline training or a self-paced online program with two two-hour facilitated review sessions via Zoom. All participants were given a 14-question pre- and post-training knowledge assessment, and a post-training course evaluation tailored to each training format. Follow-up emails that condensed the key knowledge of the training were also sent to participants during the four weeks following course completion. By the end of January 2023, EpiC and the VAAC had trained a total of 71 participants offline and 121 participants online.

### Results:

Average pre-training knowledge of concepts (41.5%) was relatively similar across the six cohorts regardless of training format; however, offline training led to a higher increase in post-assessment results compared to online training (offline: +38.4%, online: +15.3%). During the post-training evaluation, attendees self-evaluated a higher level of understanding of MC concepts (pre-training: 2.18, post-training: 4.14 on a five-point scale). Results also indicated a positive change in their confidence using MC skills (pre-training: 2.26, post-training: 4.09). Additionally, participants used a 10-point scale to rate whether learning objectives were achieved (offline: 9, online: 8.43), the content was helpful and applicable to work (offline: 9.08, online: 8.56), and commitment to applying learned skills (offline: 8.76, online: 8.51). Online and offline course evaluations showed positive feedback on session design, facilitation, and opportunities to practice skills.

### Conclusion:

Online and offline training helped participants acquire confidence, knowledge, and skills in applying MC to practice. Although knowledge assessments showed less growth in online cohorts, improvements were recorded. Participants in the online training also found the content applicable to work and were committed to applying it. The overall results demonstrate that online training is a viable, but not preferable, alternative to offline training if funding is limited. Nevertheless, the diversification of training formats has proven crucial to the expansion of MC, making it more easily accessible for health staff nationwide. Additional analysis is needed to understand whether online training can be improved to boost outcomes.

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## The Role of Peer Support on Adherence to Antiretroviral (ARV) Therapy : A Meta-Analysis Study

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Adherence to antiretroviral (ARV) therapy is the key to successful treatment in people living with HIV (PLHIV), characterized by suppressed HIV viral load. To ensure that people living with HIV are obedient and prevent loss to follow-up, WHO (2016) proposes several ways, one of which is peer support. Peer support is considered effective to help people living with HIV overcome psychosocial and internal barriers to achieving a quality life. This need cannot be provided by health care.

A meta-analysis study was conducted to obtain conclusions about the effect of peer support on adherence to ARV therapy in people living with HIV. Database searches were carried out in March – June 2022 through MEDLINE (PubMed), DOAJ (directory of open access journals), PLoS ONE, and Google Scholar. Inclusion criteria included: peer support on ARV therapy, published in Indonesian and English, observational design study, published in the period 2002 – 2022, adult participants, and available in full-text. Exclusion criteria included: having different operational definitions and pregnant women participating. The systematic review was carried out using PRISMA (preferred reporting items for systematic review and meta-analysis).

A total of 8 (eight) studies were included in the meta-analysis and analyzed separately using aRR and aOR risk estimation. Both risk estimates resulted in heterogeneity index (I<sup>2</sup>) of 65% and 82% so the analysis used was a random effect model. In both risk estimates, peer support affects adherence to ARV therapy by aRR = 1.27 (95% CI = 1.13 – 1.44; P = 0.0001) and aOR = 1.97 (95% CI = 1, 16 – 3.34; P = 0.01) and statistically significant. Both funnel plot of risk estimation shows a potential for publication bias, characterized by an asymmetric distribution between plots.

This finding indicates that peer support affects adherence to ARV therapy in people living with HIV. It suggested that peer support be integrated with health care so that their existence is sustainable and in line with the treatment of PLHIV.

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## Adolescent and Young Men and Women's Divergent Preferences for Integrated PrEP Delivery Services: A Discrete Choice Experiment in Cape Town, South Africa

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### Background:

Integrated sexual and reproductive health services have been promoted in the scale-up of PrEP delivery to adolescent and young people (AYP) in sub-Saharan Africa. Service delivery modes are drivers of choice for AYP seeking PrEP and implementers could minimize barriers to services and maximize effective PrEP use by understanding these modes and preferences.

### Material and Methods:

A discrete choice experiment (DCE) was conducted in Cape Town, South Africa, in February 2021 with male and female AYP aged 15 to 29 years. Participants were asked to choose between two hypothetical PrEP delivery models composed of six attributes: PrEP delivery location, adherence support, PrEP modality, contraception type (females only), partner STI testing and notification, and waiting time. Fixed effects logit models were run to estimate the preferences and trade-offs among PrEP delivery alternatives, using a 95% level of significance.

### Results:

Overall 343 AYP (196 female; 57%; median age=20yrs) were enrolled. While most participants (86%) were PrEP-naïve, 67% indicated that they were ready to start using PrEP. Overall, no significant preferences were found regarding type of PrEP, PrEP pick-up location, or waiting times. AYP

indicated a preference for adherence support delivered via SMS (OR=1.33; 95%CI: 1.14–1.56), a health app (OR=1.25; 95%CI=1.08–1.46) or peer group support (OR=1.34; 95%CI=1.17–1.55) when compared to in-person counseling. While male AYP overall did not have many attributes at a significant level driving preference, female AYP indicated some preference for contraception delivered in combination with PrEP (OR=1.44; 95%CI: 1.18-1.76) and were significantly less likely to choose PrEP delivery models that included partner STI testing if the results were delivered in-person (OR=0.83; 95%CI: 0.69-1.00) or by non-anonymised courier (OR=0.49; 95%CI: 0.35–0.67) compared to models that included no partner STI notification.

### Conclusion:

Best-aligned PrEP delivery for AYP include digital or peer group adherence support, and for female AYP, models that provide multiple product therapies (contraception and PrEP). Female AYP preferences highlighted their concerns with service models that included non-anonymised STI partner testing notifications. To ensure that delivery models influence positive demand for PrEP, females more than their male peers may favour tailored, gender-responsive service delivery options.



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## Assessing Policy and Health System Barriers and Facilitators to the Integration of Mental Health Screening and Linkage to Care into HIV Services in Cambodia

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### Background:

PLHIV are more likely to develop mental health disorders than their HIV-negative peers, which can affect health and quality of life. Improved integration of mental health services in HIV clinical settings has been suggested as an approach to address the burden and impact of mental health disorders among PLHIV. However mental health screening and linkage to care remains poorly integrated into routine HIV clinical care in Cambodia. We assessed policy and health system facilitators and barriers to the integration of mental health screening and linkage to care into HIV services in Cambodia.

### Material and Methods:

Data on facilitators and barriers to integration were collected through policy and healthcare provider key informant interviews (n=12) and focus group discussions (n=2). Eligible participants were >18 years old, currently working on mental health or HIV-related issues for at least one year, and were identified in consultation with the National Center for HIV/AIDS, and Dermatology and STD (NCHADS), the Department of Mental Health, and Chbar Ampov Referral Hospital. Informed consent was obtained. Interview guides were developed based on The Consolidated Framework for Implementation Research (CFIR) domains. We used Dedoose to code all data consistent with the analytic framework.

### Results:

A total of 12 key informants (4 female) and 12 focus group participants (6 female) were interviewed

between Sept 2021 and June 2022. Their average age was 42 years old and ranged from 28 to 62 years old. Commonly cited policy barriers included: the limited availability of policies and guiding documents around the integration of mental health screening into HIV services; a lack of funding to support screening; a shortage of trained staff to conduct the screenings; and a lack of formal initiatives to promote linkage between HIV and mental health services. Health system barriers included: the lack of integrated “one-stop” mental health and HIV services; a lack of mental health specialists; pressures on staff workload; a lack of funding for services and staff; and limited community engagement. Facilitators at the policy level included: the recent updating of existing policy documents to cover the inclusion of mental health screening into HIV services; allowing for mental health care allocations in HIV program budgets and collaboration between the Department of Mental Health and Substance Abuse and NCHADS. Facilitators at the health system level included: management and leadership support from local government and other stakeholders in establishing service integration; and additional financial support for staff.

### Conclusion:

These findings highlight the importance of addressing the substantial policy and health system barriers and facilitators in support of improved integration of mental health screening and linkage to care into HIV services in Cambodia, particularly those related to available resources, guidance, and workforce capacities. Further collaboration between national HIV and mental health programs is key to meeting these challenges, as is further research on feasible, acceptable, and effective approaches to addressing identified policy and system barriers.

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## Feasibility and Acceptability of Mental Health Screening and Linkage to Care in an Urban HIV Clinical Setting in Cambodia

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### Background:

Around 60,000 People Living with HIV (PLHIV) are on ART in Cambodia, with about 40% of adult PLHIV attending HIV clinics reported to have depression. Mental health disorders among PLHIV have been linked to late ART initiation and poor adherence. Although anxiety and depression screening among PLHIV using the Kessler Psychological Distress Scale (K10) was introduced in Cambodia in 2019, assessment and management of mental health conditions among PLHIV remain limited. Our study aimed to identify barriers and facilitators to mental health screening and linkage services in HIV clinical care settings in Cambodia that might inform future national program scale up.

### Material and Methods:

PLHIV aged  $\geq 18$  and enrolled in ART care at the NCHADS Social Health Clinic (SHC) for  $\geq 12$  months were screened by ART counselors using K10 from April to June 2022. Those screening positive were linked to psychiatric services at Chbar Ampov Referral Hospital located approximately 14 km away. Socio-demographic, HIV clinical, and treatment data were collected from their medical records.

Fourteen Key Informant Interview (KIIs) and four Focus Group Discussions (FGD) were conducted among health care providers (n=14) involved in K10 screening and PLHIV (n=24) that received K10 screening, to assess facilitators and barriers and to evaluate the feasibility and acceptability of integrating mental health screening and linkage into HIV clinical settings. Transcribed data were organized and coded into themes guided by the Consolidated Framework for Implementation Research (CFIR): outer setting, clinic setting,

provider characteristics, and patient characteristics. We conducted content analysis using Microsoft Excel.

### Results:

In total, 362 SHC patients were screened, including 192 (53%) women. Mean age of participants was 45 years old. Overall, average total score of K10 screening was 13 (min:10, max: 44). Among all participants, 328 (91%) participants were likely to be well (scored  $< 20$ ), 19 participants (5%) were at mild level of distress (scored 20-24), 6 PLHIV (2%) were moderate level of distress (scored 25-29), and 9 (2%) were in severe level of distress (scored  $> 30$ ). Among those in severe distress, five patients were referred for further mental health assessment or treatment and four declined referrals. Reasons for declining referral included insufficient funds to pay mental health consultation fees, the long travel distance, and fear of stigmatization and discrimination. All KII respondents reported a need for improved linkage to mental health services. Most PLHIVs and healthcare providers preferred mental health services to be co-located with or near ART clinics services offering treatment for both conditions or accessing mental health services near the ART clinic. Improving the capacity of ART providers to screen PLHIV for mental health conditions and arrange transport for mental health treatment were required priorities.

### Conclusion:

The study found substantial mental health burden among PLHIV in care at the SHC. It also suggested mental health screening among PLHIV was feasible to integrate into routine HIV services. A need to better integrate mental health treatment including one-stop services with access to professionally trained providers and support for patients was identified. Further research on integration preferences and approaches is required.

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## Facilitators of and Barriers to Implementing a Peer-Led Depression Screening Intervention: A Qualitative Study among Transgender Women Living with and without HIV and Their Healthcare Providers in Thailand

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### Background:

There are limited options for the screening of depression that are tailored to the mental health needs of transgender women in Thailand. Mental health services are siloed from other services and are made only available by mental health specialists in conventional public health facilities. 55% of transgender women had negative experiences in public healthcare settings. We therefore explored facilitators of and barriers to implementing a peer-led depression screening intervention for Thai transgender women living with and without HIV at the Tangerine Clinic, a transgender-led sexual health clinic in Bangkok, Thailand, providing integrated gender-affirming healthcare into HIV prevention, care and treatment services.

### Material and Methods:

A peer-led depression screening intervention was implemented between October 2021-January 2022. The intervention involved training transgender peer counselors and gender-sensitive nurses to use the Patient Health Questionnaire-2 (PHQ-2) and PHQ-9 for screening during routine clinic visits. Following

the screening intervention, we conducted two focus group discussions (FGDs) and 23 in-depth interviews (IDIs) with transgender women and healthcare providers (e.g., peer counselors, nurses, physicians) to assess the multi-level facilitators and barriers to, and factors that impacted the feasibility and acceptability of implementing the screening intervention, and social norms around mental healthcare within the Thai transgender community. Interview guides and initial codebook were informed by the Consolidated Framework for Implementation Research (CFIR) to assess patient and staff needs and resources, and related beliefs and feasibility around the screening intervention. FGDs and IDIs were transcribed, coded via inductive techniques, and analyzed using the content analysis approach.

### Results:

The FGDs and IDIs were conducted between March and April 2022. The FGD among transgender women living with HIV included 7 participants and the FGD among transgender women without HIV included 9. IDIs were conducted with 12 transgender women and 11 healthcare providers. All transgender respondents agreed that mental health was a critical challenge within their community due to negative experiences, including rejection by family and friends, school-based bullying, interpersonal relationship dynamics, intimate partner and gender-based violence, and structural and social discrimination. Transgender women, regardless of their HIV status, identified similar benefits from the peer-led depression screening, including accessing mental healthcare included as part of a comprehensive transgender-competent care package. Facilitators of implementation included using the PHQ-2 and PHQ-9 as simple and stepped tools, having transgender peer counselors on the healthcare provider team, and dedicated clinic space for counseling. Healthcare providers stressed the benefits of peer-led screening, capacity building for mental healthcare services (e.g., counseling, cognitive behavioral therapy), and having a psychiatrist at the clinic on a weekly basis. Transgender women and healthcare providers identified the cost of psychiatric treatment as a barrier. Other barriers for transgender women included perceived stigma towards mental healthcare and anticipated stigma in healthcare settings.

### Conclusion:

Implementing a peer-led depression screening intervention at a Thai transgender-led sexual health clinic was considered feasible and acceptable among transgender clients and healthcare

*Abstract*

providers. However, barriers to implementation need to be addressed in order to enhance and expand mental healthcare service integration that is tailored to the needs of this population.



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## Integrating Cervical Cancer Screening into Outpatient HIV Services for Women Living with HIV in a Malaysian Tertiary Teaching Hospital

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Cervical cancer (CC) is the most common, yet preventable cancer affecting women living with HIV (WLWH). HPV self-testing was introduced at our centre in 2020. We initiated efforts to integrate HPV self-testing into outpatient HIV services from November 2021–December 2022. Here, we used the Consolidated Framework for Implementation Research (CFIR) model to describe the challenges and lessons learnt thus far.

We first performed a medical chart review among age-eligible WLWH in active care (2020–2021, n=171) and found that although 73% of WLWH had ever had CC screening, only 12(9.5%) had HPV DNA testing. In the pre-implementation phase (January–June 2022), we focused on improving the inner setting and addressed CC screening knowledge and practice gaps among HIV healthcare providers (HCPs) and WLWH. Structural gaps in clinic were concurrently enhanced by ensuring availability of necessary equipment and posters to facilitate screening orders and referrals. Two outcomes were consistently evaluated, 1)CC screening engagement defined as any discussion on CC screening initiated by HCPs and/or WLWH during their HIV consult and 2)screening uptake defined as the number of HPV testing completed.

In June 2022, our first evaluation revealed that 7/69(10%) women had CC engagement, with only 2(2.9%) performing HPV testing. The top three reasons for poor engagement cited by HCPs were time constraints during consultations, forgetting to bring up the subject, and thinking it was irrelevant to the patient. Subsequent changes were made to

include sticker reminders on patient cards (CFIR Domain: Inner Setting, Construct: Communication) beginning July 2022 while maintaining on-going knowledge training among HCPs.

In the second evaluation (August 2022), we found CC engagement had improved (12/30,40%). However, screening uptake remained low (5/30,16.7%). The top three reasons for not performing HPV testing was that patients already had screening done, financial issues or WLWH were not keen. Using this information, we instituted two interventions in September 2022. We added an implementation team member in clinic (CFIR Domain: Process, Construct: Engaging) and obtained funding for subsidized HPV tests (CFIR Domain: Intervention Characteristics, Construct: Cost). These changes led to further increases in CC Engagement (46/68,67.6%) and screening (12/68,17.6%). The top reasons for not performing HPV testing in the third evaluation (December 2022) were patients were already screened, not interested and had time constraints.

Considerable barriers exist in implementing HPV self-testing in a busy clinic setting with limited human resource. Tailored training to address knowledge and practice gaps and structural improvements to facilitate screening orders only marginally improved screening uptake. Constant engagement with HCPs and reminders on patient cards were required to encourage discussions on CC screening between WLWH and HCPs. The addition of a dedicated staff to assist with implementation, in a bustling clinic, allowed for a point of communication for HCPs and WLWH and improved screening engagement and uptake. Timely evaluation and understanding reasons behind poor uptake allowed for tailoring of strategies to improve the implementation process.

HPV screening uptake increased threefold in the last 1 year. Future work to address facilitators and barriers to CC screening among WLWH is needed to increase screening uptake.



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## Mental Health Morbidity Among Clients Seeking Pre-exposure Prophylaxis, Nonoccupational Post-exposure Prophylaxis, and Antiretroviral Therapy Services at Two Key Population-Led Private Clinics in Vietnam

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### Background:

Key populations (KP) and people living with HIV (PLHIV) have an elevated risk of mental health morbidities which can reduce overall wellbeing and impact care-seeking. The USAID/PATH STEPS Project supports KP-led one-stop shop (OSS) private clinics to make mental health care more accessible through integration within routine healthcare and HIV antiretroviral therapy (ART), nonoccupational post-exposure prophylaxis (nPEP) and pre-exposure prophylaxis (PrEP) services.

### Description:

All clients at two KP-clinics in Ho Chi Minh City are screened for mental health using an online screening form or provider-led tools including the DASS21, AUDIT-C and Functioning Suicide Risk screening, and ASSIST. Clients exhibiting mild or moderate mental health symptoms are offered individual counseling as part of PrEP/ART/nPEP and other OSS services. Clients with more severe mental health symptoms are counseled and referred to expert psychiatric care, while continuing to receive supportive counseling at the clinics. During PrEP/nPEP/ART follow-up visits, clients are offered mental health re-screening, in-clinic counseling, psychoeducation, and assistance in developing personal action plans for managing their mental health conditions. Mental health-focused online and

offline communications are implemented to boost mental health awareness and care-seeking.

### Lessons Learnt:

From December 2021 to December 2022, 7,074 individuals received mental health screening, of whom 14% presented with a mental health condition and 94% received counseling and treatment. The most common condition was anxiety (10.2%), followed by stress (6.5%) and depression (3.0%). This pattern was similar across all three client types, though PrEP users exhibited more consistent levels of anxiety and stress (6.0% and 5.9%, respectively). Mental health morbidity was highest among ART users (31%), followed by nPEP (27%) and PrEP (10%) users ( $p < 0.001$ ). ART, nPEP and PrEP users were 7.6x, 6.3x and 1.8x more likely to have mental health conditions than other clients, respectively (OR = 7.6, 6.3, 1.8,  $p < 0.001$ ). Only PrEP and ART users presented with moderate or severe mental health symptoms, with 47%, 40%, and 23% exhibiting symptoms of depression, stress, and anxiety, respectively.

### Conclusion:

We found mental health morbidity to be high overall but highest among ART and nPEP users, suggesting that further integration of mental health within these services is essential for strengthening quality of care. Private-sector OSS clinics play a critical role in addressing mental health and underlying barriers to PrEP, nPEP, and ART uptake and adherence.



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## Facilitators and Barriers to the Integration of Substance Use Screening and Linkage to Care among People Living with HIV in a Tertiary Care Hospital in Malaysia

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### Background:

Substance use (SU) disorders are common among people living with HIV (PLWH) and contribute to suboptimal antiretroviral adherence and quality of life. Malaysia has punitive laws against individuals who possess and use substances which may pose challenges to the effective integration of SU screening and disclosure in healthcare settings. This pre-implementation study aimed to explore facilitators and barriers to the effective integration of SU screening and linkage to mental health care into routine HIV care at a tertiary care hospital in Malaysia.

### Material and Methods:

PLWH receiving care at University of Malaya Medical Centre, Malaysia, between June 2021-Dec 2022 were invited to participate in the study. Participants with and without a history of SU were recruited. Hazardous substance use was assessed using Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) questionnaire ( $\geq 4$  = positive). A semi-structured interview guide developed using the Consolidated Framework for Implementation Research was used to explore the facilitators and barriers to the integration of SU screening and linkage to care as part of routine HIV care. Thematic analysis was used to analyse the data using Dedoose.

### Results:

Twenty one individual interviews were conducted with PLWH (median age=38 years; males=19). Nine screened positive for hazardous SU and five were engaged in mental health care. Participants noted that the criminalization of SU in Malaysia will be a crucial barrier to SU screening and linkage to care. Societal, healthcare professional and self-stigma

towards substance use was also raised as barrier to SU screening and linkage to care. Readiness and motivation to change among substance users were raised as additional barriers to linkage to care. Participants reported that a clear explanation on the rationale of SU screening for all patients by the healthcare provider (HCP) prior to screening would be helpful in facilitating the uptake of the SU screening.

### Conclusion:

Our findings suggest that ensuring privacy and confidentiality of SU disclosure and SU stigma reduction were important strategies to facilitate the integration of SU screening into HIV care in addition to having good HCP-PLWH rapport.



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## Improving Mental Well-Being and Economic Empowerment of PLHIV Through ODH-SEGT: An Integrated and Client-Centered Psycho-Socioeconomic Intervention for Unemployed PLHIV Experiencing Homelessness in Caloocan City, Philippines

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### Background:

In the Philippines, a needs assessment showed significant associations between unemployment, homelessness, and mental distress among PLHIV. To augment the problem, Gabay sa Pulang Laso Inc. (GPLI) integrated Supportive-Expressive Group Therapy (SEGT) into its Open Doors Home (ODH) initiative (a temporary shelter provision and socioeconomic support for unemployed PLHIV experiencing homelessness).

### Description of the Program:

ODH-SEGT was implemented as a psycho-socioeconomic support to unemployed PLHIV experiencing homelessness in Caloocan City, Philippines. The core foundation of ODH-SEGT is reconnecting with oneself through a supportive and empowering environment where a PLHIV shares experiences with fellow PLHIV while addressing socioeconomic needs through employment and education opportunities. A total of 22 PLHIV voluntarily participated and completed the ODH-SEGT Programme between August 19 and October 30, 2022. The intervention was conducted in four phases: (1) baseline screening for anxiety- and depression-related symptoms using a 7-item Generalized Anxiety Disorder and 9-item Patient Health Questionnaire (GAD-7 and PHQ-9), (2)

assessment of PLHIV perceived socioeconomic needs, (3) conducting 12-week SEGT sessions with bi-monthly GAD-7 and PHQ-9 monitoring, and (4) linkage to employment or education.

### Lessons Learned:

The participants' age ranged between 19 and 52 years old (mean=33.3 years old, SD=7.9). Among 22 participants, 18 were unemployed while four had stopped attending school. At the end of the ODH-SEGT intervention, 16 were linked to employment while 5 were included in GPLI educational support and are currently attending the alternative learning system of the government. The 12-session group therapy focused on four major areas of self-expression: (a) Building meaningful relationship with self, (b) Establishing long-lasting relationship with significant others, (c) Preparing for overwhelming emotions, and (d) Developing healthy outlook and setting own criteria of quality of life. The averages in PHQ-9 and GAD-7 at baseline were at moderate levels (12.2 and 12.4, respectively) and significantly decreased to be at low to no risk by Week 10 (4.8 and 4.8, respectively). Among 22 housemates, there were 17 who started antiretroviral therapy (ART) in the same year as they were diagnosed with HIV, while 3 housemates started ART a year after HIV-positive diagnosis, one housemate started ART three years after diagnosis and another one started ART five years after diagnosis. The housemate who started ART five years later was linked to care by Gabay staff when they joined ODH-SEGT—demonstrating this program's capability to address treatment fallouts in the Philippines.

### Conclusion/Next Steps:

GPLI's ODH-SEGT has the potential to improve mental health of people living with HIV through addressing their non-biomedical needs and contributing to a higher quality of life. The next step for the project is the development of the Training of Trainers programme so that the SEGT framework can be replicated in other regions of the country. In addition, a multisectoral collaboration is currently being advocated with the local government unit, social welfare department, and academic institutions in the Philippines.





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## HIV Activist Identity, Commitment, and Orientation Scale: Development, Validation and Application to Evaluate Clinicians' Propensity Towards HIV Activism in Malaysia

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### Background:

Activism, or actions steering societal change, has a long history of securing HIV treatment and is critical in dismantling HIV-related stigma that perpetuates stigma globally. Activism ranges widely from day-to-day (e.g., contesting stigmatizing statements) to large-scale structural actions (e.g., civil disobedience). Greater involvement in activism from allies, or people without lived experience, is needed. This study aimed to develop and validate an HIV activism scale and evaluate Malaysian clinicians' propensity towards HIV activism.

### Material and Methods:

We adapted 16 items from Corning and Myers (2002) and considered clarity and range of engagement in activism across socio-ecological levels. A pilot study was conducted to assess content validity with 26 general practitioners across Malaysia. The modified scale was then tested with 74 primary care physicians across Malaysia to assess its psychometric properties from November 2022 to December 2022. Items were rated on Likert-type scales ranging from 1 to 5; higher scores indicated greater agreement or engagement.

### Results:

The clinicians who identified as male (40.8%), female (59.2%), Chinese (44.9%), Malay (35.9%), and Indian (17.9%), had practised, on average, 11.5 years. An exploratory factor analysis (n=74) was conducted and resulted in a 13-factor solution with scores of three internally consistent factors ( $p < 0.001$ , KMO=0.855, Cronbach's alphas were 0.93, 0.89 and 0.78 respectively): HIV activist identity and commitment, orientation towards day-to-day and structural activism. Clinicians had a mean score of 3.39 on the HIV identity and commitment factor, with 22 clinicians identifying as HIV activists (dichotomized at 4). On the day-to-day activism construct, clinicians had a mean of 2.92 and 16 were reportedly engaging in day-to-day activism regularly (dichotomized at 4). Lastly, on structural activism, clinicians scored on average 2.24 and only 7 were engaging frequently (dichotomized at 4).

### Conclusion:

The study provides concise, structurally valid and reliable measures to evaluate HIV activist identities, commitment and orientation. The propensity of clinicians towards HIV activism can be harnessed as a strong stigma reduction tool because clinician stigma remains a barrier in the Malaysian HIV response. The measure could benefit from further validation as HIV activism continues to be studied alongside capacity-building interventions among clinicians to encourage engagement in HIV activism.

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## Trend and Geographic Variations of Stigma Against Sexual Minority and People Living with HIV in China: Nationwide Evidence From 2015 to 2021

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### Background:

Stigma against sexual minorities and people living with HIV (PLWH) hinders access to both preventive and curative care and services. It, therefore, poses challenges to the global goal of ending AIDS in 2030. Previous studies focused largely on stigma in healthcare settings using measurement indices designed for data collection among healthcare providers or stigmatized groups, including sexual minorities and PLWH. To complement existing knowledge, societal stigma, as characterized by social attitudes, should be monitored to track the progress toward a conducive environment for HIV prevention and control. This study aims to characterize the trend and geographic variations of societal stigma against sexual minorities and PLWH in China, leveraging population-representative data.

### Material and Methods:

Data were collected as part of the China Social Survey (CSS) led by the Chinese Academy of Social Sciences. CSS uses a repeated cross-sectional study design and is conducted biannually across 31 provinces of mainland China. Stratified sampling was used to recruit participants representing the overall population, and pre-trained interviewers administered surveys face-to-face. Questions regarding participants' attitudes towards people who have engaged in same sex practices ("tongxinglian" in Chinese) and towards PLWH were consecutively asked in 2015, 2017, 2019, and 2021. Attitudes were measured by questions about whether the two groups are socially acceptable from the perspective of the participants. Bipolar Likert scale responses ranged from "Not acceptable at all", "hardly acceptable", "mostly acceptable" to "completely acceptable". The response "not

acceptable at all" was considered an indication of severe stigma. Data were analyzed on Stata 17.0, and "ptrend" .ado package was used for trend analysis. Univariate analysis was conducted to delineate geographic variation among different provinces represented.

### Results:

A total of 10243, 10143, 10283, and 10136 participants were included in the analytical sample in 2015, 2017, 2019, and 2021 respectively. The prevalence of severe stigma against sexual minorities was 64.8% (6579/10148) in 2015, 65.1% (6192/9505) in 2017, 63.0% (6090/9673) in 2019, and 59.2% (5638/9529) in 2021, with a downward slope of -0.00359 (SE: 0.00086,  $p < 0.05$ ). The prevalence of severe stigma against PLWH was 42.2% (4270/10130) in 2015, 46.6% (4404/9447) in 2017, 43.6% (4163/9541) in 2019, and 42.7% (4039/9450) in 2021. The trend for the stigma against PLWH is going marginally downward at a slope of -0.00021 (SD: 0.00087,  $p = 0.056$ ). Overall, Hunan (78.6%), Qinghai (76.5%), and Jilin (75.2%) face highest prevalence of severe stigma against sexual minorities while Sichuan (56.2%), Hunan (54.6%), and Chongqing (54.3%) see the highest prevalence of severe stigma against PLWH.

### Conclusion:

Severe stigma against sexual minorities and PLWH is still common at a national level which calls for scholarly attention and persistent effort on stigma mitigation. Although there is a downward trend over time, the progress has been slow from 2015 to 2021. Certain areas of China face greater challenges in terms of societal stigma against sexual minorities and PLWH. Future stigma mitigation efforts may consider extending focus to the general public, expanding programs to reach wider audience in order to create a conducive social environment for sexual minorities and PLWH.

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## Agreement of and Discussion with Clients about Undetectable Equals Untransmissible (U=U) Among General Practitioners in Australia

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### Background:

The message of Undetectable equals Untransmissible (U=U) is important to reduce HIV stigma. However, it is unclear whether this message is being disseminated by health professionals to clients living with HIV and to other clients during a sexual health consult. We examined Australian general practitioner (GP)'s agreement of and discussion with clients about U=U.

### Material and Methods:

We distributed an online survey through GP networks from April to October 2022: eligibility was a GP working within Australia. Logistic regression analyses were used to identify variables associated with: 1) agreement of U=U; and 2) discussing U=U.

### Results:

Of 703 surveys, 407 were included in the final analysis. Mean age was 39.7 years (standard deviation:8.4), most were female (70.5%, n=287), and 40% (n=161) had extra training with sexual health. Most GPs (74.2%, n=302) agreed with U=U but only 33.9% (n=138) had ever discussed U=U with their clients. About a third (33.7%, n=137) of participants strongly agreed with U=U, and out of these individuals, 70.8% (n=97) of them had discussed U=U before. Whereas for those who strongly disagreed: 2% (n=8), only 25% (n=2) had ever discussed U=U with their clients. In total, 14.3% (n=58) of participants were neutral towards the U=U statement, of which only 6.9% (n=4) had ever discussed U=U.

Key barriers to discussing U=U were lack of relevant client presentations (48.7%), lack of understanding about U=U (39.9%), and difficulty identifying those who would benefit from the U=U message (6.6%). Agreement with U=U was associated with greater

odds of discussing U=U (Adjusted odds ratio (AOR) 4.75, 95% confidence interval (CI): 2.33-9.68), younger age (AOR 0.96 per additional year of age, 95%CI: 0.94-0.99), and extra training in sexual health (AOR 1.96, 95%CI:1.11-3.45). Discussing U=U was associated with younger age (AOR 0.97, 95%CI: 0.94-1), extra training with sexual health (AOR 1.93, 95%CI 1.17-3.17), and negatively associated with working in Metropolitan or Suburban area (AOR 0.45, 95%CI: 0.24-0.86).

### Conclusion:

Most GPs agreed with U=U, but most had not discussed U=U with their clients. Concerningly, 1 in 4 GPs disagreed with U=U, suggesting that further qualitative research to understand this finding and implementation research to promote U=U among Australian GPs is urgently needed.



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## Strengthening HIV Prevention and Sexual Health among Vietnamese Youth through an Innovative Public-Private Partnership

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### Background:

Young people in Vietnam are at increased risk of sexually transmitted infections (STIs) like syphilis, gonorrhea, chlamydia, and HIV, and often lack access to accurate health information and youth-friendly sexual and reproductive health (SRH) services. The Vietnam Ministry of Health (MOH), Durex, Glink key population-led clinic, and USAID/PATH STEPS Project co-designed the “Break the Shame, Come Together” campaign to support greater HIV/SRH awareness and health-seeking among youth.

### Description:

In August 2022, STEPS convened representatives from the Vietnam MOH, Durex, and Glink in a series of co-creation sessions to discuss a potential partnership for addressing low youth uptake of HIV, STI and broader health services. During these sessions, the team gathered insights from a range of youth informants, assessed data on youth uptake of HIV/SRH services, and reviewed current youth/student outreach initiatives. Through this, we identified several challenges preventing youth from accessing HIV/STI services—including stigma around SRH health-seeking; lack of awareness of why, where, and how to seek HIV/STI testing; and cost of services—and applied these insights to form the “Break the Shame, Come Together” campaign in Vietnam. Reinforcing online and offline campaign activities, including a YouTube video, campaign website, and online registration platform for free STI testing at Glink, were promoted across social and mass media channels, at eight in-person events at schools, and on the platforms of popular youth influencers.

### Lessons Learnt:

Generating insights from a range of young people throughout the campaign design and implementation process enabled the development of trustworthy and accessible content. From November 2022 to January 2023, the campaign resulted in 1,257 people registering for STI testing at Glink and 1,017 people seeking STI testing, of whom 154 had a positive test and were referred for follow-up treatment and care. Additionally, the campaign team distributed 265 HIV self-tests and supported 175 individuals to book pre-exposure prophylaxis appointments.

### Conclusion:

Public-private partnerships can be a powerful strategy for reaching young people with essential SRH information and services that aligns with their needs and preferences. Further growing the number and types of these engagements is essential for realizing Vietnam’s twin goals of ending AIDS and ensuring universal health coverage by 2030.



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## People-Led Care in HIV: Challenges in HIV Care among People Living with HIV and Opportunities for Empowerment in Singapore and Hong Kong

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### Background:

Singapore and Hong Kong have relatively low HIV prevalence, and their local epidemics share similar demographic features, such as a disproportionate representation of men who have sex with men (MSM). As part of the Joint United Nations Programme on HIV/AIDS (UNAIDS), both countries have made substantial efforts towards the 95-95-95 target for PLHIV to know their status, receive sustained antiretroviral therapy, and achieve viral suppression. However, limitations persist in HIV knowledge, anti-discriminatory protection laws and public and workplace stigmatization, predisposing to gaps in mental health and social well-being. This study explored the understanding and behaviour of PLHIV in achieving and maintaining physical and psychological health to identify the challenges and support needed by PLHIV.

### Material and Methods:

This qualitative study, conducted in February-May 2022, involved 90-minute interviews to explore health-related quality of life perceptions and patient-empowerment gaps in HIV care among Singapore and Hong Kong PLHIV. Respondents provided detailed accounts of their HIV experience – what worked well, unmet needs and perceived significance of well-being indicators. The applied COM-B (C: Capability; O: Opportunity; M: Motivation; B: Behaviour) framework assessed behaviour determined through interactions of core dimensions (C, individual psychological and physical capacity; O, physical and social environment; and M, emotional and evaluative processes). Analyses of

qualitative data involved a combination of inductive content and deductive frameworks. Results were discussed and refined with all authors for reliability assurance.

### Results:

A total of 30 and 28 respondents from Singapore (SG) and Hong Kong (HK) respectively, were recruited. Most respondents were aged 20-49 years (SG: 83.3% and HK: 64.3%), males (SG: 96.7% and HK: 92.9%), and MSM (SG: 93.3% and HK: 71.4%). At least half had university or higher education (SG: 50.0% and HK: 50.0%) and were fully employed (SG: 73.3% and HK: 57.1%). Respondents considered physical health as a key focus of overall well-being. Impact of symptoms, side effects, mood and sleep were the top well-being indicators considered most important to PLHIV. While they were aware of the importance of achieving holistic well-being, attention to long-term aspects in terms of physical health related to cardiovascular and renal health appeared to be less salient. Respondents also reported a gap in patient-physician communications where they felt insufficient information was provided by physicians with insufficient time and resources prohibiting the expression of further concerns. Patients delegated psychosocial health to supportive care professionals or patient groups, families, and friends, prioritizing functional wellness instead. Time and resource constraints amplify communication barriers, impeding sufficient coverage of psychosocial well-being during consultation.

### Conclusion:

Inadequacies in patient-physician communications and alliance, and limited focus on psychosocial wellness impact holistic-based HIV management and eventually, treatment outcomes. To address the gaps, Singapore and Hong Kong would need to empower patients to establish better communications with their physicians to be more involved in their treatment journey by equally prioritizing their psychosocial well-being. Additionally, patients need to enhance their awareness and knowledge of HIV-related health issues, and actively seek support from their physicians, other healthcare professionals and community-based organizations to improve their overall health.

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## Chemsex, HIV Risk Behaviors and Access to Services Among Men Who Have Sex with Men and Transgender Women in Cambodia: An Exploratory Study

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### Background:

Chemsex is the intentional use of psychoactive drugs to increase sexual pleasure. Chemsex is increasing among men who have sex with men (MSM) and transgender women (TGW) and has likely contributed to HIV epidemic in Cambodia. Understanding of user demographics, routes of administration, risk practices, types of drugs, settings, and ways of engagement in Chemsex is currently lacking. This study aimed to understand Chemsex practices and effects, user characteristics and experiences, and access and uptake of HIV prevention services among MSM/TGW in Cambodia.

### Material and Methods:

We conducted a mixed-methods study among MSM/TGW Chemsex users aged 15 years and older living in Phnom Penh. The study was conducted from 25 August to 18 September 2022. A total of 135 active MSM/TGW Chemsex users were enrolled, and 15 in-depth interviews were performed. Risk-tracing sampling was used as the recruitment strategy. Quantitative data were analyzed using SPSSX. Content analysis was used for the qualitative component.

### Results:

Participants were relatively young (28.1 years) and most not living alone (70.4%). Respondents reported high numbers of sexual partners and frequent attendance of Chemsex events. Crystal methamphetamine (68.8%) and Ketamine (50.4%) were the Chemsex drugs of choice. Some also injected crystal meth (13.3%). Non-condom use

during anal intercourse was common (15.6%), despite condoms (71.9%) and lubricants (82.2%) being readily available. Uptake of frequent HIV testing was low (66.7%) and only a few had ever heard of or had used HIV Pre-Exposure Prophylaxis (PrEP). The internet and social media such were most frequently mentioned (85.2%) for identifying and recruiting Chemsex partners. Sexual partners and friends are the most influential. Non-consensual sex (17.7%) and drugging before or during Chemsex (9.7%) were relatively common. Chemsex use was problematic in many cases with almost half (49.6%) showing signs of dependency and addiction. An important role was found in the exchange of Chemsex in return for money and drugs.

### Conclusion:

HIV risk behavior in Chemsex users was found to be high in combination with limited uptake of HIV prevention and other services. Increased and improved HIV prevention activities and drug management and addiction services, including innovative strategy to reach virtual and physical, are urgently needed.



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## A Dyadic Qualitative Analysis of Coping Experiences of Chinese Serodiscordant Male Couples to HIV Care

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### Background:

It is unknown how Chinese serodiscordant male couples—one man is HIV-positive, and the other man is HIV-negative—cope with HIV care. The communal coping process theoretical framework, which recognizes couples as a whole coping with stressors associated with chronic illness for optimal patient adjustment pathways, has not been applied to this unique cultural context.

Objective: To explore the coping experiences of Chinese serodiscordant male couples with HIV care by applying the theoretical framework of the communal coping process.

### Material and Methods:

Face-to-face interviews were conducted in a dyadic qualitative study between July and September 2021. Purposive sampling was used to recruit via community-based organizations in two Chinese metropolitans. A total of 20 serodiscordant male couples (n = 40) were included. Eligibility included one partner being HIV-positive and the other being HIV-negative; both were 18 or older, biologically male, gay, or bisexual, and in a relationship for at least three months. A 60-minute semi-structured individual interview was audio recorded, transcribed, and translated. Once thematic saturation was reached, recruitment was stopped. A hybrid deductive-inductive approach integrated with dyadic interview analysis and the framework method was used to analyze individual and dyadic data.

### Results:

The median age of the HIV-positive partners was 34 (range: 24-58) years, and the median age of the HIV-

negative partners was 35 (range: 25-53) years. We identified three themes in the coping process in HIV care: (1) coping as a contextualized communal process; (2) coping as a dissonant process; and (3) coping as an autonomous process. The communal coping process of HIV care was contextual. We suggested two potential risk factors for the dissonant coping process: the HIV-positive partner's internalized HIV stigma and the couples' asymmetric relationship goals. Inconsistent appraisals on HIV care engagement might lead to couples' divergent negative coping strategies and non-interactive support. Most couples adopted either disengaged avoidance or mutual non-involvement as negative coping strategies for the autonomous coping process and presented a support continuum from no support to interactive support.

### Conclusion:

Our broadening of the theoretical framework of communal coping offers significant insights into how serodiscordant male couples appraise and cope with stressors connected to HIV care. It will inform the development of dyadic interventions based on health psychology for Chinese serodiscordant male couples for effective HIV care engagement.



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## An Online Poll on Monkeypox Vaccines Among Men Who Have Sex with Men in Singapore

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### Background:

Monkeypox was declared a global health emergency by the World Health Organisation. Most reported cases disproportionately involved, but were not limited to, men who have sex with men (MSM). Given the epidemiological risk of infection within the MSM community, this study explored the willingness of Singaporean MSM to receive monkeypox vaccines, changes to sexual behaviour, and analysed the factors influencing both decisions.

### Material and Methods:

An online cross-sectional study was disseminated through community groups and Grindr from September to October 2022 among MSM in Singapore. A COVID-19 vaccine receptivity scale was adapted for Monkeypox, and participants provided responses about their demographics, stigma associated with monkeypox, perceived risks of sexually transmitted infections, and changes to sexual behaviours in response to monkeypox. Statistical analyses were conducted through descriptive statistics and multivariable linear and logistics regression. Thematic analysis of open-ended responses around concerns towards monkeypox vaccines was also conducted.

### Results:

Among 237 respondents, the mean vaccine receptivity score was 30.211 (SD=6.130) out of a total score of 35, with a higher score indicative of greater receptivity. 160 (67.5%) respondents changed their sexual behaviour in response to rising monkeypox infections. In an adjusted analysis, predictors of vaccine receptivity amongst MSMs

included self-perceived monkeypox risk (Adjusted Odds Ratio [aOR] = 0.444 95% CI [0.072, 0.817]) and self-perceived sexually transmitted infections (STI) risk (aOR = 0.392, 95% CI [0.030, 0.755]). Predictors for changes to sexual behaviour included self-perceived monkeypox stigma (aOR = 1.170, 95% CI [1.080, 1.268]), self-perceived monkeypox risk (aOR = 1.217, 95% [1.028,1.440]), age (aOR = 0.964, 95% CI [0.931, 0.998]) and being of Malay race (aOR = 0.305, 95% CI [0.100, 0.931]). Concerns raised by respondents included vaccine effectiveness, side effects, cost, privacy if receiving the vaccine and association with the queer community.

### Conclusion:

This study explored monkeypox vaccine acceptance and changes in sexual behaviour among Singaporean MSMs. Our findings suggest that the rise in monkeypox infections has prompted changes to MSMs' sexual practices. In general, MSMs are willing to receive the monkeypox vaccine but are concerned about the physical and social consequences of uptake. These concerns should be addressed when vaccines are released.





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## Exploring Migrant Sex Workers' Experiences with Access and Care For HIV and Sexual Health in Singapore: A Qualitative Study

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### Background:

The disruption of sex work practices due to the COVID-19 pandemic has heightened the existing precarity experienced by sex workers, potentially increasing the risk of HIV and sexually transmitted diseases. This study aims to understand the HIV and sexual health education of migrant sex workers in Singapore, as well as the challenges they face in accessing sexual health care services.

### Description:

This project was conducted in collaboration with the local non-profit sex work-focused community organisation, Project X. It adopted a community participatory qualitative study research approach, which included the implementation of four focus group discussions (FGDs) with 14 participants, and semi-structured in-depth interviews (IDIs) with 53 sex workers in Singapore. The interviews were conducted by trained sex workers, and explored themes such as sex work experiences, HIV and STI knowledge and valuable insights provided by the participants in creating a supportive environment for migrant sex workers.

### Lessons Learnt:

Participants reported that their sexual health practices were largely unaffected by COVID-19, although many experienced financial hardship due to reduced customers. They identified several areas of need that were already underserved prior to the pandemic, including poor access to HIV pre- and post-exposure prophylaxis PrEP and PEP, as well as

lack of person-centered sexual and reproductive health services services which including HPV vaccinations and pap smear tests. As a result of the above, participants described low levels of sexuality education and resultant empowerment, and described a belief that information, skills and services that could increase sexual health empowerment could only be accessed through trusted community groups rather than official healthcare providers.

### Conclusion:

The empowerment of sexual health in migrant sex worker is a critical issue that needs to be addressed. This study highlighted the importance of comprehensive sexuality education to this vulnerable community, to increase access to safe and healthy sexual practices. By raising awareness and providing education, in addition to introducing relevant health policies and regulations, migrant sex workers can be equipped with the necessary skills and knowledge in negotiating safer sex practises.

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## Sex Venue Preferences and HIV/STIs Risks for Chinese Men Who Have Sex with Men: A Latent Class Analysis

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### Introduction:

Past studies have found that sexual venue choices among men who have sex with men (MSM) are associated with risks of STIs acquisition. Specifically, such studies found that differences across private spaces, commercial sex venues, and public spaces can shape access to sexual partners as well as condoms and substance use behaviors. This study sought to understand such dynamics among Chinese MSM.

### Material and Methods:

This cross-sectional, online survey was disseminated through Chinese MSM community networks through WeChat from June 2022 to July 2022. Participants responded to questions on sociodemographics, sexual behaviors, and other psychosocial attributes. Latent class analysis was employed to generate classes of participants based on their preferences for sex venues. Multinomial logistic regression was utilized to examine the associations (using adjusted relative risk ratios [RRR]) between sociodemographic characteristics and sexual behaviors with classes of sex venue preferences.

### Results:

The total sample size was 890. Participants were mostly single (n=792, 89.0%), with a college degree (n=653, 73.4%), and identified as gay (n=687, 77.2%). Latent class analysis revealed that a three classes model (labelled post hoc as 'primarily home', 'hotels only', and 'all venues'). The 'primarily home' group comprised participants who essentially had sex only in their homes (n=611, 69%); the 'hotels only' group comprised participants who had sex only in hotels (n=199, 22%); and the 'all venues' group

included participants who had sex in multiple venues (n=80, 9%). The results of multinomial regression (including relative risk ratios) are reported in Table 1. Compared to the 'primarily home' group, those who were ever married (RRR=2.32, p<0.05), of income 1500-3000 RMB (RRR=1.88, p<0.05), with lower community connectedness (RRR=0.89, p<0.01), with higher levels of consistent condom use with casual partners (RRR=1.43, p<0.05), and never tested for STI (RRR=0.58, p<0.05) were more likely to be in the 'hotels only' group; those who were ever married (RRR=2.25, p<0.05), with lower educational attainment (RRR=0.47, p<0.05), did not identify as gay ([unsure/other] RRR=4.44e-07, p<0.001; [heterosexual] RRR=2.54e-05, p<0.001), had more sexual partners in the last six months (RRR=1.04, p<0.01), and had used poppers in the last six months (RRR=1.61, p<0.05) were more likely to be in the 'all venues' group.

### Conclusion:

Differentiated sexual health messaging and interventions can be tailored to these distinct groups of participants who prefer to have sex primarily at home, primarily in hotels, or at all venues.



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## The Changing Role of Chemsex Engagement and Its Impact on STI Risk in the HIV-Positive Men Who Have Sex with Men Network in Hong Kong

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### Background:

Chemsex, the sexualised use of recreational drugs, was reported to have driven the sexually transmitted infection (STI) epidemics in men who have sex with men (MSM) in recent years. This study examined the changing role of chemsex engagement and its impact on STI risk in HIV-positive MSM between 2014 and 2019 in Hong Kong.

### Material and Methods:

Baseline recruitment of MSM living with HIV was conducted in the largest HIV clinic in Hong Kong during their routine visits in 2014. Consented participants were asked to self-administer an anonymous survey covering their demographics, frequency of patronising different sex networking venues (public toilet, bar, sauna, beach/pool, gymnasium, party, mobile dating application and other web-based platforms), and risk behaviours. The same cohort was invited to complete a follow-up questionnaire in 2019 based on the situation in the past year, with added questions on chemsex engagement. Participants' STI history, including gonorrhoea, chlamydia, syphilis, genital warts, and herpes, in the respective year was retrieved from clinic database. For each round of survey, the venue-based affiliation network was projected for comparison of centrality measures between chemsex and non-chemsex users using Student's t-test. Association between STI diagnosis and chemsex engagement was evaluated using multivariable logistic regression.

### Results:

Totally 189 (55%) out of 345 participants recruited in 2014 completed the follow-up survey. Their median age in 2019 and at HIV diagnosis was 41 years (IQR 34-49) and 37 years (IQR 31-43)

respectively. In 2014 and 2019, the prevalence of chemsex engagement had increased from 20% to 40%, with slamming and polydrug use reported in 12% and 50% among the latter. Poppers (68%) and Viagra (52%) were most commonly used, followed by methamphetamine (47%), GHB (35%) and cannabis (16%). The prevalence in 2019 remained 23% after excluding those who used poppers/Viagra exclusively. In general, chemsex users played a more central role in 2019, demonstrating a significantly higher degree ( $p = 0.044$ ), betweenness ( $p = 0.048$ ) and closeness centrality ( $p = 0.035$ ) compared to non-chemsex users. Condomless anal intercourse had been increasingly disclosed in chemsex users (56% to 67%) with the odds ratio (OR) increasing from 5.87 in 2014 ( $p < 0.001$ ) to 9.39 in 2019 ( $p < 0.001$ ). Accompanying the decrease in STI prevalence in the entire cohort (31% to 14%), the proportion had also dropped among chemsex users from 56% to 28%. Nevertheless, a stronger association between STI and chemsex engagement was noted in 2019 (adjusted OR 3.72;  $p < 0.001$  in 2014 vs 7.11;  $p < 0.001$  in 2019) controlling for age, age at diagnosis, education level, and the number of sex partners. In both years, syphilis remained the most common STI (44% in 2014 vs 20% in 2019), followed by chlamydia (13% vs 9%) and gonorrhoea (13% vs 4%) in chemsex users.

### Conclusion:

The growing popularity of chemsex engagement and the more influential role of its user could predispose HIV-positive MSM community to an increased risk of STI. Public health interventions focusing on safer sex promotion and sexual health support should be tailored for chemsex users.

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## Very High HIV Incidence among Men Who Have Sex With Men (MSM) And Transgender Women (TGW) In Indonesia: A Retrospective Observational Cohort Study

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### Background:

There are no longitudinal HIV incidence data among men who have sex with men (MSM) and transgender women (TGW) in Indonesia. Pre-exposure prophylaxis (PrEP) use is very low and HIV treatment cascade outcomes are poor.

### Material and Methods:

We conducted a retrospective cohort study using medical record data from five private/non-government clinics in Indonesia (one in Jakarta and 4 in Bali). We reviewed all HIV tests among self-reported MSM and TGW aged  $\geq 18$  years between 1 January 2018 and 31 December 2020 in Jakarta and 1 January 2017 and 31 December 2019 in Bali. Those with an HIV-negative baseline test and one or more follow-up tests were included in the person-years (PY) at risk to determine HIV incidence. The PY at risk calculation started at the first negative test until the last recorded negative test or seroconversion. Multivariable Cox regression was used to determine factors associated with HIV acquisition; we report adjusted Hazard Ratios (aHR) and 95% confidence intervals (CI) for these associations.

### Results:

We included 5,203 patients in Jakarta and 2,815 in Bali at baseline. Of these, 3,998 and 2,119 were HIV-negative at baseline, equating to an HIV prevalence of 23.2% in Jakarta and 21.9% in Bali. The longitudinal sample of those with one or more follow-up tests included 1,418 patients in Jakarta and 873 in Bali. The number of tests included in the dataset ranged from 2 to 13 per patient (mean=3.71, standard deviation=2.06; median=3, interquartile range=2-4). In both provinces, about one-quarter were aged less than 25 years, 94% were MSM, and >60% had been tested for HIV previously. In Jakarta, there were 127 incident HIV infections in 1354.5 PY, equating to an incidence rate of 9.39 per 100 PY (95%CI=7.89-11.17). In Bali, there were 71 incident HIV infections in 981.2 PY, equating to an incidence rate of 7.24 per 100 PY (95%CI=5.73-9.13). Compared to those 18-24 years, incidence was lower in older patients (Jakarta – 30-39 years: aHR=0.58, 95%CI=0.35-0.96; 40+ years: aHR=0.34, 95%CI=0.14-0.80; Bali – 25-29 years: aHR=0.51, 95%CI=0.29-0.89; 30-39 years: aHR=0.35, 95%CI=0.19-0.65; 40+ years: aHR=0.11, 95%CI=0.03-0.48). In Jakarta, those with university education had lower incidence than those without (aHR=0.62, 95%CI=0.43-0.91). In Bali, those who were referred by outreach workers had higher incidence than those who self-presented to the clinic for testing (aHR=1.70, 95%CI=1.04-2.78).

### Conclusion:

In the first multi-province HIV incidence study in Indonesia among MSM and TGW, we observed very high HIV incidence rates. In this setting of very low PrEP use, measures to encourage regular HIV testing and effective use of HIV prevention methods, including rapid PrEP scale-up and demand creation, are urgently needed. Greater local and international investment in HIV prevention and treatment in these populations must be prioritised to meet global AIDS elimination goals.



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## High Rates of HIV and Sexually Transmitted Infections (STIs) Among Men Who Have Sex with Men (MSM) And Transgender Women (TGW) In Bali, Indonesia: Results of the PRIA Bali Prospective Cohort Study

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### Background:

Prospective longitudinal data on HIV incidence in Indonesia among men who have sex with men (MSM) and transgender women (TGW) have not been reported. There are very few data on the incidence of syphilis, or the prevalence of rectal and urethral gonorrhoea and chlamydia.

### Material and Methods:

We conducted a prospective observational cohort study of MSM and TGW aged  $\geq 18$  years in three non-government clinics in Bali, Indonesia, from 24 May 2021 to 5 December 2022. Participants attended at baseline and four follow-up visits over 12 months. Testing was conducted for HIV and syphilis at every visit, and for rectal and urethral gonorrhoea and chlamydia at baseline only. Participants completed surveys on a tablet computer at the clinic at each visit. Those with at least one follow-up visit were included in longitudinal analysis. We examined baseline prevalence of syphilis, gonorrhoea and chlamydia, and calculated incidence rates per 100 person-years (PY) for HIV and syphilis and present 95% confidence intervals (CI) for these rates.

### Results:

We recruited 200 participants (MSM=189; TGW=11). The median age was 33 (IQR=29-38) and 124 (62.0%) were Balinese. Prior to the study, 188

(94.0%) had ever been tested for HIV. Among 113 (56.5%) individuals who had ever heard of PrEP before, 18 (15.9%) had ever taken PrEP. In the 6 months prior to baseline, 21 (10.5%) reported engaging in sex work, 11 (57.9%) had one or more episodes of condomless intercourse (CLI) with female partners, and 195 (97.5%) with male or TGW partners. At baseline, prevalence of urethral gonorrhoea was 0.5%, rectal gonorrhoea was 8.0%, urethral chlamydia was 6.0%, rectal chlamydia was 22.0%, and syphilis was 21.0%; overall, 45.0% were diagnosed with any sexually transmitted infection (STI) at baseline. Of all STIs diagnosed at baseline, only 4.4% were symptomatic by self-report. Overall, 194 (97.0%) had one or more follow-up visits and were included in the incidence analyses. Among these, the median number of follow-up visits was 4 (interquartile range=4-4), and participants contributed 173.5 PY of follow-up. There were 9 incident HIV infections, equating to an HIV incidence rate of 5.2 per 100 PY (95% CI=2.7-10.0). The incidence of HIV was much higher among those with a new syphilis infection during follow-up (25.1 per 100 PY, 95% CI=3.5-177.8) compared to those without a new syphilis diagnosis (4.2 per 100 PY, 95% CI=2.0-8.8). Over follow-up, there were 16 incident cases of syphilis for an incidence rate of 9.4 per 100 PY (95% CI=5.8-15.3).

### Conclusion:

In the first prospective cohort study of MSM and TGW in Indonesia, we found high incidence of HIV and syphilis, and high prevalence of STIs. Effective HIV prevention methods must be better promoted. Access to and scale-up of HIV pre-exposure prophylaxis (PrEP) and routine screening for bacterial STIs are urgent priorities.

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## Trends and Associated Factors in HIV Testing among Heterosexual Men and Women in Melbourne, Australia, 2012-2020

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### Background:

Despite the recent increase in the proportion of HIV notifications attributed to heterosexuals in Australia, little is known about HIV testing practices among heterosexuals. We aimed to investigate the trends and factors associated with HIV testing practice among heterosexuals.

### Material and Methods:

This is a retrospective analysis of heterosexuals first attending Melbourne Sexual Health Centre between 2011 and 2020. We calculated the proportion of heterosexuals who had ever tested for HIV, had tested for HIV in the last 12 months and the number of months since their last HIV test. Univariable and multivariable logistic regression analyses were performed to identify the factors associated with ever HIV testing and HIV testing in the last 12 months.

### Results:

In total, 78,652 heterosexuals were included, with 41,778 (53.1%) men and 36,873 (46.9%) women. The mean age was 28.7 (SD±8.74). The median number of opposite-sex partners in the last 12 months was 3 (2,5). There were 24,304 (58.2%) heterosexuals who reported at least one condomless sex in the last 12 months. Overall, the proportion of heterosexuals ever tested for HIV was 40.8% (32,078/78,652), with a declining testing trend from 40.2% (2,412/5,997) in 2011 to 36.5% (2,164/5,936) in 2020. Those having condomless sex with casual partners (aOR=0.92, 95% CI: 0.88-0.96) and who were diagnosed with a sexually transmitted

infection (aOR=0.88, 95%CI:0.84-0.93) were less likely to ever tested for HIV. Compared with individuals who were born in Oceania and Antarctica region, individuals who were born in other regions had the highest odds of ever testing; except for individuals who were born in South-East and North-East Asia regions (aOR=1.04, 95% CI: 0.95-1.15 and aOR=0.89, 95% CI: 0.81-0.98, respectively). Additionally, the proportion of heterosexuals tested for HIV in the last 12 months was 15.7% (12,354/78,652), with no significant change in the testing trend (Ptrend=0.489). Individuals from North-East Asia had the lowest odd of testing for HIV in the last 12 months (aOR=1.25, 95% CI: 1.10-1.41), compared to Oceania and Antarctica born heterosexuals. The median months since the last HIV test decreased from 18.0 (IQR 6.7-37.3) in 2011 to 15.0 (IQR 6.4-32.5) in 2020 (Ptrend<0.001).

### Conclusion:

HIV testing was low among heterosexuals, and individuals who engaged in condomless sex and had another sexually transmitted infection were less likely to get tested. With the rise in the proportion of new HIV cases among heterosexuals in Australia, our study findings indicate the need for additional approaches to increase HIV awareness and promote HIV testing in heterosexuals to reduce HIV transmission.



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## High Prevalence of Asymptomatic Bacterial Sexually Transmitted Infections (STIs) Among HIV Pre-exposure Prophylaxis (PrEP) Clients in Malaysia: A Single-Centre Experience

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### Introduction:

Studies have shown that the burden of sexually transmitted infections (STI) is high among PrEP clients. Integration of STI services into PrEP care is recommended to improve individual sexual health while addressing the public health threats of HIV and STIs, especially in the era of multidrug-resistant organisms. This retrospective study was conducted to identify the prevalence of 3 common bacterial STIs among clients involved in a PrEP implementation project at our centre.

### Material and Methods:

This was a descriptive single-centre retrospective study that included clients who received PrEP services at the Universiti Malaya Medical Centre (UMMC) from January 2019 to December 2022. STI screening comprised *Treponema pallidum* antibody (syphilis), pooled *Neisseria gonorrhoea* (NG), and *Chlamydia trachomatis* (CT) NAAT testing from 3 sites was recommended for all clients at baseline and 6 monthly thereafter. Baseline sociodemographic data and STI results were collected for all clients. Syphilis was diagnosed serologically by a positive treponemal antibody test or detection of *treponema pallidum* from skin lesions by either nucleic acid implication test (NAAT). A diagnosis of gonorrhoea or chlamydia was made based on a positive NAAT test or a presumptive diagnosis based on symptoms for clients who were unable to afford testing.

### Results:

Of the 268 clients who ever received PrEP, the majority (91.4%) were men who have sex with men (MSM) with a median age of 30 (IQR 26-36) years. Up to one-third (30.41%) of MSM had reported chemsex use (ever-used or actively using within the past three months). Out of 110 episodes of pooled bacterial STIs, 77.3% were asymptomatic; 82.7% of the recorded syphilis infections were latent syphilis, 71.4% of all NG infections and 71.0% of all CT infections were asymptomatic. 250 (93%) over 268 clients were screened for syphilis at baseline with 13.6% (34/250) of them having a new syphilis infection. The rate was reduced to 4.67% in month-6 (69% screening rate out of 217 clients) and increased to 11.0% in month-12 (83% screening rate out of 185 clients). The screening rates were lower for CTNG with 39% at baseline, 33% at month-6, and 40% at month-12. Of those screened for CTNG, 6.8% were diagnosed with gonorrhoea at baseline, 7.0% at month-6, and nearly double at month-12, 12.2%. For CT infection, the rates were 9.5%, 14.1%, and 14.9% at baseline, month-6, and month-12 respectively.

### Conclusion:

Our screening showed that asymptomatic bacterial STI rates were high among PrEP clients. These findings highlight the importance of integrating routine STI screening including CTNG into PrEP care.

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## **Mycoplasma Genitalium Infections among Men Who Have Sex with Men in an HIV Pre-exposure Prophylaxis Program in Hanoi, Vietnam**

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### **Background:**

Mycoplasma genitalium (MG) primarily causes nongonococcal urethritis (NGU) and relates to antimicrobial resistance (AMR). Pharyngeal and rectal infections can also occur, which are mostly asymptomatic. MG infections were correlated with higher HIV risk in men who have sex with men (MSM). Screening for MG is not typically performed as nucleic acid amplification tests (NAATs) for MG are not always available in low-resource settings, therefore data on prevalence are limited and clinicians often use syndromic case management to treat NGU without proper testing. We explored the prevalence of MG among MSM in an HIV pre-exposure prophylaxis (PrEP) program in Hanoi, Vietnam.

### **Material and Methods:**

From January to December 2022, MSM in the PrEP program at the Sexual Health Promotion Clinic in Hanoi, Vietnam were enrolled in a study testing for Chlamydia trachomatis (CT) and Neisseria gonorrhoeae (NG). A survey collecting demographic, behavioral, and clinical characteristics was administered. A retrospective analysis of MG results from de-identified self-collected urine, rectal, and pharyngeal specimens was performed using the Alinity m STI Assay (Abbott Molecular, USA).

### **Results:**

In total, specimens from 484 participants with a median age of 25.2 (21.7-29.6) years underwent MG testing. Among them, 49.0% had two or more sex partners of any gender in the last month, while 12.6% participated in group sex and 45.5% reported sexualized drug use in the last 6 months. The prevalence of MG infections was 7.6% (34/445),

1.9% (9/480), and 3.1% (15/481) at rectum, pharynx and urethra, respectively, and 10.7% (52/484) were positive for MG at any site. MG co-infections with NG and CT occurred among 15.3% (11/72) and 7.3% (7/96), respectively. Asymptomatic MG accounted for 71.2% (37/52). Among those reporting pharyngeal symptoms, but without CT or NG, no MG infections were detected; while among those reporting rectal and urethral symptoms, but without CT or NG, 9.8% (5/51) and 2.9% (1/35) tested positive for rectal and urethral MG, respectively.

### **Conclusion:**

Above 10% of MSM in a PrEP program in Hanoi, Vietnam tested positive for MG. The prevalence was highest among rectal specimens and nearly three quarters of MG infections were asymptomatic. Meanwhile MG was detected in 6 participants with rectal and urethral symptoms who tested negative for NG and CT. Additional studies are needed to better understand the risk factors and AMR related to MG, and cost-effectiveness of MG testing and treatment in Vietnam.



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## The Impact of COVID-19 on Sexual and HIV Testing Behaviors Among MSM Tested for HIV in China: A Serial Trend Analysis

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### Background:

HIV testing remains the most important means to engage key populations like men who have sex with men (MSM) in HIV care. This study aimed to assess the impact of the COVID-19 pandemic on sexual and HIV testing behaviors among MSM in Guangdong to inform the adaptation of current HIV programs.

### Material and Methods:

We retrospectively analyzed data from annual online surveys that assessed sexual and HIV testing behaviors among MSM in Guangdong from 2018 to 2022. Only individuals >16 years, self-identified as male, reported sex with another man in the last 12 months, and resided in Guangdong were eligible. Information collected included age, education level, number of sexual partners, and venue of last HIV test. A trend test was used to assess the changes in sexual and HIV testing behaviors over time, and logistic regression were used to identify the factors associated with HIV testing uptake. Data was categorized as: 'before Covid-19' for 2018-2019, 'during Covid-19' for 2020 and 'After Covid-19' for 2021-2022.

### Results:

Overall, data from 1693 participants were included in this study (average age 29±4.55). Most participants earned >746 USD monthly (57.9%) and had a college or above level of education (69.3%). We observed an increasing trend MSM with >2 stable ( $\chi^2_{trend}=93.25$ ,  $P<0.001$ ) and casual ( $\chi^2_{trend}=54.76$ ,  $P<0.001$ ) male sexual partners in the past six months, engaged in condomless sex ( $\chi^2_{trend}=7.60$ ,  $P=0.015$ ), and had last HIV test at a facility ( $\chi^2_{trend}=59.90$ ,  $P<0.001$ ) [Table 1]. MSM  $\geq 25$  years (OR=0.72, 95%CI: 0.53-0.99) had lower odds of HIV testing uptake after the Covid-19 pandemic. MSM with college or above

education (OR = 2.22, 95%CI: 1.65-2.97), had >2 stable male sexual partners (OR = 2.80, 95%CI:1.485-5.2), engaged in condomless sex (OR =1.3, 95%CI:1.02-1.81) and last tested for HIV at a facility (OR =2.31, 95%CI:1.69-3.17) had higher odds of HIV testing uptake after the pandemic.

### Conclusion:

Sexual risk behaviors and HIV testing habits among MSM in China have evolved after the COVID-19 pandemic. The number of MSM with more than two stable and casual sexual partners has increased, but condom use is still low. Hence, policymakers need to expand HIV prevention strategies, like condoms and PrEP use promotion.



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## Harm Reduction Program for HIV-Positive Patients with Chemsex Drug Use

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### Objective:

Approximately 40% of people living with HIV (PLHIV) use drugs and addictive substances. Stem from the foundation of harm reduction theory, Taoyuan General Hospital established harm reduction group therapy and utilized the power of peer-aid group among drug addicts with the similar experience and homogeneity. The measurements are supplemented by psychotherapy such as emotional exploration and psychological drama, which enhances the motivation and ability to achieve addiction recovery.

### Material and Methods:

Via the "Harm Reduction Group for AIDS Drug Addicts", twelve times of monthly harm reduction group counseling and discussions were conducted in 2022 to facilitate the concept of harm reduction within the group. A variety of group themes include self-analysis and discussion, driftwood theory, firewall construction, drug addiction treatment goals, sexual danger links, etc. All these themes supported the implementation of harm reduction and restore health. The effectiveness evaluation was measured by the BSRS-5 (Brief Symptom Rating Scale) questionnaire performed prior to and after the courses.

### Results:

In 2022, twelve harm reduction treatments and deeper emotional explorations, respectively, and one psychological drama were performed to reach a cumulative result of 426 participants. Amongst 20 regular participants, they were gay with the mean age of 36, and the longest duration of drug usage was ten years. The regular usage of drugs comprised amphetamines (90%) and crystal methamphetamine (70%), and 9 participants abused SLAM injections and combination of other drugs, and more than 60% of them did not use condoms.

The results of BSRS-5 questionnaire prior to the course and psychological drama indicated that the mean score was 7.31 with the standard deviation of 5.31 (range 0-20) whereas the mean score after the course was 4.69 with the standard deviation of 3.5 (range 0-13). The difference between the scores prior and after the course was statistically significant (student's t-test,  $p < 0.05$ ). Furthermore, the number of participants with severe emotional distress decreased from five to one after attending the course.

According to the results of BSRS-5 questionnaire, the difference of 10 points was present in the category of irritability (31 and 21 score before and after attending the course, respectively) whereas the difference of 4 points was present in the category of suicidal thoughts (10 and 5 score before and after attending the course, respectively). The abovementioned differences illustrated a drastic decrease in the BSRS-5 scores and a great improvement in bearing suicidal ideation, which was in line with the effectiveness in the treatment of the Harm Reduction Group for AIDS Drug Addicts. Lastly, amongst the 20 participants including 5 drug addicts and 15 continuous drug users, a statistically detectable difference was also observed in the category of irritability before and after the treatment using one-way analysis ( $p = 0.0081$ ).

### Conclusion:

PLWH is susceptible to physical and mental harm due to chemsex. The beneficial impacts of harm reduction groups lie in improvement of self-awareness, reflection on the relationship between drug addicts and drugs with their personal emotional needs, enhancement of power in individual participant to solve problems by themselves, and reorganization of values of life, which strengthens the concept of harm reduction and establish the determination to recover from drug addiction.

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## Improving Access to Oral Pre-exposure Prophylaxis for HIV Among International Migrant Populations: A Scoping Review

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### Background:

Pre-exposure prophylaxis (PrEP) is recommended for people at risk of HIV infection, and the scale-up of PrEP programs has contributed to new HIV case reductions at a population level. Yet, international migrants, a priority population in countries aiming to end HIV transmission by 2030, continue to be disproportionately affected by HIV. This review identified barriers and facilitators of HIV pre-exposure prophylaxis (PrEP) use among international migrant populations.

### Material and Methods:

We searched MEDLINE, EMBASE, CINAHL and SCOPUS for publications reporting primary data on the barriers and facilitators to PrEP among international migrant populations published until November 2022. Two reviewers independently screened titles and abstracts, reviewed full texts and extracted the data. A socio-ecological framework was used to code the data thematically at the individual, service and societal levels.

### Results:

In total, 593 studies were screened, and 19 were included: 18 (95%) were conducted in high-income countries, and eight (42%) included men who have sex with men. Most studies included migrants from Africa (n=6, 31.6%), South America (n=4, 21.1%) and Asia (n=3, 15.8%). We found shared barriers and

facilitators to PrEP between native- and overseas-born populations. Yet, additional barriers were reported among overseas-born populations. Barriers and facilitators at the individual level were related to knowledge and risk perception of HIV. Cost, provider discrimination and health system navigation influenced PrEP use at the service level. Perception toward LGBT+, HIV and PrEP users in the migrant community impacted PrEP use at the societal level. Migrants reported that the combination of insufficient education about HIV in their countries of origin, the struggle to navigate the healthcare system in destination countries, inequitable access to the healthcare system, and HIV-related discrimination in migration laws and policies exacerbated fears of deportation and dissuaded them from accessing sexual health service.

### Conclusion:

For equity in PrEP access and use, and to support scale-up of PrEP, efforts must be made to address the range barriers both specific to and independent of PrEP at individual, service and societal levels. Most existing campaigns which educate and encourage PrEP use do not target international migrants, which is a priority population in countries that want to end HIV transmission. Designing culturally tailored approaches to educating people from different backgrounds and reviewing policies that potentially discriminate against individuals in relation to their migration and HIV status are needed to increase health equity and encourage more people, regardless of their migration status, to access HIV prevention services to end HIV transmission at a population level.

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## Sexual Satisfaction among Elderly Chinese Adults and Its Association with Physical, Mental and Self-Rated Health: Findings From a Nationwide Survey

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### Background:

Sexual health among older population has been oftentimes overlooked until recently when HIV incidence increased among the elderly in China. Few studies examined sexual health among adults older than 49 years old. According to the World Health Organization, sexual health is not merely the absence of diseases, dysfunction or infirmity but also includes sexual satisfaction. However, in China and other East Asian countries, discussion on sexual satisfaction remains to be a taboo in local cultures, which leads to the scarcity of data and limited previous research. Provision of high-quality and comprehensive sexual health care and services for older adults calls for population-based epidemiological data on sexual satisfaction and understanding of its correlates. This study aims to characterize the sexual satisfaction among the Chinese population older than 49 years old from a nationwide, population-representative sample, and to explore its association with selected physical health, mental health and self-reported overall health indicators.

### Material and Methods:

Data were collected as part of the China Family Panel Studies in 2020, led by the China Social Survey Center of Peking University. Eligibility criteria included: being partnered at the time of survey (married, or cohabitating); aged 50 or older; and completed the individual survey including question on sexual satisfaction. A total of 8,208 participants were included in the analysis and divided into the sexual dissatisfied group (cases) and sexual satisfied group (controls) based on their survey response. Descriptive and multivariable logistic regression were conducted to explore the distribution of sexual dissatisfaction and to investigate its association with

subjective health (self-rated), physical health (including self-reported history of selected diseases) and depression (measured by CES-D), adjusting for the potential confounding sociodemographic factors such as age, gender, and education.

### Results:

Among 8,208 partnered older adults (age: median 59 (IQR: 54-66); 47.3 % identified as women), 77.6% (6,372/8,208) reported "satisfied" or "very satisfied" on their sexual life. Logistic regression results showed that, "fair/poor" self-rated health was associated with increased likelihood of sexual dissatisfaction compared subjective health rated as "excellent/very good/good" (AOR: 1.58, 95%CI: 1.42-1.76,  $p < 0.001$ ). Sexual dissatisfaction was significantly associated with presence of physical diseases (AOR: 1.20, 95% CI: 1.06-1.35,  $P = 0.004$ ) and depression (AOR: 1.96, 95% CI: 1.76-2.19,  $P < 0.001$ ), respectively after adjusting for age, gender, and marital status. Specifically, reproductive system diseases are associated with women's sexual dissatisfaction (AOR: 2.17, 95%CI: 1.18-3.98,  $p = 0.013$ ); conversely, this association is not significant among men (AOR: 1.73, 95%CI: 0.86-3.46,  $p = 0.123$ ). Among sociodemographic factors, younger age, education level at senior high school or above were also risk factors of sexual dissatisfaction (all  $p < 0.05$ ).

### Conclusion:

More than one in five Chinese adults of 50 years old or older face sexual dissatisfaction. Subjective health, presence of diseases and depression were all found to be associated with sexual dissatisfaction among the elderly in China. More research is warranted on sexual health of the elderly in an aging society, especially for older adults with other diagnosed medical conditions. Understanding sexual dissatisfaction as part of sexual health among elder adults in China would help inform behavioral interventions for HIV/STD prevention among this understudied group.

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## Demographics and Assault Characteristics of Sexual Assault Survivors in Siriraj Hospital, Thailand

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### Background:

Sexual assaulted survivors are at increased risk of HIV transmission. Poor adherence to HIV post-exposure prophylaxis and follow-up rate were reported. This study aimed to describe demographics, assault characteristics, post-sexual assault care cascade among the assaulted survivors.

### Material and Methods:

We conducted a retrospective cohort study of the assaulted receiving post-assault care between 2014 and 2020 at Siriraj Hospital, Thailand. Data were abstracted from medical records.

### Results:

Of 121 patients, 118(97.5%) were female and the median age was 21(IQR 18-30) years. Most assaults were vaginal penetration. Nineteen assaults (15.7%) occurred in public outdoors and 70 (69.4%) occurred at night. Sixty-two(51.2%) were assaulted by acquaintances or family members. All assaulted survivors tested negative for HIV at baseline; 105(86.8%) were eligible for nPEP but 5 refused nPEP. Most common nPEP regimens were 58(55.8%) TDF/XTC plus RPV and 43(41.4%)TDF/XTC plus LPV/r. Eighty patients received 28-day nPEP but the exact doses taken were not recorded. Of 121 patients, only 59(48.8%) and 33(27.3%) returned for HIV blood test at 1 month and 3 months after the assault, respectively. None of the sociodemographic and assault characteristics was associated with loss to follow-up at 3 months from logistic regression analysis.

### Conclusion:

The result of the study highlights incomplete nPEP uptake and a low rate of follow-up among sexual assault survivors in Thailand. Strategies to improve post-sexual assault care cascade such as multidisciplinary care teams and monitoring

systems should be implemented. Further studies are needed to explore reasons and factors associated with loss of follow-up among all assault survivors.

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## Factors Associated with Pre-exposure Prophylaxis Use Among Gay Asian Men in Australia

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### Background:

Gay Asian men (GAM) are a priority population as Australia aims to end HIV transmission. We investigated the proportion and factors associated with pre-exposure prophylaxis (PrEP) use among GAM in Australia, including GAM born in Asian countries.

### Material and Methods:

This was a sub-analysis of a community-based survey conducted from March to September 2021. We recruited participants online and offline in Sydney and Melbourne, Australia. We calculated the proportion of individuals who had ever used PrEP and had used PrEP in the last six months. Univariable and multivariable logistic regression analyses were performed to identify the factors associated with ever PrEP use and PrEP use in the last six months.

### Results:

There were 870 GAM included: 288 Australian-born and 582 Asian-born GAM. The proportion of GAM who ever used PrEP was 46.7% (406/870), and 35.6% (310/870) used PrEP in the last six months. The proportion of GAM born in Asian countries who ever used PrEP was 43.6% (254/582) and 33.2% (193/582) for those who used PrEP in the last six months. Meanwhile, The proportion of GAM born in Australia who ever used PrEP was 52.8% (152/288) and 40.6% (117/288) for those who used PrEP in the last six months. GAM who were born in South-East Asia (adjusted odds ratio (aOR)=0.5, 95%CI: 0.3 to 0.7) and South Asia (aOR=0.4, 95%CI: 0.2 to 0.8) and who had no STI diagnosis in the last 12 months (aOR= 0.50, 95%CI 0.3 to 0.9) were less likely to ever use PrEP. Besides, GAM who had multiple sexual partners (aOR=1.9, 95%CI: 1.3 to 3.0) and engaged

in condomless anal sex with hookups (aOR=6.1, 95%CI: 3.3 to 11.1) were more likely to ever use PrEP. GAM who were born in South-East Asia (aOR=0.4, 95%CI: 0.3 to 0.7), North-East Asia (aOR=0.5, 95%CI: 0.3 to 0.8) and South Asia (aOR=0.4, 95%CI: 0.2 to 0.7) were less likely to use PrEP in the last six months. Medicare eligibility, confidence in using the English language and age were not statistically significant in the multivariable analyses.

### Conclusion:

PrEP use among Asian-born GAM in Australia was low despite an increase in HIV notifications among this population. Strategies that better target Asian-born gay men to improve access to PrEP services for this population are required to end HIV transmission in Australia.

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## Crowdsourced Partner Services among Men Who Have Sex with Men Living with HIV: A Pilot Randomized Controlled Trial in China

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### Background:

Partners of people living with HIV have a higher HIV prevalence. To improve the uptake of HIV partner services (HIV PS) among men who have sex with men living with HIV (MLWH) in China, our team developed a crowdsourced intervention. This study assessed the acceptability, feasibility, and preliminary effectiveness of the intervention.

### Material and Methods:

A pilot two-arm randomized controlled trial (RCT) was conducted to compare the proportion of partner HIV testing of MLWH. Indexes in the control arm received conventional HIV PS using referral cards. Indexes in the intervention arm received a crowdsourced HIV PS intervention which included HIV self-testing kits for secondary distribution (HIVST-SD), digital education materials, and assisted PS via provider/contract referral. The primary outcomes were intervention feasibility (i.e., the frequency of indexes using crowdsourced intervention components), intervention acceptability (i.e., the evaluation of indexes on intervention components using Likert scales), and the preliminary impact of the intervention (i.e., the proportion of partners getting HIV testing within three months of index enrollment). Descriptive analysis was conducted, and generalized linear models were used to test whether the proportional differences were significant.

### Results:

A total of 121 newly diagnosed MLWH were enrolled between July 2021 and May 2022 in Guangzhou and Zhuhai, China, with 81 in the intervention arm and 40 in the control arm. The 3-month follow-up rates were 93% (75/81) and 83% (33/40), respectively. In the crowdsourced intervention arm, 23 indexes

used HIVST-SD, six used online provider-referral to notify nine sexual partners. Indexes visited the digital educational materials 2.3 times on average. The intervention components also demonstrated acceptability, with HIVST-SD rated 4.4 out of 5 and the digital educational materials rated 4.1 out of 5. The proportion of partners getting HIV testing among all identified partners was 38% (65/171) in the intervention arm, compared to 27% (24/89) in the control arm. The difference was not statistically significant (11%, 95% CI: -2% ~ 24%).

### Conclusion:

The crowdsourced HIV PS intervention components were acceptable and feasible among Chinese MLWH and may improve the proportion of sexual partners receiving HIV testing. Further implementation science research is needed to expand HIV PS among key populations in low and middle-income countries.

Clinical trial registration ID: NCT04971967 (Protocol ID: 19-0496)



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## Expansion of Gender-Affirming and Sexual Health Services Needed for Young Transgender Women in Thailand

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### Background:

Transgender youth are a population with specific health needs. Gaps in evidence and knowledge of their needs are urgently needed to inform interventions to improve transgender healthcare delivery. We examined service use patterns and explored healthcare needs in young transgender women in an HIV adolescent care clinic in Thailand.

### Material and Methods:

A mixed-methods study was conducted among young transgender women (YTGW) aged 15-24 years coming for services at an adolescent HIV care clinic in Bangkok. Service use data including service retention, pre-exposure prophylaxis (PrEP) use, and for those living with HIV viral load suppression were collected. Health data, including age of sexual debut, realization of gender identity and gender-affirming hormone therapy use were obtained. History of sexually transmitted infections (STIs) and mental health disorders were summarized. In-depth interviews were conducted in YTGW on facilitators and barriers in their decision to live as transgender women and their specific health needs.

### Results:

Between January 2018 and June 2022, 124 YTGW attended the adolescent HIV care clinic; 14 (11%) were living with HIV, 23 (19%) were PrEP users, and 87 (70%) had come for HIV and STI testing. Median (IQR) age was 19.5 (15.1-24.6) years. Six-month retention was 100% in those living with HIV, 43% in PrEP users, and 24% in those coming for HIV and STI testing. STIs were found in 10 (8%) YTGW. Physician-diagnosed mental health disorders (depression, PTSD) were seen in 5/124 (4%). Median

(range) age of antiretroviral initiation (ART) was 17 (2-22) years, with 93% achieving HIV viral suppression <50 copies/ml at 12 months post-ART initiation.

In-depth interviews were conducted in 23 YTGW, made up of 12 YTGW living with HIV, 8 PrEP users, and 3 at HIV risk not on PrEP. They became aware of their TGW identity at a median age (range) of 12 (9-18) years. All gender-affirming hormones were sourced online, the commonest regimens used were cyproterone acetate (65%) and estradiol (25%) initiated at a median (range) age of 14 (12-19) years.

Facilitators for good service retention were availability of comprehensive healthcare, including physical, mental, and gender-affirming healthcare, for those living with HIV the desire to stay virally suppressed to maintain physical appearance, and for those at risk of HIV, high self-risk perception. Barriers to service retention included unaffordable service fees, transportation costs to the clinic, and fear of drugs prescribed interacting with existing supplements and hormones being taken. YTGW interviewed expressed the desire for accessibility to and counselling for gender-affirming and sexual health services at younger ages when exploring their gender identity.

### Conclusion:

Comprehensive gender-affirming and mental healthcare provision for YTGW by healthcare providers is needed. These services could be used to engage YTGW into HIV/STI prevention and treatment services.



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Abstract number 124 has been withdrawn.

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## Attitudes of Presbyterian Church Leaders on HIV Prevention in Mizoram, Northeast India

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### Introduction:

Investigating church leader's attitudes towards HIV prevention and harm reduction is essential to understand the factors that enable them to take on leadership role in facilitating HIV and SUD prevention efforts. Significant reduction in HIV prevalence rate and SUD in the Mizoram could be contributed by church leader's participation. This study could be the first formal study on attitudes of church leaders regarding HIV prevention and harm reduction for SUD among the Presbyterian Church leaders in Aizawl, Mizoram.

### Material and Methods:

Cross sectional, mixed methodology was used. Quantitative consists of self-administered questionnaire while in-depth interview and focus group discussion were used for qualitative. From 15 Presbyterian churches randomly selected from all over Aizawl city, 293 leaders representing the four groups of leadership (Pastor/Elder, Women, Youth and Men). Analysis was done using SPSS V21 for quantitative, manual analysis for qualitative study.

### Results:

The proportion of Church leaders willing to advocate condom use for HIV prevention was 34.0 percent. Around 97.3 percent of them agreed that Church leaders should be concerned and intervene in HIV prevention. AND 90.4 percent felt it should be discussed in Church services. According to 66.9 percent of the Church leaders, Biblical disobedience led to HIV and almost 80 percent felt homosexuals deserve HIV. Abstinence (77.1%), marital fidelity (22.2%) and condom use (0.3%) were the preferred choice for HIV prevention. Although 66.9 percent agreed with the Church statement that condoms encourage pre-marital sex, more than 80 percent agreed that condom prevents spread of HIV. Nearly 66% of the Church leaders felt that the church should support NSEP (needle syringe exchange

program) by the Government of India even though 16% felt it was not Biblical and 12% felt it does not really help in mitigating substance use or HIV.

### Conclusion:

Church leaders agreed that they have responsibilities towards HIV prevention and harm reduction for OUD but were restricted by the Church doctrine. Being HIV positive is seen as something sinful, which happens when one is disobedient to Biblical teachings. Misconceptions around HIV persists irrespective of many awareness programs within the Church. Education of safe sex and SUD from early childhood, using Church medias and sensitizing core leaders were suggested for prevention.

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## Just How Far off Target Are We? Measuring Unmet Pre-exposure Prophylaxis (PrEP) Need among Men Who Have Sex with Men (MSM) And Transgender Women (TGW) In Asia

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### Background:

Despite recent efforts to expand oral pre-exposure prophylaxis (PrEP) access in Asia, uptake has lagged significantly behind the regional 2025 target, with only 3% of the 4 million goal achieved. We aimed to measure unmet PrEP need among men who have sex with men (MSM) and transgender women (TGW) in Asia to inform scale-up strategies in the region.

### Material and Methods:

We implemented an online cross-sectional survey among MSM and TGW across 15 and 11 countries or territories in Asia, respectively, from May to November 2022. Participants were asked about potential HIV risk, PrEP use history, and PrEP product and service preferences. We defined unmet PrEP need as those who had: 1) heard of and wanted to take PrEP but had never taken it (NeverPrEP Want); 2) never heard of PrEP but had HIV risk factors indicating need (NeverPrEP\_Need); 3) taken oral PrEP but preferred a different PrEP product (e.g., long-acting PrEP) (PrEP\_Switch); or 4) had temporarily discontinued oral PrEP due to a barrier (side effects, not liking pills, cost) but still needed it (PrEP\_Return). We generated descriptive statistics and used multivariable logistic regression models to identify factors associated with unmet PrEP need.

### Results:

Among 17,032 MSM and 1,260 TGW surveyed, 10,195 (59.9%) MSM and 598 (47.5%) TGW were found to have unmet PrEP need. Unmet need was expressed as follows: 1) NeverPrEP Want: 6,130 (60.1%) MSM and 202 (33.8%) TGW were PrEP-

naïve but wanted to take it; 2) NeverPrEP\_Need: 1,368 (13.4%) MSM and 134 (22.4%) TGW were unaware of PrEP but reported risk factors indicative of need; 3) PrEP\_Switch: 2,004 (19.7%) MSM and 182 (30.4%) TGW were taking oral PrEP but preferred using a different product; 4) PrEP\_Return: 693 (6.8%) MSM and 80 (13.4%) TGW had temporarily discontinued PrEP due to a barrier. Knowing fewer people who took PrEP (aOR=1.85; 95%CI:1.72-2.00), condomless anal sex in past 6 months (aOR=1.64 95%CI:1.54-1.75), and younger age (aOR=1.02 95%CI:1.01-1.02) were positively associated with unmet PrEP need.

### Conclusion:

We identified substantial unmet PrEP need among MSM and TGW respondents in the largest known regional study on PrEP in Asia. To accelerate regional progress towards 2025 HIV prevention goals, urgent investment is needed to increase PrEP awareness and service access, accompanied by a wider selection of products, that best align with what TGW and MSM need and want.



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## Low Coverage of Antenatal and Peripartum HIV Screening Tests in a Tertiary Center in the Philippines

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### Background:

WHO initiated a campaign on triple elimination of neonatal HBV, syphilis and HIV to expand their capacity to address vertical acquisition of these infection. The Philippines provides antenatal screening tests for HBV, syphilis and HIV free of charge at government-funded health facilities. However, HIV testing policy is performed thru provider-initiated counseling and testing, rather than opt-out policy as HBV and Syphilis tests. HIV screening is essential to trigger vertical transmission prevention cascade. According to the report of Epidemiology Bureau of the Department of Health, only 173,737 pregnant women had HIV testing out of the 2.4 million births in year 2021. This study aims to describe coverage of HIV testing at antenatal and peripartum care (ANC) service during 2016-2002 in a tertiary care center.

### Material and Material and Methods:

A retrospective aggregate data on coverage of HIV, HBV and syphilis tests among women who attended ANC at Jose B. Lingad Memorial General Hospital, a 900-bed health facility in Pampanga, Philippines was reviewed. These tests were offered at the first ANC visit or at the time delivery or immediately postpartum if without ANC. The assays include HIV (Sysmex Ag-Ab (CMIA- 4th generation), SD Bioline HIV Ag-Ab cassette, Alere Determine HIV ½ • Geenius HIV ½ Confirmatory Assay Kit), HBsAg (ONE STEP HBsAg TEST)) and TPHA (Abbott Bioline Syphilis 3.0). Prevalence of infection was reported as percentage and 95% confidence interval. HIV vertical transmission prevention package includes initiation of antiretroviral regimen to pregnant women, cesarean section if with high plasma HIV RNA (>1000 copies/ml) at near delivery or duration of ART <4 weeks prior to delivery. Early infant diagnosis was performed by HIV RNA PCR at 4-6 weeks and 4-6 months. Infant formula was

recommended, but not provided by the government.

### Results:

From 2016 to 2022, there were 44, 062 pregnant women who delivered baby in this hospital. The uptake rates of HIV, Syphilis, and HBV were 10.5%, 100% and 100%, respectively. Corresponding prevalence rate of HBV infection was 0.54% (95%CI 0.47-0.62) and for Syphilis 0.07% (95%CI 0.05-0.11). Among 4754 women who received HIV test, the HIV prevalence rate was 1.03% (95%CI 0.76-1.36). Mode of delivery were 30(61%) vaginal delivery and 19 (39%) cesarean section. All except one infant received neonatal post exposure prophylaxis antiretroviral drugs. HIV early infant diagnosis was 36 (74%) completed, 9 (18%) only one HIV PCR test, 3 (6%) not done due to lost to follow up, 1(2%) died at 7 months presumed HIV infection.

### Conclusion:

With the rising HIV incidence among adults in the Philippines, there is an urgent need to increase uptake of HIV testing during antenatal care service using opt-out strategy as part of triple elimination initiative. Missed opportunities in preventing vertical transmission of HIV should be addressed with a collaborative integrated effort in maternal child health service.

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## Interest in and Preferences for Current and Future PrEP Modalities Among Men Who Have Sex With Men: Results From a Cross-Sectional Online Survey in 15 Countries and Territories in Asia

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### Background:

Oral HIV pre-exposure prophylaxis (PrEP) is the most common form of PrEP, but it may not be suitable for everyone. Emerging PrEP modalities could increase PrEP uptake among men who have sex with men (MSM) throughout Asia by allowing more choice to suit an individual's HIV prevention needs. This analysis aimed to determine which forms of PrEP would be most appealing to MSM in Asia.

### Material and Methods:

We conducted an online cross-sectional survey in 15 countries/territories in Asia among MSM between May and November 2022. The countries/territories included were Cambodia, China (excluding Hong Kong), Hong Kong SAR China, India, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, the Philippines, Singapore, Taiwan (China), Thailand, and Vietnam. Participants were asked about their interest in (non-mutually exclusive) and top preference for (mutually exclusive) PrEP as: daily pills, event-driven pills, monthly pills, long-acting injectable (LAI-PrEP), and long-acting implants. Bivariate logistic regression models were conducted to compare interest

between PrEP-naïve and PrEP-experienced participants.

### Results:

Among 16,564 participants, interest was highest for the monthly pill (n=6920, 41.8%), and event-driven pills (n=6,616, 39.9%), followed by LAI-PrEP (n=6,311, 38.1%), daily pills (n=5,621, 33.9%), and long-acting implants (n=2,919, 17.6%); 1,226 (7.4%) participants were not interested in any modality. Compared to PrEP-naïve participants (n=11,956, 72.2%), PrEP-experienced participants (n=4,608, 27.8%) were more likely to be interested in using daily pills (46.0% vs 29.3%, OR=2.06, 95%CI=1.92-2.21), LAI-PrEP (46.6% vs 34.8%, OR=1.63, 95%CI=1.52-1.75), and long-acting implants (21.5% vs 16.1%, OR=1.43, 95%CI=1.31-1.55). PrEP-experienced participants were less likely than PrEP-naïve participants to be interested in event-driven pills (37.1% vs 41.1%, OR=0.85, 95%CI=0.79-0.91) or monthly pills (38.8% vs 42.9%, OR=0.84, 95%CI=0.79-0.90). Among those who were interested in at least one form PrEP (n=14,949), the top preferences when choosing one modality over all other choices were event-driven pills (24.5%), monthly pills (24.2%), LAI-PrEP (22.9%), daily pills (19.9%) and long-acting implants (8.5%). In PrEP-naïve participants the most preferred modality over other choices was monthly pills (27.3%), followed by event-driven pills (27.0%), LAI-PrEP (20.8%), daily oral pills (16.8%) and long-acting implants (8.2%). In PrEP-experienced participants, the most preferred modalities was LAI-PrEP (27.9%), followed by daily oral pills (27.3%), event-driven oral pills (18.6%), monthly oral pills (17.1%) and long-acting implants (9.1%).

### Conclusion:

MSM in Asia had similar levels of interest in and preference for event-driven pills, monthly pills, LAI-PrEP, and daily pills, with more than one-third showing interest in each of these options and with comparable proportions choosing these options as their top preference. Less than one-fifth were interested in long-acting implants with less than a tenth choosing it as their top preference. Levels of interest and preference varied substantially depending on PrEP experience. These findings point to urgent need to advocate for availability and affordability of each available PrEP product to increase PrEP coverage and lower population-level HIV incidence in the region.



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## Preparing for Next-Generation HIV Prevention: Awareness and Willingness to Use Long Acting Injectable Cabotegravir (CAB-LA) among Men Who Have Sex with Men and Trans Women in Asia and Australia

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### Background:

Offering choices in pre-exposure prophylaxis (PrEP) products is expected to help accelerate PrEP uptake and reduce HIV transmission in the Asia-Pacific region. In 2022, WHO recommended long acting injectable cabotegravir (CAB-LA) as a new additional HIV prevention option. CAB-LA is not yet available in the Asia-Pacific region outside limited trial sites in Viet Nam and Thailand. This study aimed to assess the awareness, values, and preferences related to CAB-LA among gay men and other men who have sex with men (MSM) and trans women (TGW) across Asia and Australia to inform successful introduction of CAB-LA.

### Material and Methods:

We conducted an online cross-sectional survey among self-identified MSM and TGW aged >18 years who were not reporting to be living with HIV, in 16 and 11, respectively, countries/territories in Asia and Australia between May and November 2022. All participants were asked about awareness of and willingness to use CAB-LA, and reasons for preferring or not preferring CAB-LA. Descriptive statistics and bivariate logistic regression models

were calculated for associations between awareness and willingness to use PrEP.

### Results:

Among 17032 MSM and 1260 TGW, 18.2% (n=3103) and 26.6% (n=335) were aware of CAB-LA. Willingness to use CAB-LA among all MSM and TGW respondents was 16.1% (n=2742) and 15.6% (n=196), respectively. Both awareness and willingness to use CAB-LA varied substantially across countries. Among MSM, awareness of CAB-LA was highest in Viet Nam (36.0%, n=396/1162) and lowest in Lao PDR (9.0%, n=21/277). Willingness to use CAB-LA was highest in Australia (25.1%, n=423/1687) and lowest in Cambodia (5.3%, n=32/129). Among TGW, awareness of CAB-LA was highest in Viet Nam (56.2%, n=123/228) and Malaysia (0%, n=0/12). Willingness among TGW was highest in China (37.5%, n=9/24) and lowest in Indonesia (10.1%, 7/67). Prior awareness of CAB-LA was positively associated with willingness to use CAB-LA among MSM (OR=1.74, 95% CI=1.58-1.91) but not TGW (OR=1.17, 95% CI=0.83-1.65). The most commonly reported perceived benefits of CAB-LA ranked similarly in importance between MSM and TGW, although the proportion varied: HIV protection (55.2% and 45.7%); not having to remember to take pills (37.2% and 27.8%); and longer-term protection (35.1% and 21.1%). However, the most commonly reported perceived concerns varied in importance between MSM and TGW: unaffordable cost (36.3% and 19.9%); side effects (34.0% and 20.6%); insufficient knowledge (32.5% and 21%); and pain (20.0% and 24.0%).

### Conclusion:

Awareness of CAB-LA is currently low among MSM and TGW across Asia and Australia, with substantial variability between countries. Urgent efforts are needed to increase awareness of CAB-LA which is likely to support a higher willingness to use it. Furthermore, tailored demand generation activities are needed that address the perceived benefits and concerns of MSM and TGW if CAB-LA is to become widely adopted and support increased uptake of PrEP in Asia and Australia.



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## Adaptation of a Theory-Based Clinic-Affiliated Mobile App to Deliver HIV Testing, Pre-exposure Prophylaxis, and Gender-Affirming Care Services for Transgender Women in Malaysia

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### Background:

HIV is disproportionately affecting transgender women (TGW) in Malaysia. Existing anti-trans stigma, limited employment opportunities, high engagement with sex work, and limited access to health care, including gender-affirming health care, make TGW a mostly hidden population at risk for HIV. mHealth interventions, particularly mobile apps, are a promising and cost-effective strategy to reach stigmatized and hard-to-reach populations, like TGW, and link them to HIV prevention services (e.g., HIV testing, PrEP ). This study aims to examine the PrEP barriers and adapt and refine the JomPrEP app developed for the MSM of Malaysia to improve HIV prevention and gender-affirming care services for TGW in Malaysia.

### Material and Methods:

We conducted online focus group discussions between March and April 2022 with 18 TGW and 11 stakeholders (e.g., doctors, clinicians, and NGO staff). Through FGDs, the participants delved into the topic of PrEP uptake and barriers for TGWs, sharing their own experiences. The discussions were followed by a live demo of the JomPrEP app, and feedback was gathered on preferred features and ways to tailor the app for TGWs. Each session was digitally recorded and transcribed. Transcripts were coded inductively using Dedoose software and analyzed to identify and interpret emerging themes.

### Results:

Limited understanding of PrEP, its high cost and accessibility concerns, preference for condoms as a prevention method, trans and PrEP stigma and discrimination, perceived adverse effects, and concerns about maintaining regular adherence were identified as barriers to PrEP uptake and use. Key themes mostly focused on the adaptation and refinement of the app for the TGW contexts were related to the attributes of the app (user interface, security, customizable colors, themes, and avatars), feedback, and requests for additional features (appointment booking and e-consultation for gender-affirming care, online pharmacy, medicine, and mood tracker, service site locator) and communication features (peer support group/discussion forum and live chat).

### Conclusion:

These focus group discussions indicate key barriers to PrEP uptake and use among TGW in Malaysia. The findings further demonstrate detailed recommendations for successfully adapting the JomPrEP app to the Malaysian TGW context with a potential solution to deliver tailored HIV prevention and gender-affirming care services for TGW in Malaysia.

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## Oral HIV Pre-exposure Prophylaxis (PrEP) Awareness, Use and Continuation Cascade Among Men Who Have Sex With Men (MSM) In 16 Countries and Territories in Asia and Australia

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### Background:

Despite global recommendations, oral HIV pre-exposure prophylaxis (PrEP) implementation and uptake will fall significantly short of 2025 regional targets unless substantially accelerated. In most Asian countries, little is known about PrEP awareness, uptake and continuation among gay and other men who have sex with men (MSM).

### Material and Methods:

We conducted an online, cross-sectional survey among MSM in 16 countries/territories (Australia, Cambodia, China, Hong Kong, India, Indonesia, Japan, Lao, Malaysia, Myanmar, Nepal, Philippines, Singapore, Taiwan, Thailand, Vietnam) in Asia/Australia from May to November 2022. We constructed a PrEP 'cascade' examining awareness, previous use, and continuation (i.e. current use). Those who had not taken PrEP but wanted to or had taken PrEP but discontinued it were asked why. As PrEP is not widely available across all countries/territories, we examined

sociodemographic and risk factors associated with the first step of the cascade (i.e. aware versus not aware of PrEP) using multivariable logistic regression with adjusted odds ratios (aOR) and 95% confidence intervals (CI).

### Results:

We included 17,017 MSM in the analysis (ranging from n=277 in Lao to n=2,104 in Taiwan; mean per country=1,064). The median age was 30 (IQR=25-37), 71.6% identified as gay and 20.1% as bisexual/pansexual.

Overall, 81.6% were aware of PrEP. Awareness was >90% in respondents from Australia, China, Hong Kong, Myanmar, Singapore, Taiwan, and Vietnam; and was lowest in India (53.9%) and Lao (48.0%). Of those aware of PrEP, 36.5% had ever used PrEP, 19.3% did not want to, and 44.2% wanted to but had not (top reasons included: not knowing where/how to get PrEP=55.6%, PrEP being too expensive=38.0%, and concerns about side effects=33.9%). Ever having used PrEP was highest among respondents from Nepal (71.1%), Vietnam (67.6%) and Australia (66.2%), and lowest in Indonesia (13.2%) and India (11.9%). Of those who had ever used PrEP, 70.1% continued taking it to the time of the survey, while 5.2% stopped permanently (top reasons: monogamous relationship=31.7%; not having much sex=27.2%; concerns about side effects=24.9%) and 24.7% paused temporarily (top reasons: not having much sex=44.6%; too expensive=26.2%; concerns about side effects=24.4%). Continuation was highest in respondents from Nepal (82.6%) and Vietnam (80.7%), and lowest in India (55.4%) and Lao (44.4%).

PrEP awareness was associated with university education (aOR=1.44, 95%CI=1.32-1.57), full-time employment (aOR=1.17, 95%CI=1.07-1.28), living in a capital/major city (aOR=1.65, 95%CI=1.51-1.80), recent HIV testing (aOR=1.95, 95%CI=1.77-2.15), having >10 sex partners in last 6 months (aOR=1.34, 95%CI=1.16-1.55), and living in a country/territory with relatively broad PrEP access (aOR=1.97, 95%CI=1.79-2.16). Recent sex work was negatively associated (aOR=0.74, 95%CI=0.65-0.85).

### Conclusion:

In the largest regional survey on PrEP, despite very high levels of awareness, our cascade analysis identified significant barriers in access to and continuation on PrEP. Efforts to address barriers (such as cost, lack of knowledge and fears of side effects) and to increase PrEP access are urgently needed to meet the 2025 regional PrEP target and reduce HIV incidence.



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## HPV Vaccine Immunogenicity Among Female Sex Workers with or Without HPV Infection: A Pilot Study in Vietnam

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### Background:

Female sex workers (FSWs) are at high-risk of HPV infection due to high numbers of sexual partners, and can also have multiple HPV genotype infections. HPV vaccines are mainly recommended for adolescent girls before initiating sexual activity. There have been few assessments of vaccine-associated immune responses in FSWS and men who have sex with men. While HPV vaccination does not clear existing infection, antibodies are generated to vaccine HPV types to which individuals may not currently be infected with, protecting them from future HPV infections and reducing their risk of HPV-associated diseases. Whether prior or current HPV infections impact HPV vaccine immunogenicity is unclear. We evaluated HPV vaccine immune responses in FSWS in Hai Phong, Vietnam.

### Material and Material and Methods:

A pilot study was initiated in September 2022 among 18-26-year-old FSWS who had not previously received HPV vaccine (NCT04590521). A standard 3-dose Gardasil quadrivalent vaccine is being given to the participants; the first dose was at baseline, and the second and third doses will be at 2 and 6 months. Two cervical swabs are being collected at baseline and at 7 months. Blood samples are being collected at baseline, and 2, 3, 6, and 7 months. Baseline visits have been completed, with collection of socio-demographic and risk behaviour data through participant interviews, cervical swabs, and blood samples. Cervical samples were genotyped for 14 high-risk HPV types using a validated, in-house real-time PCR method.

### Results:

A total of 69 FSWS were screened and 63 were consented and enrolled. Median age was 23.0 years (IQR 21.0-24.7). Mean age at first selling sex was 18.5 years. At baseline, the mean number of clients per day was 11.0 (SD 5.0). Consistent condom use was reported by 68.3%. Prevalence of any HPV type was 22.2% (14/63), with 2 participants coinfecting with 2 HPV types and 1 participant coinfecting with 3 HPV types. The most common HPV types were HPV 68, HPV 51 and HPV 18 (6.3%, 4/63 with all 3 types), followed by HPV 58 (3.2%, 2/63).

### Conclusion:

We found that one-fifth of FSWS in our cohort in northern Vietnam had prevalent HPV infection. Immunogenicity analyses are ongoing.

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## Correlation Between Human Immunodeficiency Virus Reservoir and Poor Immune Reconstitution of Human Immunodeficiency Virus/Immunodeficiency Syndrome Patients

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### Objective:

To analyze the correlation between human immunodeficiency virus (HIV) reservoir and poor immune reconstitution of HIV/ immunodeficiency syndrome (AIDS) patients, and to investigate the influence of HIV-1 reservoir on immunity reconstitution.

### Material and Methods:

Cross-sectional survey was conducted to measure HIV-1 RNA and T-lymphocyte subsets from 219 patients with HIV/AIDS who had been treated with anti-retroviral therapy (ART) for more than two years with HIV RNA lower than the limit of detection. Among them, there are 195 patients from the Sixth People's Hospital of Zhengzhou, 12 patients from Shangqiu Municipal Hospital and 12 patients from Zhoukou Infection Diseases Hospital. Peripheral blood mononuclear cells (PBMC) were collected, and HIV-1 DNA was detected. The measurement data of normal distribution were analyzed by two independent sample t-test. The measurement data of skewness distribution were analyzed by rank sum test. Spearman's rank correlation was used for correlation analysis. Receiver operating characteristic curve (ROC) was used to predict the predictive value of occurrence of poor immunity reconstitution AIDS patients.

### Results:

There were 121 patients with poor immune reconstitution and 98 patients with healthy immunity reconstitution. HIV-1 DNA was (2.50±0.52) copies /1×10<sup>6</sup> PBMC in the group with poor immune reconstitution, which was significantly higher than the healthy immune reconstitution

group (2.11±0.66) copies /1×10<sup>6</sup> PBMC,  $t=4.78$ ,  $p<0.01$ ). The CD4+ T lymphocyte counts in the group with poor immune reconstitution was 192 (139,227) /uL, which was lower than that in the healthy immune reconstitution group (573 (457,730) /uL) . The difference was statistically significant ( $Z=12.68$ ,  $P<0.01$ ) HIV-1 DNA was reversely correlated with CD4 +T lymphocyte counts and CD4+/CD8+ lymphocyte ratio (after adjusting the influence of age and ART time,  $r=-0.277$  and  $0.316$ , respectively, both  $P<0.01$ ); The area of ROC curve for HIV-1 DNA to predict poor immune reconstitution was 0.679 (95%CL 0.604 to 0.750). The HIV-1DNA threshold value was 100 copy/1×10<sup>6</sup> PBMC with the sensitivity of 90.13% and specificity of 42.91%. The area of ROC curve of CD4+/CD8+ lymphocyte ratio to predict poor immune reconstitution was 0.905 (95%CL 0.863 to 0.942) . The threshold value of CD4+/CD8+ lymphocyte ratio was 0.536 with the sensitivity of 77.68% and specificity of 89.84%.

### Conclusion:

There is correlation between HIV-1 DNA and poor immune reconstitution in HIV/AIDS patients. The volume of HIV-1 DNA higher than 100 copy/1×10<sup>6</sup> PBMC and CD4+/CD8+ lymphocyte ratio lower than 0.536 could be used as predictor of poor immune reconstitution.

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## Development of Usability Study Protocol for HIV Self-Testing Kit Using for Licensing Process in Thailand

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### Background:

The Thai Food and Drug Administration (FDA) has approved the HIV Self-Testing Kit (HIVST Kit) for home use since 2019. As part of the approval process, the Thai FDA requested a report on a usability study conducted in Thai population to demonstrate the feasibility. The information of the test kit for user should be appropriate for Thai population.

### Material and Methods:

The study protocol was provided as guideline for usability study of screening test for HIV self-test. The goal of this study is to develop a protocol for evaluation usability of HIVST Kit. The developed protocol for the use of test kit in this study was divided into two parts: the observed untrained user and mock result interpretation. Both processes were evaluated by an observer. The proportions of participants who pass each process were determined. The study results were used to determine the accuracy of HIVST kit.

### Results:

There were 5 HIVST kits in this study (U1, U2, U3, U4, and U5) included in this study. U1, U2 and U3 used the blood samples and U4 and U5 used oral fluid samples for testing. Four products enrolled 400 participants and one product (U3) enrolled 205 participants. The percentage of volunteers that pass the specimen collection process of U1-U5 test kit were 98.25, 98.0, 83.41, 96.00, and 97.00, respectively. For the mock result interpretation study, the percentage of volunteers that pass from U1-U5 test kit were 94.25%, 97.75%, 94.15%, 93.75% and 95.50%, respectively. Percentage of the participants who passed both two processes were

92.75, 96.00, 79.51, 90.00, and 93.50 for U1-U5 respectively.

### Conclusion:

Four of the five HIVST kits that passed Thai FDA regulation were studied for their interpretation and usability using our developed protocol. The usability results from the our developed protocol can be applied to the design of HIVST kit for Thai population as well as submit a results to the Thai FDA for reviewing of HIVST kit performance in the licensing process.

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## Risk Factors for Progressing to Severe COVID-19 among People Living with HIV in Japan

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### Background:

Studies on people living with HIV (PLWH) and coronavirus disease 2019 (COVID-19) have remained scarce. HIV and AIDS are reported to be the poor prognostic factors of COVID-19; however, the characteristics and risk factors for severe COVID-19 in PLWH have not been well studied. Therefore, we aimed to reveal the characteristics of mild to severe COVID-19 patients with HIV using the Japanese Diagnosis Procedure Combination (DPC) database.

### Material and Material and Methods:

This is an observational, retrospective study using the DPC database among secondary and tertiary hospitals in Japan. Data were extracted from hospitals with the DPC system between February 2020 and December 2021. Patients aged  $\geq 18$  years with diagnosis records of HIV under antiretroviral therapy and COVID-19 were eligible. A total of 4,672 patients were found to have HIV infection with antiretroviral therapy regimens. Among these patients, 94 were confirmed with a COVID-19 diagnosis; 9 patients were excluded because they were treated as outpatients. As a result, 85 hospitalized PLWH with COVID-19 were included in the study. Demographic characteristics (age and sex), body mass index (BMI), smoking index, pregnancy, date of hospitalization, size, area of the hospital for admission, diagnoses of chronic comorbidities, and COVID-19 treatments were collected as patient data. The patients' baseline comorbidities and COVID-19 adverse outcomes (mild/moderate and severe/death) were analyzed using the t-test for continuous variables and Fisher's exact test for categorical variables.

### Results:

Among 85 hospitalized PLWH with COVID-19, most patients were male (91.8%). The mean age of the participants was 48 ( $\pm 14.4$ ) years. AIDS-defining illnesses were confirmed in 28 patients (32.9%). Sixty-eight patients (80.0%) had comorbidities, except for AIDS-related disease. The most frequent comorbidity was syphilis (40.0%), followed by diabetes (34.1%) and dyslipidemia (24.7%). As for COVID-19 severity, 76 (89.4%) were found in the mild/moderate group, including 55 (64.7%) as mild/moderate I and 21 (24.7%) as moderate II; 9 (10.6%) patients were severe with comorbidities such as *Pneumocystis carinii* pneumonia; 1 (1.2%) patient died. The mean age was 46 in the mild/moderate group; 65 in the severe/death group. In terms of risk factors for adverse COVID-19 outcomes, we found that older age ( $p=0.002$ ), hypertension ( $p=0.032$ ), interstitial pneumonia ( $p=0.049$ ), and syphilis ( $p=0.005$ ) were significantly associated with progressing to severe COVID-19 or death. AIDS was not found to be a significant factor in this study.

### Conclusion:

In our study, older age, hypertension, interstitial pneumonia, and syphilis were statically higher in the severe COVID-19 group. Because these comorbidities may be higher risks for progression to adverse COVID-19 outcomes, more attentive inpatient care and follow-ups are required for those patients.

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## Characteristics and Opportunistic Infections Among Patients with Advanced HIV Diseases in Vietnam: Profiling to Improve Clinical Interventions

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### Background:

Vietnam has made significant progress towards epidemic control. However, advanced HIV disease (AHD) remains a primary driver of mortality, mostly in the 6 months after treatment initiation. WHO defines AHD as a CD4 cell count below 200, clinical stage 3 or 4, or children living with HIV younger than five. We aimed to identify common characteristics and opportunistic infections (OI) among clients with AHD at facilities receiving USAID support through the Meeting Targets and Maintaining Epidemic Control (EpiC) project to improve last-mile clinical interventions.

### Material and Methods:

We reviewed medical records of patients who received treatment between April 2021 and March 2022 at three facilities in Tay Ninh, Vietnam. Patient data on demographics, antiretroviral therapy, and screening and treatment for OIs were collected and analyzed using descriptive statistics and chi-square test.

### Results:

Among 2,740 charts reviewed, 117 (4.3%) met WHO criteria for AHD identified by clinical stage, as CD4 count was not available. Common OIs included pulmonary TB (36.8%), and oral (20.5%) and esophageal (10.3%) candidiasis. Of the 112 adults and adolescents, 91 (81.3%) were enrolled during the review period, seven (6.3%) returned after interruption in treatment, and 14 (12.5%) were on treatment the entire period. Among all patients, males were more likely to have AHD (5.02% vs. 1.95% female,  $p < 0.001$ ). Female sex workers (FSW)

(11.1%) and men who have sex with men (MSM) (6.3%) presented higher proportions of AHD compared to people who inject drugs and those in prison (3.7% and 2.2%,  $p < 0.001$ ). There was no difference in age groups in terms of likelihood of having AHD. Among clients who died during the review period, AHD accounted for 80.6% of deaths (37.9% of deaths due to pulmonary TB and 13.8% to extra-pulmonary TB).

### Conclusion:

Identifying AHD at enrollment and re-engagement is critical to ensure that PLHIV receive appropriate care. CD4 cell count should be made accessible to prevent misdiagnosis of AHD. Interventions should be tailored for MSM and FSW to prevent risks of developing AHD, and increase emphasis on early diagnosis and enrollment to expedite their linkage to care and avoid AHD.

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## The Characteristics of Toxoplasma Encephalitis Treatment with Pyrimethamine Compared to Non Pyrimethamine

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### Background:

Toxoplasma encephalitis (TE) is an opportunistic infection manifested as expansive brain lesions commonly found in Acquired Immunodeficiency Syndrome (AIDS) patients. It causes high morbidity and mortality among patients. The incidence of HIV patients with cerebral toxoplasmosis is 33% in Indonesia. Nevertheless treatment choice in TE is still debatable. Pyrimethamine, the most effective drug against toxoplasmosis, often related with common side effects such as cytopenia, drug allergy which could ended as drug interruption, thus compromise treatment. In this study we compared the efficacy and outcome of TE patients with and without pyrimethamine.

### Material and Material and Methods:

A retrospective cohort study was carried out from April 2019 to January 2023 in Indonesia's top national referral hospital, Cipto Mangunkusumo hospital. The inclusion criteria were patients older than 18 and HIV positive. Subjects were divided into two groups: treated with pyrimethamine compared to other regiments. The outcome was defined with discharge status as alive or dead, functional outcome using Modified Rankin Scale (MRS), rate of adverse drug reaction between the two groups.

### Results:

We've analyzed, 84 adults, 73% male, 62% known and advanced HIV (median CD4 31 cell/  $\mu$ L). Only 20% of them had history of cotrimoxazole prophylaxis. Toxoplasma patients had more prominent focal deficits by physical examination (79%) rather than symptoms supporting diagnosis such as headache (21%) and seizure (11%), with encephalitis as the most common brain imaging findings. Regarding blood findings during

treatment, there were no remarkable effects on hemoglobin, but lower trend of leukocytes and thrombocytes on pyrimethamine group. We also found that drug interruption in pyrimethamine group was more frequent than the other. No difference regarding drug allergy between the two groups. Patients in non-pyrimethamine group had higher mortality 21% versus 10% and disability than pyrimethamine group. GCS and MRS at discharge showed no significant difference between the two groups.

### Conclusion:

Toxoplasma encephalitis still caused significant morbidity in advanced HIV patients. This study showed no significant difference in cell count but higher drug interruption in pyrimethamine group, but higher mortality in non-pyrimethamine group. This result indicate the need to perform larger and randomized study to draw a clear conclusion to choose the better regiment.

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## Prevalence, Clinical Features and Outcomes of Hepatitis B and Hepatitis C Co-Infections among HIV-Positive Adults in a Tertiary Hospital in Manila, Philippines

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### Introduction:

The Philippines is one of the countries with the fastest-rising HIV rate in Asia. HIV, Hepatitis B (HBV), and Hepatitis C (HCV) have similar transmission routes; hence, co-infection with HBV or HCV is common in HIV-positive patients. Despite the high prevalence of HBV and HCV in the Philippines, there is limited data regarding HBV and HCV co-infections in People Living with HIV (PLHIV) in the Philippines. We sought to determine the prevalence, clinical features, and outcomes of HBV and HCV co-infections among PLHIV enrolled in a treatment hub in Manila, Philippines.

### Material and Methods:

A retrospective study was conducted on PLHIV enrolled at San Lazaro Hospital treatment hub between 2015 and 2019. Demographic data, pre-treatment laboratory results, including hepatitis B surface antigen (HBsAg) and HCV antibodies (anti-HCV), and outcomes were retrieved from the medical records.

### Results:

Among 1,658 HIV-positive patients, the prevalence of HIV/HBV co-infection was 12%, and the prevalence of HIV/HCV co-infections was 0.4%. There were no triple co-infections of HIV/HBV/HCV. Most patients with hepatitis co-infections were male (99.4%), and the most common mode of transmission was homosexual contact (68%). HIV/HBV and HIV/HCV patients exhibited mild elevations of serum transaminases. Based on the non-invasive fibrosis scores of HIV/HBV patients, 17.3% have fibrosis, and 11.3% have cirrhosis. The mortality rate in HIV/HBV co-infection was 28.4%, while the mortality rate of HIV-HCV co-infection was 16.7%.

### Conclusion:

The prevalence of HBV among HIV patients in this study was lower than that of the reported prevalence of HBV among the general population in the Philippines. Our results showed a higher prevalence of HIV/HBV co-infection as compared to the median HIV/HBV co-infection rate of Sub-Saharan Africa. Furthermore, the prevalence of HIV/HCV co-infection in our setting is very low, which can be attributable to this population's uncommon injection drug use. The findings of this study highlight the importance of HBV and HCV screening, Hepatitis B vaccination and early anti-retroviral therapy in all PLHIV.

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## HIV and Hepatitis Among Alcohol and Opioid Users in Mizoram, Northeast India

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### Background:

Mizoram in Northeast India bordering Myanmar and Bangladesh has the second highest HIV prevalence rate in India at 0.80% triggered by rampant substance misuse, porous international border and proximity to the golden triangle. However, studies on HIV and Hepatitis co-infection among intravenous drug users, alcoholics or those with injection abscess/venous ulcers are minimal.

### Material and Methods:

A hospital based retrospective study was done using hospital register of K-ward, a hospital ward dedicated specially for substance misuse, at Presbyterian Synod Hospital, which is a 300 bedded secondary hospital located in Mizoram, India. From 2005 to 2016, patients admitted at K-ward either for alcohol misuse or intravenous drug misuse or those with injection abscess/venous ulcers were selected.

### Results:

Total number of patients admitted (2005-16) was 3957. Reasons for admission were 30% alcohol, 43% intravenous drug use and 27% due to injection abscess/venous ulcer. While 47% of those admitted were in the age group between 20 - 29years.

The prevalence of Hepatitis C among intravenous drug users was 69.3%, HIV at 19.4% and Hep B at 4.3%. While alcohol users have prevalence of Hepatitis C at 28%, HIV at 3.5% and Hep B at 3.1%. Regarding co-infections, 0.40% of the patients had Hepatitis C, B and HIV. Nearly 7% of them had HIV and Hepatitis C co-infections.

### Conclusion:

The prevalence of Hepatitis C, B and HIV was the highest among intravenous drug users as compared to alcohol user or those with injection abscess/venous ulceration. There seemed to be an association between HIV and Hepatitis C co-infection especially among the IVDU. Harm reduction strategies needs to be strengthened.



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## Prevalence of Integrase Strand Transfer Inhibitors (INSTI) Resistance in HIV-1 Infected Patients with Virological Failure

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### Objectives:

To describe integrase strand transfer inhibitor (INSTI) resistance profiles in antiretroviral - experienced patients failing an INSTI-based regimen in southern Taiwan

### Material and Methods:

Data were collected from patients failing an INSTI-containing regimen in a medical center in southern Taiwan between 2009 and 2022. Virological failure was defined as plasma viral loads (VL) >1000 copies/ml. Reverse transcriptase, protease and integrase coding regions were sequenced at failure. Resistance-associated mutations (RAMs) included in 2022 IAS-USA list was used. Drug resistance was analyzed by HIV Stanford HIVDB 9.4 edition algorithm.

### Results:

A total of 184 patients were enrolled for genotypic drug resistance testing due to virological failure. Among the 184 patients, 104 were failing on NNRTIs, 58 on PIs and 21 on INSTIs. For those 21 patients failing on INSTI therapy, 6 were failing on raltegravir, 3 on genvoya, 2 on biktarvy, and 10 on triumeq. Only 10 patients had INSTI drug resistance testing result available. Overall, 40% (4/10) showed INSTI resistance at failure. Among the 7 patients failing on 2nd generation INSTI, 2 harbored E157Q and R263K mutations, respectively and only 1 had drug resistance to INSTIs.

### Conclusion:

INSTI resistance was uncommon in the modern antiretroviral therapy. The results confirmed the robustness of triumeq and biktarvy regarding resistance selection in integrase in the case of virological failure in routine clinical care.

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## Analysis of Drug Resistance in Patients with AIDS Antiviral Therapy Failure

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### Objective:

To understand the drug resistance status of some HIV/AIDS who came to our hospital to provide guidance for choosing effective ART programs.

### Material and Methods:

From October 2017 to December 2018, there were 156 treated AIDS patients who came to our hospital for treatment and received HIV-1 resistance testing. The treatment time was more than 6 months, and the HIV-1 viral load was more than 1000 copies/ml. The viral load uses RT-PCR and Real-time fluorescence quantitative detection technology, and the genotype resistance detection uses the ViroSeq™ (Celera Diagnostics/Abbott Laboratories). The drug resistance test results were compared and analyzed according to the Stanford University database (<http://hivab.stanford.edu>).

### Results:

The overall drug resistance rate of patients with failed antiviral therapy was 78.21% (122/156), of which 106 cases were NRTI resistant (67.95%), and the cross-resistance rate of 3TC, FTC, and ABC reached 66.67%; 118 cases (75.64%) were resistant to NNRTI, the cross-resistance rate of EFV and NVP reached 75.64%, and 7 cases (4.49%) were resistant to PI.

There are 16 NRTI resistant sites, the M184V/I mutation rate is up to 71.31%, the NNRTI resistant site is 13, the K103N/R mutation rate is 40.16%, the PI resistant site is 11, and the A71V/T mutation rate is the highest 40.16%. The moderate and high resistance rates of 3TC/FTC is 83.61%, and the moderate and high resistance rates of EFV/NVP is 95.91%.

These drugs have a low resistance barrier. The moderate and high resistance rates of AZT, TDF, and LPV/r were 23.78%, 39.34%, and 4.10%, respectively. These drugs have relatively high resistance barriers.

### Conclusion:

The incidence of drug resistance in patients with failed AIDS treatment is high, multi-drug resistance is serious, and drug resistance sites are diversified. After treatment fails, timely adjustment of the regimen to reduce the accumulation of drug-resistant strains is the key to reducing the occurrence of drug resistance. The introduction of new drugs for treatment and provision individualized programs are vital to future AIDS treatment.

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## Efficacy and Safety of Dolutegravir + Lamivudine for the Treatment of HIV in the Real World Setting in China

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### Background:

During the last 30 years, ARV regimens for human immunodeficiency virus (HIV) infection have been continuously evolving. Treatment with a two-drug regimen (2DR) approach has the potential to decrease lifetime cumulative drug exposure and long-term toxicities associated with multiple antiretrovirals. The 2DR of Dolutegravir (DTG) plus Lamivudine (3TC) is currently one of the preferred treatments under several international guidelines. Here we describe outcomes of treatment-naïve PLWH initiated on DTG+3TC.

### Material and Methods:

This study is a single-center, retrospective and observational study. Inclusion criteria were naïve, aged 18 years and older who received at least one dose of DTG+3TC between May 2020 and January 2022. The primary objective was the rate of virological suppression( defined as an HIV-1 VL less than 50 copies/ml) and the incidence of adverse events at week 48.

### Results:

A total of 46 PLHIV who met study criteria were identified. Overall, the mean age was 37.95 years and 38 (82.6%) of the cohort were male. Median HIV-1 RNA at entry was 35,150 copies/mL (interquartile range (IQR): 14,375-170,000) and the median baseline CD4+ cell count was 312 cells/ul (IQR: 224-457). We analyzed 13 (28.2%) patients with DTG +3TC regimen at baseline due to comorbidities (two with tuberculosis, four with diabetes, two with hypertension, and five with syphilis).

At week 48, 43(95.56%) patients had viral loads <50 copies/ ml, 12 (100%) of 12 participants with a baseline HIV-1 RNA ≥100,000 copies/mL achieved virological success. 9 (90.9%) of 10 participants with baseline CD4+ cell count < 200 cells/ul achieved virological suppression. Median CD4+ cell count

change from baseline was 255 cells/ul [(IQR (181-411)),p<0.05].

We haven't detected any significantly change in TG, TC, LDL-C, HDL-C and creatinine between baseline and 48 week.

The regimens of DTG plus 3TC were well tolerated , only one patient withdrew at 48 week due to severe insomnia.

### Conclusion:

Based on our studies, findings support the real-world effectiveness and low metabolic impact of DTG+3TC. Results are also consistent with results from the phase 3 GEMINI 1/GEMINI 2 studies.

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## Changes in Health and Sleep Quality After ART Modification in Japanese PLWH

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### Background:

Maintaining good health-related quality-of-life (HRQoL) is an important goal of treatment for people living with HIV (PLWH). Although patient-reported outcomes are often used to measure HRQoL in a clinical trial, there are few chances to use them in clinical practice. Now a days, modified anti-retroviral treatment (ART) regimen is often used in virologically well-controlled PLWH for treatment simplification. However, reports on the impact of these stable switching on HRQoL in clinical practice are scarce.

### Material and Methods:

PLWH who attended Teikyo University Hospital from October 2019 to March 2021 and whose treatment medication was changed to a single tablet regime for treatment simplification rather than side effects were included in the study. HRQoL evaluation by Short-Form (SF)8 and sleep quality by Pittsburgh sleep quality index (PSQI) global score were recorded before and after the treatment change. Background disease; time since HIV infection diagnosis and ART initiation; ART regimens; and blood test data before and after the treatment were collected for evaluation. SF-8 is a questionnaire index to calculate physical component summary (PCS) and mental component summary (MCS) for evaluation.

### Results:

Forty-nine males (mean age 48.57 years) were evaluated. Before and after modified ART showed no significant change in SF-8 evaluated PCS (before,  $51.03 \pm 5.48$ ; after,  $50.43 \pm 6.45$ ;  $p=0.5807$ ), while MCS significantly improved from  $48.50 \pm 6.56$  to  $50.76 \pm 4.37$  ( $p=0.0159$ ). PSQI also showed a significant improvement from  $6.47 \pm 3.71$  to  $5.57 \pm 3.29$  ( $p=0.0307$ ). After the change in the ART regimen, 13 patients further changed to dolutegravir/lamivudine. Therefore, changes in HRQoL and sleep quality were analyzed again in these 13 cases. Even in this small group, there was a

significant improvement in the MCS and PSQI. Another 30 patients changed to bicitegravir/tenofovir alafenamide/emtricitabine; however, there were no significant changes in HRQoL and PSQI in these cases.

### Conclusion:

The currently recommended treatment regimen modification due to simplification may improve HRQoL and sleep quality in PLWH.

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## A Clinical Analysis Study of Tenofovir-Associated Fanconi Syndrome in HIV/AIDS

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### Background:

Tenofovir disoproxil fumarate (TDF) is a prodrug of tenofovir (TFV) which is widely used antiretroviral agent for the treatment of HIV patients with favorable efficacy, safety and tolerability profiles. However, renal adverse events, including rare Fanconi syndrome (FS), may occur in a small subset of HIV-infected treated patients. The aim of this study is to present the cases of HIV-infected patients with FS during treatment with TDF as part of the antiretroviral therapy.

### Material and Methods:

Clinical records and laboratory investigations from patients receiving TDF (N=962) between 2017 and 2021 were extracted. FS was defined based on aminoaciduria, renal glycosuria, phosphaturia, hypouricemia and proximal tubular acidosis in Nephrology. With all of the five performances above was divided into complete type, others were divided into incomplete type. The incidence of FS of TDF exposure was 1.7% (16/962)

### Results:

A total of sixteen participants receiving TDF were identified FS including six patients of complete type and ten patients of incomplete type, the majority (n=13, 81.5%) of the subjects previous or concurrent received lopinavir/ritonavir with TDF. The median age was 49 years old (IQR, 34–64), FS occurs on an average of 67.7 months after the received TDF. All patients had suppressed HIV virus load (<20 copies/ml) and 87.5% patients had CD4 counts greater than 200cells/ul when hospitalization. Urinalysis was positive for glucose (in the setting of normal serum glucose), 13 with low blood phosphorus, 11 with reduced urinary phosphorus and urinary calcium and 11 cases with osteoporosis. Of the 16 cases followed for resolution, most participants (75%) had full normalization at median of 30 days (IQR, 15–64) after the discontinuation of

TDF, there was marked improvement evidenced by normalization of biochemical parameters.

### Conclusion:

FS is a metabolic defect results from a dysfunction of the proximal tubular cells of the kidney. In the study, we found that previous or current use of LPV/r with TDF may be associated with the development of FS. There is no specific treatment for FS. The primary measure of treatment is the suspension of the drug involved which were identified in our study. This report highlights the need for close monitoring of renal function, calcium and phosphate, proteinuria, and glycosuria in patients treated with tenofovir (especially concomitant with lopinavir/ritonavir) by clinician. And early treatment and avoiding TDF use may improve the prognosis of patients with FS.

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## Change of Urine $\alpha$ 1 and $\beta$ 2-Microglobulin and Its Influencing Factors in HIV Infected Patients Treated with Tenofovir Containing Regimen

Ji J<sup>1</sup><sup>1</sup>Communist, Hengyang, China**Objective:**

To analyze urine  $\alpha$ 1-Microglobulin ( $\alpha$ 1-MG) and  $\beta$ 2-Microglobulin ( $\beta$ 2-MG) change in Long-term Tenofovir Disoproxil Fumarate Users with HIV and to analyze the risk factor.

**Material and Methods:**

399 HIV infected patients who received first-line antiretroviral therapy (ART) over 2 years were enrolled between January 1, 2015 and December 31, 2021 in The third people's hospital of Hengyang, Hunan province. They were divided into different groups according to age, sex, medication duration and CD4 counts. The data of urine  $\alpha$ 1-MG and  $\beta$ 2-MG and abnormal rate was analyzed.

**Results:**

272 males and 127 females were enrolled, with an average of (37.8 $\pm$ 3.4) years old and an average follow-up of 2.7 $\pm$ 1.2 years, mainly heterosexual transmission. For urinary  $\alpha$ 1-MG, the abnormal rates of male and female were 84.93% and 57.48%, respectively. For urinary  $\beta$ 2-MG, the abnormal rates of male and female were 90.44% and 74.80%, respectively. With the increase of age, the abnormal rates of urinary  $\alpha$ 1-MG and  $\beta$ 2-MG increased significantly ( $P < 0.05$ ). The mean values of urine  $\alpha$ 1-MG and  $\beta$ 2-MG of the male were significantly higher than those of the female ( $P < 0.05$ ). Multivariate analysis showed that female was an independent protective factor for abnormal  $\alpha$ 1-MG urine and  $\beta$ 2-MG ( $P < 0.05$ ), and age  $\geq 51$  years was an independent risk factor ( $P < 0.05$ ). However, no significant correlation was observed between medication duration and baseline CD4 count ( $P > 0.05$ ).

**Conclusion:**

The long-term of TDF-containing antiviral regimens users with HIV will lead to abnormal urine  $\alpha$ 1-MG and  $\beta$ 2-MG. It may be considered as an early clinical predictive biomarker of kidney impairment.

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## Study on the Effectiveness and Safety of BIC/FTC/TAF in Adult HIV-1 Patients in China: A Retrospective Real-World Cohort Study

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### Objective:

To evaluate the therapeutic effect and tolerance of BIC/FTC/TAF used for 24-week in ART-naïve in China.

### Material and Methods:

This single-center retrospective cohort study included ART-naïve who received BIC/FTC/TAF from July 2021 to April 2022. The proportion of patients with HIV RNA < 50 cp/ml at the end point of 24-week (virological inhibition rate) was the primary outcome, and the changes of CD4 cell count, CD4/CD8, weight, blood lipid, and safety were secondary outcomes.

### Results:

A total of 80 ART-naïve were enrolled. Male accounted for 72.5%, and the median age of the patients at baseline was 40.0 (IQR 28.0, 54.0) years, with heterosexual transmission as the dominant factor (63.7%). In 20% of patients, the virus load was higher than 500000 cp/ml, the median CD4+T cell count was 212 (IQR 90.3-398.3) cells/μL, and 36.3% of cases were complicated with opportunistic infection. The most common reasons for using BIC/FTC/TAF were convenient medication (58.9%), less DDI (13.3%), and fewer side effects (10.8%). The inhibition rate of virology was 86.3% 24-week. The median CD4 cell count increased from 212 cells/μL (90.3-398.3) at baseline to 348 cells/μL (219.8-541.0) at 24-week. The median CD4/CD8 ratio increased from 0.25 (0.13-0.37) at baseline to 0.40 (0.26-0.66) at 24-week. Compared with baseline, total bilirubin, triglyceride and blood amylase had no significant changes at 24-week ( $p > 0.05$ ). In terms of metabolism, the body weight (57.8 vs 60.5, kg,  $p < 0.01$ ) and BMI (21.5 vs 22.6, kg/m<sup>2</sup>,  $p < 0.01$ ) increased from the baseline. AST (28.5 vs 23.0, U/L,  $p < 0.01$ ) and ALT (23.5 vs 19.0, U/L,  $p < 0.01$ ) decreased from the baseline. In terms of renal function, it decreased from baseline at 24 weeks,

and creatinine (66.7 vs 82.6, umol/L,  $p < 0.01$ ) CKD-EPI SCR (103.9 vs 82.7, mL/min,  $p < 0.01$ ). Total cholesterol, high density lipoprotein and low density lipoprotein increased compared with baseline ( $p < 0.01$ ). Blood-glucose has decreased. During the follow-up of 80 ART-naïve using BIC/FTC/TAF, 16 patients had adverse events; however, no drug withdrawal was caused by adverse events.

### Conclusion:

This real-world cohort study showed that BIC/FTC/TAF could achieve good immunological and virological responses in ART-naïve. In addition, This study also shows good safety.

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## Real-World Implementation in Treatment-Experienced Patients Switching to Bictegravir/Emtricitabine/Tenofovir Alafenamide (BIC/FTC/TAF) Regimen

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### Objective:

To understand the efficacy and safety of bictegravir/emtricitabine/tenofovir alafenamide (BIC/FTC/TAF) regimen in treatment-experienced patients living with HIV.

### Material and Methods:

Between February, 2020 and April, 2022, HIV/AIDS patients who switching antiviral treatment to BIC/FTC/TAF regimen in Guiyang public health treatment center were enrolled in this study. By consulting the AIDS comprehensive prevention and control information system and hospital electronic archives, collect the baseline characteristics of patients such as gender, age, complications and reasons for use. To understand the virological inhibition rate (the proportion of viral load (VL) < 50copies/ml), CD4+T lymphocyte count and blood biochemical index changes of patients after conversion to this protocol, and to observe the adverse reactions during follow-up. Virological inhibition is defined as viral load < 50copies/ml. SPSS 23.0 software was used for statistical analysis, and the difference was statistically significant with P < 0.05.

### Results:

A total of 244 ART-naïve patients were included, of which 87.7% were male. The median baseline age of patients was 38.0 (31.0,51.8) years old, mainly concentrated in patients under 40 years old (52.4%), patients over 60 years old accounted for 11.9%, and the main route of infection was male sexual transmission (53.2%), heterosexual transmission accounted for 44.6%. The duration of treatment before conversion was 3.5 (1.5, 6.2) years. The median baseline CD4+T lymphocyte count was

326.50 (282.50-434.00) cells/μL. Before conversion, 201 patients (82.4%) had VL < 50 copies/ml, 38 patients (15.6%) had VL ≥ 50 copies/ml, and 5 patients had no viral load results. The top three complications were: syphilis in 35 cases (14.3%), abnormal liver function in 26 cases (10.7%), dyslipidemia in 17 cases (7.0%). There were 32 cases (13.1%) complicated with AIDS related opportunistic infections. The main reasons for the use of this protocol are the convenience of taking medicine (59.4%), dyslipidemia (10.7%), economic difficulties (7.0%), drug interaction (6.1%), hepatotoxicity (4.1%), reducing the drug burden (3.3%). Among the pre conversion regimens, tenofovir (TDF) / lamivudine (3TC) / EFV, TAF/FTC/EVG/cobi and DTG based regimens accounted for 45.9%, 18.9% and 14.8%, respectively. A total of 112 patients had viral load results 8 to 12 weeks after treatment, and the virus inhibition rate was 89.3% (100/112). A total of 45 patients completed the 24 week follow-up, of which 29 patients had viral load results, and the virus inhibition rate was 96.6% (28/29). The median CD4+T lymphocyte count at 24 weeks (385.0 cells/μL) increased by 189.5 cells/μL than baseline (326.5 cells/μL), but the difference was not statistically significant (p>0.05). Compared with baseline, there were no statistical difference in the CD4+/CD8+ ratio, alanine aminotransferase, aspartate aminotransferase, creatinine, triglyceride, total cholesterol, high-density lipoprotein and low density lipoprotein (P>0.05). During the follow-up of 244 patients, the incidence of adverse drug reactions was 1.6% (1 cases of skin pruritus, 1 cases of rash, 1 cases of joint pain, 1 cases of gastrointestinal reaction), and there was no adverse reaction leading to drug withdrawal.

### Conclusion:

The single tablet regimen of BIC/FTC/TAF can maintain the inhibition rate of retrovirus in HIV/AIDS patients, with fewer adverse reactions and good safety in the treatment- experienced patients.



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## 96 Weeks Efficacy and Tolerability of Dolutegravir(DTG)+ Lamivudine(3TC) In People Living with HIV(PLWH) As a Switch or Start: A China Experience

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### Background:

The rationale of 2-drug regimens strategies lies in the expected better tolerability and safety profile without sacrificing the virological efficacy. Results from clinical trials and observational studies supports the dolutegravir plus lamivudine in antiretroviral therapy(ART)-naïve adults or as a simplification strategy in virologically suppressed PLWH.

### Material and Material and Methods:

This study analyzes the effectiveness, defined as the capability of the treatment to achieve a viral suppression with a viral load (VL)<50copies/mL, and safety, defined as the emergence of adverse events of DTG+3TC in real-life with ART-naïve and treatment-experienced HIV patients.

### Results:

48 patients were included. Of these, 11(22.9%) scripts were for ART-naïve patients and 37 (77.1%) were for switches among experienced patients.

In the naïve cohorts, age range 60-78yr (mean 76 yr), 8 (72.7%) male. Seven patients completed 96 weeks follow-up, and 85.7%(6/7) had VL<50copies/ml. One ART-naïve achieved virological inhibition at 48 week and then increased to 3370copies/ml at 96 weeks, due to adherence (skipping pills). Among the 48 ART-naïve patients, the CD4 count significantly increased by 119cells/μL (p=0.045).

For switch patients, age range was 33-57 yrs (mean 41yr), male 31 (83.8%) . CD4 count at time of switch ranged 262 (222.5–276.5) and 31(83.8%) had undetectable viral loads. Regimens prior to DTG+3TC were recorded with most frequent being

DTG-based (45.9%), EFV-based(27%) and others(27%). 32 patients completed 96 weeks follow-up, and 96.9%(31/32) had VL<50copies/ml. And the CD4 count increased by 35 cells/μL (P > 0.05). The most frequent reasons for switching to DTG+3TC were modification of dyslipidemia (21.6%), renal toxicity (16.2%), drug interactions (16.2%), hepatotoxicity (10.8%). Concerning metabolic profile, low-density lipoprotein cholesterol increased (+0.7 mmol/L, p=0.003).

The estimated rates of drug-related adverse events in the ART-naïve group and ART-experienced group were 27.3% and 13.5%, respectively. No adverse effects led to the discontinuation of DTG+3TC at week 96.

### Conclusion:

Our findings show the long-term( 96 weeks) efficacy and tolerability of dolutegravir plus lamivudine in treatment experienced and naïve patients.

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## Gaps in Mental Health Screening and Linkage to Care Amongst Women Living with HIV in a Malaysian Tertiary Teaching Hospital

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### Background:

Women living with HIV (WLWH) have greater rates of depression and anxiety compared to women without HIV. Mental health (MH) disorders in WLWH are associated with adverse HIV-related health outcomes, including non-adherence to antiretroviral therapy (ART) and poor retention in care. HIV Clinicians are often the main healthcare providers for WLWH. In low-middle income settings like Malaysia, integration of HIV and MH services are uncommon despite evidence of better health outcomes. We aimed to identify the gaps in MH screening and linkage to care amongst WLWH to inform the development of an integrated outpatient MH - HIV clinical care service in our centre.

### Material and Material and Methods:

We reviewed the medical records of all WLWH with  $\geq 1$  follow-up appointment at the University Malaya Medical Centre, Malaysia from January 2020 - December 2022. We ascertained the proportion of women who had  $\geq 1$  MH engagement or had received MH screening during their routine HIV care. MH engagement was defined as any previously documented consultation or appointment with a psychiatrist or psychologist. MH screening was defined as documented discussions on MH issues or formal screening with MH assessment tools during their HIV consult. Of those screened positive, we assessed linkage to care by determining whether they were referred to a psychiatrist or psychologist and if they followed through with the consultation. We assessed gaps in retention to mental healthcare

by ascertaining the proportion of women who have engaged in MH services but subsequently defaulted their follow-up. We used descriptive statistics for each measurement.

### Results:

We identified 182 WLWH meeting our inclusion criteria. Their median age was 50 (interquartile range [IQR] 43, 56) and median number of years living with HIV was 13 years (IQR 7, 18). All were receiving ART, with 67% of them on an efavirenz-based regimen. Overall, 159 women (87.4%) had undetectable viral loads. Thirty (16.5%) WLWH ever had engagement with MH services, half of whom were treated for major depressive disorder or depressive mood symptoms (n=15, 50%). Six (40%) of these women with depressive symptoms are still on an efavirenz-based regimen. Among the women who have engaged in MH care (n=30), the majority (n=25, 83.3%) were referred by their HIV clinician and they attended their initial MH consultation. However, 27 (90%) are no longer under follow-up with the majority (n=17, 63%) defaulting their follow-up appointments with mental healthcare services. Of those who defaulted, 4(24%) have detectable HIV viral loads. Of the 152 (83.5%) women who never engaged in mental healthcare, 131 (86.2%) had no MH screening during their HIV consults over the last 3 years. Of those who received formal screening (n=13), 11 (84.6%) were one-off assessments for research, and 1 (7.7%) required referral, but subsequently declined follow-up care.

### Conclusion:

There are significant gaps in MH screening, referral, and retention among WLWH in care at UMMC. Further studies are needed among healthcare professionals managing WLWH and WLWH to identify reasons for these gaps and to inform the strategies for the implementation of integrated MH services.

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## Knowledge, Attitude and Practice on HPV Infection, Cervical Cancer, and HIV Amongst Women Living with HIV in a Tertiary Teaching Hospital in Malaysia

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### Background:

Cervical cancer (CC) is the most common cancer affecting women living with HIV (WLWH). Malaysia recently adopted HPV self-testing in their national guidelines but screening uptake among WLWH has remained low. We aimed to identify the knowledge gaps in HPV infection; and attitude and practices towards CC screening amongst WLWH in our centre.

### Material and Material and Methods:

WLWH between the ages of 25 – 65 years, attending outpatient Infectious Diseases clinic follow-up from November 2021 till January 2023 were invited to answer a questionnaire. The questionnaire collected basic socio-demographic details and encompassed 14 knowledge questions and 12 questions relating to attitude and practices towards CC screening. Descriptive statistics was used to explore the level of knowledge, and its association with attitude and practice.

### Results:

Seventy-five WLWH, with a median age of 47 years (interquartile range [IQR] 41,53) participated, representing 44% of all WLWH seeking HIV care at our centre. The median number of years living with HIV is 11 years (IQR 6,16). All of them were on anti-retroviral therapy, with the majority (n=64, 85.3%) having an undetectable viral load. Most (n=51, 68%) were aware that CC is the most common cancer affecting women. The majority (n=58, 77.3%) had previous CC screening done using a Pap smear, with only 15 (20%) WLWH having had previous HPV

testing. The majority of women (n=51, 68%) were unaware (n=45, 60%) of the increased risk of HPV infection in WLWH. Only 41 (54.7%) women had heard of HPV, and of these women, 31 (75.6%) were aware of its association with CC, and 23 (56.1%) were aware of HPV testing. The women who had not heard of HPV (n=34) had a lower education level (n=29, 85%) and lower income (n=27, 79.4%). Among WLWH who had heard of HPV, knowledge of it remained poor. Thirty-five (85.4%) women believed HPV infections had visible signs and symptoms, yet were unaware that certain HPV infections cause genital warts (n=28, 68.3%). Twenty-nine (70.7%) were unaware of its mode of transmission, 39 (95.1%) incorrectly believed that condom use reduced transmission risk, and 34 (82.9%) incorrectly believed that HPV can be cured with antibiotics. Of those who had a previous pap smear (n=58), most (n=37, 63.8%) recall being uncomfortable, embarrassed (n=29, 50%) and preferred if a female healthcare worker did the sampling (n=41, 70.7%). Most women (n=54, 72%) welcomed the idea of performing self-testing and preferred to undergo HPV testing (n=57, 65.3%). Of those who were not keen on self-testing (n=21), the majority 16 (76.2%) had never heard of HPV.

### Conclusion:

There is a gap in knowledge on HPV infection and CC screening amongst WLWH, especially in the lower socio-economic group. Our findings suggest addressing poor HPV knowledge among WLWH may improve attitudes towards CC screening using HPV self-testing.

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## PLHIV Who Use Non-prescribed Anabolic-Androgenic Steroids - Are There Higher Rates of Adverse Effects?- Data from the PUSH Audit

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### Background:

Historically there had been an increased use of testosterone and other AAS (androgenic- anabolic steroids) in MLHIV (men living with HIV) due to HIV wasting and the desire to look healthy (muscular). There is some evidence that the prevalence of non-prescribed AAS use is higher amongst gay men compared to the general population. The majority of this use involves injection of substances and they are seldom studied as they are not usually captured in any datasets.

Non-prescribed AAS use could be associated with additional adverse effects in MLHIV when compared to MNLHIV (men not living with HIV) due to additional co-morbidities experienced by MLHIV. To date there has been little to no data published about MLHIV who use non-prescribed AAS. The PUSH Audit looked at adverse effects, both measured and reported, and compared the rates of these adverse effects between the two populations. The study had previously published data about measured adverse effects. This further analysis looks at the self-reported adverse effects of non-prescribed AAS use.

### Material and Methods:

The PUSH! Audit was a cross-sectional study conducted between May 2019 and May 2021.

Data were obtained from 9 participating primary care clinics in 5 cities in Australia, who provide specialized care for PLHIV. We included data from 137 subjects who used non-prescribed AAS, who had their HIV status recorded.

The self-reported adverse effects data was compared using fisher 2 tail test. A two-tailed p value of 0.05 was set as the significance threshold.

### Results:

We collected data on the following self-reported AEs - polycythaemia, hypertension, abnormal liver function, balding, acne, gynaecomastia, testicular shrinkage, aggression, depression, infertility and ongoing testosterone suppression. There was a higher prevalence of depression amongst MLHIV but there were no significant differences in the prevalence of all the other AEs reported.

### Conclusion:

This study has previously published data about measured AEs (polycythaemia, hypertension, abnormal liver function and hyperlipidaemia) which showed that MLHIV did not experience any higher rates of these measure AEs. This further analysis of self-reported AEs experienced by MLHIV who use non-prescribed AAS, does not show any significant increased AEs compared to MNLHIV (men not living with HIV) in most of the AEs looked at. The increased prevalence of depression is consistent with other studies which show a higher prevalence of depression in PLHIV in general. MLHIV on non-prescribed AAS experienced similar AEs- measured and self-reported, to MNLHIV. Monitoring for these AEs remain important in people who use non-prescribed AAS as there is potential for significant harm from this practice and a harm reduction approach is encouraged when managing these individuals. This study also highlights the importance of recognising and treating depression in MLHIV. It is reassuring to know that there were no significantly higher prevalence of any other AEs in MLHIV. The study population was small but represents the first study its kind in this specific population.

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## **Integrated Model of Maternal Caregiving in Child HIV Management in Chinese Mother–Child Dyads Living With HIV: A Qualitative Dyadic Analysis**

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With the scale-up of antiretroviral therapy (ART) and the improvement of pediatric HIV care in resource-limited areas, millions of perinatally HIV-infected (PHIV+) children are expected to survive into adulthood and assume responsibility for their own HIV management. These PHIV+ children will face challenges arising from their complicated and highly stigmatized chronic illness throughout their childhood and adolescence. Mentoring and support from caregivers, especially their mothers who also live with HIV, is vital to PHIV+ children when they become aware of their HIV status, gain knowledge about HIV, and manage HIV independently. However, little is known regarding how HIV+ mothers coach their PHIV+ children to adjust to HIV and the positive or negative impacts they have on their children's HIV management. This study used individual- and dyadic-level qualitative analyses of semi-structured and in-depth individual interviews among 20 mother–child dyads (children aged 12–18 years) both living with HIV in southern China. Interviews examined the perspectives of both mothers and children on the maternal caregiving in child HIV management and child adaptation outcomes. Our findings showed that, based on a dual-dimension model of the extent on the maternal involvement in the child HIV management and in the intimacy of mother–child relationship, there were four categories among these mother–child dyads: Supportiveness (maternal active involvement and close relationship, n = 4, 20%), independence (maternal peripheral involvement and close relationship, n = 9, 45%), contradiction (maternal active involvement and conflictive relationship, n = 4, 20%), and alienation (maternal peripheral involvement and conflictive relationship, n = 3, 15%). These four categories also showed variations

on the PHIV+ children's selected HIV management indicators including disclosure of HIV status, HIV-related communication, ART adherence, stigma coping, and emotion management. The integrated model provides new knowledge on the facilitators and barriers of maternal caregiving in the HIV management of their PHIV+ children and informs the development of dyadic intervention programs tailored for mothers and children both living with HIV.

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## Emergence of Pediatric Advanced HIV Disease in a Tertiary Center in the Philippines: A Case Series

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### Background:

The Philippines has a low HIV prevalence, about 0.2% in general adult, and Central Luzon ranks 3 as the region with the highest number of HIV cases in the country. HIV testing in antenatal care is voluntary, and only <1% of pregnant women know their HIV status. According to the Department of Health, there were <1000 pediatric cases reported from 2010-2022, yet majority of children brought in were the index case in the family, and already in advanced stage. The study aims to present case series of children living with HIV seen in a tertiary referral center in Pampanga, Philippines during 2016-2022.

### Material and Methods:

Retrospective case series of children living with HIV enrolled at Jose B. Lingad Memorial General Hospital (150 pediatric beds) in Pampanga, Philippines. Clinical presentations and antiretroviral treatment outcomes were described.

### Results:

There were 14 children living with HIV with median (range) age of 34 months (10-154), ten of them identified as the index case in the family. Seven children had the diagnosis in 2015-2021 and another seven in 2022 alone and nine of them (64%) already in WHO stage 3 or 4. Median CD4 at baseline was 285 (0-1036) cell/mm<sup>3</sup>. Opportunistic diseases noted were tuberculosis (n=6), oral Candidiasis (n=5), Pneumocystis jiroveci pneumonia (n=3), CMV retinitis (n=1). Antiretrovirals initiated were Nevirapine (7), Dolutegravir (3), Efavirenz (2), Lopinavir/ritonavir (1), Abacavir (1)-based regimen. Currently, all except one used crushed adult antiretroviral treatment due to lack of access to pediatric formulation. For the outcome: 2 died, 2 lost to follow-up, 2 transferred hubs. Among those who continue to follow up, only 2 out of 5 clients (40%)

achieved plasma HIV RNA viral suppression < 40 copies/mL.

### Conclusion:

This study described the emerging pediatric HIV/AIDS situation in the Philippines. With low coverage of HIV antenatal screening and limited supply of pediatric antiretroviral drug formulation, the outcome of children living with HIV is poor. The policy on voluntary HIV screening among pregnant women and the supply of pediatric formulation need urgent scrutinization to immediately address this alarming crisis in the Philippines.

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## Effectiveness of the Integrated Psychospiritual Intervention on the Mental Well-Being of PLHIV in Temporary Shelter Program in Caloocan City: A Pilot Implementation Study

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### Introduction:

A needs assessment survey conducted by Gabay sa Pulang Laso Inc. (GPLI) in 2021 showed the need to address psychological and socioeconomic needs of people living with HIV (PLHIV) in the country, especially during COVID-19. From the survey, a significant association was noted between unemployment and anxiety-related symptoms. As a response, GPLI integrated a psychospiritual intervention into the temporary shelter program among PLHIV who were unemployed and without homes during the peak of the pandemic. This study aimed to determine the effectiveness of the integrated psychospiritual intervention on the mental well-being of GPLI's "housemates" (herein defined as PLHIV admitted into GPLI temporary shelter program).

### Material and Methods:

A pretest and posttest design was administered to 17 housemates who were admitted into the shelter program between July 25, 2020 to September 1, 2021. A weekly group therapy focused on three parts: (1) expressing housemates' experiences during the pandemic, (2) difficulties in finding or retaining employment, and (3) expressing gratitude for any positive event they experienced within the week. In addition, a faith minister did weekly visits provide spiritual counseling. To assess depressive- and anxiety-related symptoms, PHQ-9 and GAD-7 were administered during shelter admission and before discharge. Descriptive statistics and

Wilcoxon Signed-Rank Test were used to analyze the data.

### Results:

Among 17 housemates of GPLI's temporary shelter program, ten were referred by fellow community-based organizations while five directly contacted GPLI and two others were referred by health facilities. The average length of shelter stay among 17 housemates was 118 days (min=5;max=447 days). Their age ranged between 19-74 (mean=31.7; sd=14.4). Homelessness was the most common reason for seeking shelter support among 10/17 PLHIV, while 7/17 reported discrimination and/or domestic violence from their immediate family. Eleven housemates have successfully transitioned back to their communities and families while two elderly housemates were transferred to a permanent shelter, two were prematurely discharged for grave offense, and two others became a shelter staff for GPLI. Pretest-posttest scores showed a significant reduction in mental distress among housemates: from a mean PHQ-9 score of 15.41 (moderately-severe depressive symptoms) during admission to a score of 7.76 (mild depressive symptoms) during discharge. Moreover, GAD-7 significantly reduced from a mean score of 11.65 (moderate anxiety) to 5.65 (mild anxiety). Wilcoxon Signed-Rank Test revealed a statistically significant difference between admission and discharge scores of PHQ-9 and GAD-7 ( $p=0.002$  and  $p=0.001$ , respectively).

### Conclusion:

GPLI's psychospiritual intervention showed potential impact in improving anxiety- and depression-related symptoms among PLHIV in a temporary shelter program. However, the effectiveness of such psychospiritual intervention needs to be tested on a larger scale of PLHIV in shelter care to produce generalizable findings. Hence, a scale-up of this intervention model is needed. Nonetheless, psychospiritual interventions should be advocated as a necessary component of a holistic and integrated HIV care in the Philippines.

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## Integrating Mental Health Screening into HIV Care: A Steppingstone to Holistic Health in Vietnam

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### Background:

In Vietnam, the COVID-19 pandemic has raised awareness about the need for mental health services. Global data demonstrate the intersection of HIV, key population (KP) status, and mental health (MH), and the higher likelihood of MH issues among people living with HIV (PLHIV) and KP members, which can negatively affect their ability to seek services and adhere to treatment. We aimed to address MH needs among clients at public HIV treatment facilities and KP-led clinics supported by the Meeting Targets and Maintaining HIV Epidemic Control (EpiC) project by integrating MH screening into routine visits.

### Description:

A needs assessment was conducted to determine mental health challenges and support needs among PLHIV on antiretroviral treatment and clients taking pre-exposure prophylaxis (PrEP). Results were used to develop a training curriculum for providers on common MH disorders among PLHIV and KP members and how to recognize and screen individuals using validated tools.

### Lessons Learned:

Health staff (44) and community lay providers (14) were trained to complete screening for MH and substance use issues in May 2022. Between June and November 2022, 16,024 PLHIV and PrEP clients in 21 clinics in five provinces were screened with the patient health questionnaire 4 (PHQ-4). Fewer clients were identified as at risk (117/0.7%) than expected, with wide variation among sites (0.4% to 8.5%). Clients identified as at risk received secondary screening with other validated tools. Among them, depression (mild: 40.2%, moderate: 33.3%, severe: 6.8%) and anxiety (mild: 38.5%,

moderate: 28.2%, severe (8.6%) were most common. Of the 117, 32 (27.4%) manifested hazardous alcohol use.

### Conclusion:

Integration of MH screening into HIV prevention and care can increase identification of MH issues and improve counseling and referral to specialized treatment. Substantial variation in initial screening results in Vietnam and a lower-than-expected proportion of clients identified with MH issues suggest the need for tailored coaching and mentoring. Sites with part- or full-time professional MH staff may be more efficacious in screening, counseling, and referral.





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## Co-occurrence of Bacterial Vaginosis with High-Risk HPV Infection among Women Living with HIV in Mysore, India

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### Background:

Bacterial Vaginosis (BV) is a polymicrobial condition that increases women's risk for acquisition and transmission of viral infections such as HIV and HPV. There are no studies in Mysore to examine the concurrent infection of HPV with BV among women living with HIV (WLHIV). This study assessed the co-occurrence of BV and HPV infection among women living with HIV.

### Material and Methods:

Between June 2016 and June 2017, WLHIV were recruited through local community-based organization that delivered health care services including antiretroviral therapy. Women were invited to participate in a cervical cancer screening program that used HPV DNA testing. After consent process samples were collected following the manufacturer's instructions (Qiagen) for HPV DNA detection by the Hybrid Capture 2 (HC2) test. A vaginal sample was also collected for gram staining and Nugent scoring (NS) to screen for BV.

### Results:

A total of 139 women were screened with VIA and HPV DNA testing. The median age was 36 years. More than half were married (70, 50.4%) or widowed (59, 42.4%). Over 54% of the women had a monthly household income of less than Rs. 5,000 (66 USD), and many had no formal education (57, 41%). 60 women (43.2%) screened positive for HPV DNA, of whom 31 (51.7%) also had concurrent BV infection. Among BV positive women, 14 (45.2%) had intermediate score (NS: 4-6) and 17 (54.8%) had BV (NS: 7-10). Those who tested positive for HPV infection, they also had a higher occurrence of BV (51%) as compared to women who did not have HPV

(43%) and this was not statistically significant ( $p > 0.05$ ).

### Conclusion:

We observed high occurrence of BV as well as intermediate BV among HIV-infected women with HPV infection. Since BV increases the risk of acquiring STIs, persistence of HPV infection and increased risk of gynaecological outcomes, BV among HIV-infected women should not be neglected.

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## Applying Augmented Reality in Assisting HIV Self-Test among Men Who Have Sex with Men

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### Background:

A web application with an augmented reality (AR) component aiming to assist men who have sex with men (MSM) to perform HIV self-test was developed. Its acceptability, usability, effectiveness, and areas of improvement are evaluated.

### Material and Methods:

This is an on-going parallel open-label randomised controlled trial. Adult MSM were randomised in a block size of 4 with an intervention-to-control allocation ratio of 3:1. All participants were eligible to request for a free oral fluid-based HIV self-test kit delivered to their designated collection point or address. Participants assigned to the intervention group were given access to the AR-enriched screens in the web application and were asked to use them as a step-by-step guidance when undergoing the self-test; whereas those in the control group were asked to perform the self-test with the written instruction sheet only. After the self-test, they were asked to submit the result in the post-test evaluation questionnaire. Participants with non-positive results were invited to the research centre for blood test. Per protocol analysis was conducted to differentiate the usability of the AR approach between two arms.

### Results:

Between 1 December 2022 and 31 January 2023, 200 MSM enrolled in the study, of which 99 (50%) completed the post-test questionnaire. Some 64 received intervention while 35 were in the control group. No incident cases were identified. Participants in the AR group, compared with those in the control group, were more confident in collecting correct and sufficient oral fluid for the self-test ( $p=0.026$ ), and considered the self-test process very easy ( $p=0.0085$ ). Over half (65%) of the users thought the AR application was in general effective in assisting HIV self-test. Regarding

components suggested to add to the app, 27% selected automatic result reading and interpretation, 18% selected real-time real-personal online conversation, and only 8% wanted a chatbot. No technical errors were reported when using the app, but two reported unable to view the AR model.

### Conclusion:

The AR approach was well-accepted by the MSM and was effective in assisting HIV self-test. Community's feedbacks can drive future improvements before scaling up the service.

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## Perceptions of Using a Mobile Health Approach to Support HIV Self-Test Among Men Who Have Sex with Men

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### Background:

With the extensive coverage of mobile devices, mobile health (mHealth) approach offers an innovative means to support HIV self-test and related services for men who have sex with men (MSM). Their perceptions and concerns towards such an approach were evaluated.

### Methods

An augmented reality-enhanced HIV self-test web application was developed with the following functionalities: HIV information provision, HIV self-test request, augmented reality models for assisting the self-test performance, and result upload. At the self-test request process, participating adult MSM were asked to complete a self-administered questionnaire on their perceptions and experiences of HIV self-test, and perceived benefits and concerns of using this mHealth approach for assisting HIV self-test.

### Results:

Between 1 December 2022 and 31 January 2023, totally 200 participants with a median age of 31 years (interquartile range 27-35 years) joined the study. The majority (89%) had tested for HIV before, among which 69% had self-tested. Some 92 preferred real-time support when performing the HIV self-test, of which 40% would like a friend/sex partner to accompany and 38% preferred digital means. Participants who had never self-tested were less confident in reading the self-test result ( $p=0.043$ ). They were also more likely to require support for HIV self-test ( $p<0.0001$ ), preferably from a friend ( $p=0.0004$ ). Regarding channels of supporting service provision, 51% preferred instant messaging, 46% preferred an mHealth approach, and 31% preferred in-person. Participants accepting mHealth support were more likely to have a higher perceived risk of HIV ( $p=0.012$ ), and pay more

attention to the test kit's window period when choosing one ( $p=0.027$ ). They recognised mHealth could help access follow-up referral services if necessary ( $p=0.012$ ), but concerned about metadata collection when using it ( $p=0.017$ ). Participants requiring self-test support believed mHealth approach carried a benefit of verifying the self-test result ( $p=0.012$ ).

### Conclusion:

mHealth approach was generally accepted by MSM for assisting HIV self-test, especially for those who had a higher risk of HIV acquisition that result verification and follow-up services would become necessary if screened positive. They, however, concerned about passive data collection when using such services. Minimum metadata collection with a transparent data collection policy would be reassuring.



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## Factors Associated Immediate Antiretroviral Therapy Initiation among Newly Diagnosed People Living with HIV in Guangdong Province, China

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### Background:

Immediate antiretroviral therapy (ART) initiation reduces AIDS-related morbidity and mortality. However, there is a paucity of evidence on the uptake of immediate ART initiation among newly diagnosed people living with HIV (PLHIV) in China.

### Material and Methods:

Newly diagnosed PLHIV from May 2018 to June 2019 were recruited from six cities in Guangdong Province. Immediate ART initiation was defined as participants initiating ART within one month of HIV diagnosis. Delayed ART initiation was defined as participants initiating ART after one month but within one year of HIV diagnosis. No ART was defined as participants not initiating ART within one year of HIV diagnosis. Data from a questionnaire and the national HIV surveillance system were used to explore the potential factors associated with immediate ART initiation.

### Results:

The proportion of immediate, delayed and no ART initiation was 72.83% (780/1071), 14.94% (160/1071) and 12.23% (131/1071), respectively. Multivariable multinomial logistic regression

showed that compared to immediate ART initiation, females were less likely to have no ART than males (aOR: 0.50, 95%CI: 0.28-0.89). Individuals with college or above education were less likely to have no ART than those with primary school or below (aOR: 0.34, 95%CI: 0.13-0.90). Individuals without partner (aOR: 2.39, 95%CI: 1.21-4.74) or who had HIV-unknown partners (aOR: 2.35, 95%CI: 1.18-4.67) were more likely to have no ART than those who had HIV-positive partners. Individuals with active HIV testing (aOR: 0.45, 95%CI: 0.30-0.68) and with syphilis (aOR: 0.31, 95%CI: 0.13-0.75) were less likely to have no ART. Individuals willing to initiate ART early were less likely to delay ART initiation (aOR: 0.33, 95%CI: 0.11-0.93) or have no ART (aOR: 0.21, 95%CI: 0.08-0.54). Individuals with unknown CD4 counts were more likely to delay ART initiation (aOR: 3.26, 95%CI: 1.91-5.57) or have no ART (aOR: 2.54, 95%CI: 1.39-4.64) than those with CD4 counts <200 cells/ $\mu$ L. Additionally, individuals with a CD4 count >500 cells/ $\mu$ L were more likely to have no ART (aOR: 2.44, 95%CI: 1.25-4.77) than those with a CD4 count <200 cells/ $\mu$ L.

### Conclusion:

Efforts should be made to promote immediate ART initiation in Guangdong Province, especially among those at a higher risk of delayed or no ART initiation.

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## Barriers to Baseline CD4 Cell Testing: How to Improve Identification of Advanced HIV Disease Patients in Jakarta, Indonesia

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### Introduction:

A comprehensive package of interventions has been recommended globally for people living with HIV (PLHIV) with advanced HIV disease (AHD) to reduce HIV mortality. Baseline CD4 cell testing is critical to identify AHD cases. The Jakarta Provincial Health Office (PHO) partnered with the USAID Meeting Targets and Maintaining Epidemic Control (EpiC) project to optimize baseline CD4 testing among new PLHIV as the entry point for identifying and supporting AHD patients.

### Description:

An initial retrospective review of baseline CD4 testing among new PLHIV was conducted in May 2021 at 23 facilities in Jakarta. Of the 53% of PLHIV that had baseline CD4 counts, half displayed CD4 levels of <200 cells/mm<sup>3</sup>, indicating a critical need for AHD programming. The Jakarta PHO and EpiC sensitized providers and PLHIV about AHD through awareness raising, trainings, and materials distribution. We also worked to increase CD4 testing coverage by extending specimen transport networks, procuring additional CD4 tests, and strengthening referral laboratory networks.

### Lessons Learned:

Between Sept 2021 and Dec 2022, baseline CD4 coverage at 109 Jakarta health facilities increased from 33% (n=330/988) to 45% (n=466/1033) among new PLHIV, while the percentage who were diagnosed with AHD rose from 27% (n=267) to 39% (n=400). The maximum CD4 testing coverage reached was 58% (n=566/970) in March 2022, with 38% (n=366) of new PLHIV diagnosed with AHD. Barriers affecting systematic baseline CD4 testing included a lack of CD4 testing kits, insufficient specimen transport mechanisms for province-wide

coverage, and provider misunderstandings about the value of CD4 testing for AHD detection.

### Recommendations:

To strengthen AHD programming — and reduce HIV mortality rates — baseline CD4 testing is critical. Programs must safeguard appropriate resources that ensure the implementation of CD4 testing for all newly diagnosed PLHIV. The Jakarta PHO and EpiC have developed a comprehensive AHD service package and are now conducting advocacy at national and provincial levels to ensure that all components of this package can be implemented at scale.

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## Perception of Ilonggo PLHIV Towards the Quality of ART Services During the General Community Quarantine (GCQ) Restrictions in Iloilo City, Philippines

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### Introduction:

Due to the implementation of community quarantine during the COVID-19 outbreak, PLHIV faced a greater challenge in terms of getting care and treatment, particularly antiretroviral therapy (ART). Community-based clinics, resources, and support services had to close due to the pandemic's effects on several systems. When the Enhanced Community Quarantine (ECQ) status transitioned to the General Community Quarantine (GCQ), travel restrictions eased down. This study aims to determine the perception of PLHIV in Iloilo City, Philippines towards ART services during GCQ.

### Material and Methods:

A cross-sectional survey was conducted among 249 PLHIV between February and March 2022, at a time when Iloilo City began to loosen its travel restrictions. The survey used a 5-point Likert scale to collect responses from PLHIV about the availability and accessibility of ART services and a 10-point rating scale to collect responses about their self-reported ART adherence. Descriptive statistics were used to analyze the data.

### Results:

Among 249 PLHIV who responded in the survey, nearly half of them aged between 25 and 31 years old (49.8%). The majority of the respondents were from the Family Planning Organization of the Philippines (89.6%). Most of them were males (97.6%), and the majority of them identified as cisgender men (74.3%). Half of them were employed (50.6%) while there is a small portion of them who are unemployed and/or currently still students (23.7%), and about a one-third earn less than US\$90

per month (33.7%). Almost all of them reported personally going to their treatment hub for ART refill and consultations (97.6%).

The overall PLHIV adherence rate during GCQ is 9.85 on the 10-point rating scale. The 5-point Likert scale revealed that despite the travel restrictions during GCQ: (a) the majority of them agreed on having a readily available case manager (88%), (b) agreed that they were able to acquire at least a month-worth of ARV during travel restrictions (88.4%), and (c) agreed to having convenient access to viral load and CD4 monitoring while on ART (73.1%). Majority of the respondents strongly agreed that ART services were always available (99.5%), and about one-third of the PLHIV disagreed to have experienced severe delays in access to ART services (36.1%). Generally, ART services for PLHIV in the treatment hubs in Iloilo City were reported to be always available (Mean[M]=4.27 out of the 5-point Likert scale) and very accessible (M=4.77).

### Conclusion:

In conclusion, PLHIV in Iloilo City still perceived high accessibility and availability of ART services among their respective treatment hubs, despite the impact of COVID-related restrictions. Further analysis of the ART delivery model implemented by the treatment hubs in Iloilo City can be done so that other treatment hubs in the rest of the country can gain insights regarding best practices in ART delivery that work effectively despite COVID-19 travel restrictions.

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## Community-Based Model for the Delivery of Antiretroviral Therapy: Lessons Learned and Best Practices in Cambodia

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### Background:

Community antiretroviral therapy (ART) delivery (CAD) is integral to the response to HIV in Cambodia. Stable people living with HIV (PLHIV) can safely reduce the frequency of clinic visits and potentially receive ART in the community setting. The CAD project aims to develop, implement, and evaluate a scalable model for effective and sustainable HIV treatment adherence for PLHIV in Cambodia using a community participatory approach.

### Description:

This is a 36-month project – 6 months of developing the intervention, 24 months of implementation, and 6 months of impact and cost-effectiveness evaluation in 10 ART sites in the capital city and four provinces. Community ART Group (CAG) leaders were assigned to collect and deliver pre-package antiretrovirals to stable PLHIV. They also conducted routine outreach activities, including counseling, group education sessions, monitoring ART adherence, checking vital signs, following up on missed appointments, and referring unwell PLHIV to clinics.

### Lessons Learnt:

The project has registered 2,057 stable PLHIV for the intervention (59% were females), 48 of them were adolescents aged between 15 to 19 years old, and 40 were from key populations, including men who have sex with men, transgender and female entertainment workers. We have established 82

CAGs, of which half was led by women living with HIV. The project has involved 76 healthcare providers (27 female). The results from the midterm qualitative evaluation revealed that the project was beneficial, especially to PLHIV and ART clinics. Influencing factors included CAG's empathy and compassion towards their peers, the willingness of the ART site staff to work with them, and the high level of stakeholders' commitment. The model was applicable and had great potential to succeed and produce good results. Local ownership at different levels appeared to be strong and encouraging. The partnership had been assured at the technical, operational, or community level.

### Conclusion/Next Steps:

The model has been found to be relevant, viable, and impactful. The models have demonstrated reduction of burdens for PLHIV and the health systems. The effectiveness and cost-effectiveness will be evaluated after the completion of the intervention. The scale-up of the model will be considered by the national HIV program in Cambodia's local context.

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## **iPARTY: Increasing Pre-exposure Prophylaxis (PrEP) Access and Reach through Telehealth for Young Men Who Have Sex with Men (YMSM) in Singapore**

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While PrEP services have been available in Singapore since 2016, PrEP uptake has been low amongst young men who have sex with men (YMSM) despite their greater risk of HIV infection and other sexually transmitted infections (STI). The objective of this demonstration project is to evaluate the feasibility and acceptability of a PrEP teleconsultation service for YMSM. Self-reported HIV-negative YMSM between the ages of 18 – 29 years old were recruited in Singapore to partake in a 12-month demonstration project. Enrolled participants were provided and sponsored consultations, laboratory testing, and generic daily PrEP. Baseline and quarterly surveys were conducted to measure behavioural outcomes alongside HIV/STI results review and counselling. Majority of the consultations with the PrEP physicians were conducted via a secure telecommunications platform (e.g., Zoom™), reducing the need for physical clinical visits. The cohort median age is 24 years old, with majority of the participants holding a university degree and 45.3% not employed full-time. Given that majority of the cohort earns little to no money, it is not surprising that cost is a major deterrent for YMSM in Singapore seeking PrEP or PrEP services, as previously published studies have found. 84.9% and 83.0% of participants had their sexual debut between the ages of 11 – 20. Furthermore, 60.4% of participants had unprotected oral sex with at least > 6 partners in the past 6 months, while 69.8% and 37.7% had unprotected anal sex and group sex, respectively, in the past 6 months. This highlights the importance of developing PrEP services tailored to the needs of YMSM, as our cohort was found to be of relatively high sexual risk. There were no

technical issues or challenges encountered when conducting the telehealth services. Due to the convenience and acceptability of the service, all participants expressed high levels of satisfaction with their telehealth experience and thought the platform was appropriate for conducting HIV/STI counselling. Overall, a PrEP telehealth service appears to be feasible, acceptable, and in-demand among YMSM. However, more needs to be done to make PrEP more affordable and accessible to YMSM, especially given Singapore's lack of subsidy for PrEP and PrEP services.





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## 2023 Taiwan PrEP Guideline: Optimising Accessibility to Differentiated PrEP Services with Adoption of Long-Acting Injections and Vaginal Rings

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### Background:

No countries in Asia-Pacific have adopted long-acting injectable cabotegravir or dapivirine vaginal ring pre-exposure prophylaxis (PrEP) for HIV prevention despite World Health Organization's global recommendation. The first version of Taiwan's PrEP guideline was officially published by Taiwan AIDS Society and Taiwan Centers for Disease Control (Taiwan CDC) in 2016. After endorsing the event-driven oral PrEP in 2018, Taiwan AIDS Society has initiated revising the Taiwan PrEP guideline since 2022. We describe the process, recommendations and policy implications of the 2023 Taiwan PrEP Guideline for upscaling nationwide PrEP implementation.

### Material and Methods:

The Taiwan PrEP Guideline writing group searched randomised controlled trials and international guidelines published in English before February 2022 through four databases (MEDLINE, PubMed, Cochrane Database, and ClinicalTrials.gov). Keywords included pre(-)exposure prophylaxis, anti-retroviral chemoprophylaxis, PrEP, cabotegravir, dapivirine, tenofovir alafenamide, TDF, TAF,

Descovy, lenacapavir, islatravir, anti-HIV agent, HIV prevention and HIV.

Each included article was independently assessed by two authors using the Guideline Development Tool of the Grading of Recommendations Assessment, Development and Evaluation (GRADE). The GRADE Evidence to Decision Framework was applied for consensus recommendations. External reviewers were invited to independently evaluate the revised manuscript per the Appraisal of Guidelines for Research and Evaluation (AGREE) II. A public hearing is held to reach consensus on the updated guideline among different key stakeholders, including healthcare providers, key populations, non-profit organisations and Taiwan CDC.

### Results:

Of 430 records screened, four systematic reviews and 18 original articles were assessed. The 2023 Taiwan PrEP guideline was finalized in January 2023. Final recommendations were tailored to six sub-populations: men who have sex with men (MSM), transgender women (TGW), cisgender men, cisgender women, HIV-negative partners in serodiscordant relationships and people who inject drugs (PWID). We recommend the daily oral use of tenofovir alafenamide and emtricitabine (TAF/FTC) for HIV prevention among MSM and TGW (strong recommendation; high certainty of evidence). We suggest using long-acting injectable cabotegravir for HIV prevention among all key populations except for PWID (strong recommendation; high certainty of evidence). We also suggest the use of dapivirine vaginal ring among cisgender women for HIV prevention (weak recommendation; moderate certainty of evidence). Differentiated PrEP services were recommended through shared decision-making between healthcare provider's clinical suggestions and user preferences.

### Conclusion:

The forthcoming 2023 Taiwan PrEP Guideline recommends the use of both injectable and vaginal ring PrEP for HIV prevention through a rigorous evidence-informed assessment and synergistic community engagement. The Guideline will be officially adopted by Taiwan AIDS Society and Taiwan CDC, followed by upscaled national PrEP programmes and public dissemination in early 2024. It will advance PrEP implementation in Asia-Pacific by creating opportunities for user-centred, inclusive and differentiated service delivery.

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## Dedicated Sunday Service Hours at Government-Run HIV Treatment Facilities Boost HIV Pre-exposure Prophylaxis Enrollment in Vietnam

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### Background:

The USAID-supported Meeting Targets and Maintaining Epidemic Control (EpiC) project in Vietnam supports HIV pre-exposure prophylaxis (PrEP) at public health facilities. In 2020, client feedback highlighted some potential PrEP clients were unavailable or hesitant to present at a public HIV treatment facility during business hours for fear of being assumed HIV positive. Community outreach workers and site staff were consulted before two sites for Sunday PrEP were selected. We sought to understand if the addition of dedicated PrEP hours on Sunday increased PrEP enrollment at these facilities.

### Description:

Data were reviewed from November 2020 to November 2022 to determine the contribution of dedicated PrEP Sunday service hours to overall enrollment at two project-supported district-level facilities: one in Ho Chi Minh City (HCMC), one in Tay Ninh. Public sector Sunday hours were suspended in Tay Ninh in March 2022 when a private clinic offering PrEP during weekends opened nearby. Sunday hours continued in HCMC.

### Lessons Learned:

During months with active Sunday hours, many PrEP enrollees at the two facilities came on Sunday (HCMC: 41.6%, Tay Ninh: 39.4%). During the review period, average monthly enrollment was also higher in months with Sunday hours than those without (HCMC: 41.1 vs. 12, Tay Ninh: 25.9 vs. 6.8) though additional project strategies and COVID-related service disruptions also contributed to this difference. Sunday enrollments peaked following several COVID-related lockdowns, when clients choosing PrEP services on Sunday reached up to

more than half of new enrollment in a month (HCMC: 54.0% and 57.5% in May and June 2022, respectively; Tay Ninh: 50.0% in November 2021 and 52.9% in March 2022). Clients also selected Sunday hours for follow-up (HCMC: 33.2%, Tay Ninh: 23.4%).

### Conclusions/Next Steps:

Sunday PrEP helped increase PrEP enrollment at reviewed facilities. The sheer volume of PrEP enrollments during these dedicated times and the increase in PrEP clients demonstrate this approach provided a favorable environment for PrEP enrollment, and PrEP programs must consider the timing and environments that are conducive for potential clients to access services.



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## Bringing PrEP to the Youth: Application of a Peer-Led Demedicalized HIV PrEP Targeting the Young Key Populations in the Philippines

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### Background:

HIV pre-exposure prophylaxis (PrEP) in curbing the HIV epidemic in the Philippines is strongly recommended by the WHO due to the increasing number of cases, especially among youth. In 2022 alone, among the 14,119 diagnosed with HIV, 30% (4,239) belong to the 15-24 age group. Due to the increasing vulnerability of this age group, more targeted and comprehensive interventions could be instrumental in preventing the infection. We present a program employing a peer-led PrEP program using a demedicalized approach.

### Description:

In 2022, LoveYourself enabled a simplified HIV PrEP enrollment targeting the youth. University organizations would collaborate with the organization through its outreach program (Caravan) to provide HIV awareness talks and testing on their respective campuses. 65 participants were initiated on HIV PrEP in 5 Caravan events starting August 2022. The majority of the participants during these events were students in the university who were young gay, bisexual, and other men who have sex with men (GBMSM). After getting a nonreactive HIV test result, participants were screened using the simplified guidelines of the WHO in the demedicalization of HIV PrEP. They were assessed for antiretroviral syndrome/sexually transmitted infection symptoms, kidney-related comorbidities, bodybuilding supplements, gender-affirming hormone therapy, body weight, and age.

### Lessons Learned:

Among the 65 participants, 11 had completed their first refill at a LoveYourself center in their area. 5 had completed their second refill and creatinine test and

are still on PrEP. During the Caravan events, awareness of the importance of testing among the target population is high, but the knowledge about PrEP is minimal. The participants acknowledge the importance of initiating HIV PrEP, but financial concerns in sustaining the regimen are the primary concern.

### Conclusions/Next Steps:

Most students consider their universities safe spaces, and ensuring the service is easily accessible would be instrumental in continuous supply and adherence to the regimen. Keeping in contact with student organizations to do repeat events or plan annual events would provide alternatives to access these services.

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## Qualitative Segmentation of Adolescent Girls and Young Women (AGYW) PrEP Users: The Role of Differentiated PrEP Delivery Platforms

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### Background:

Adolescent girls and young women (AGYW), a target population for HIV prevention in Africa, show high PrEP interest but difficulty in sustained effective use. With ongoing PrEP scale-up focused on increasing PrEP access, it is important to understand what influences AGYW's choice of PrEP delivery platforms.

### Material and Methods:

The POWER (Prevention Options for Women Evaluation Research) PrEP implementation study site in Cape Town utilised a differentiated delivery model from July 2017 to November 2020. AGYW 16-25 years could access PrEP from any of four delivery platforms: a mobile clinic, government facility, courier delivery service, or community-based youth club. At government and mobile clinics, healthcare providers delivered comprehensive integrated sexual and reproductive health services. The courier and youth club platforms provided light-touch PrEP follow-up services incorporating rapid HIV self-testing. We conducted in-depth interviews with a purposive sample of AGYW who had  $\geq 3$  months of PrEP use based on pharmacy records and who accessed more than one PrEP delivery platform. Thematic analysis explored the preferences, decision-making, influences, and habits related to PrEP access to inform market segmentation.

### Findings:

We interviewed 26 AGYW (median age 20) persistent PrEP users between November 2020 to March 2021. Of these, 24 used mobile clinics, 17 courier delivery, 9 the government facility, and 4 the youth club. Qualitative findings highlighted three potential behavioural profiles. The "Social PrEP-user" seeks PrEP delivery in shared peer spaces such as youth clubs or adolescent-friendly mobile clinics, that provide affirmation and social support for continued PrEP use. The "Convenience PrEP-user" seeks PrEP delivery at easily accessible locations, providing quick (courier) and/or integrated service with contraception and PrEP refills in a single visit (mobile and government clinic). The "Independent PrEP-user" seeks PrEP delivery that is discreet, outside of traditional medical environments, and offers control over delivery times that fit into their schedule as offered by the courier service. Comfort with HIV self-testing had minimal influence on PrEP delivery choice.

### Conclusion:

PrEP delivery platforms and demand creation for these services must be tailored to thematic groups of AGYW and more closely aligned to individual characteristics and needs for convenience, independence, or social engagement to improve AGYW's PrEP persistence.



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## Conversion from Post Exposure Prophylaxis (PEP) To Pre-exposure Prophylaxis (PrEP) At a Community-Led Clinic in Kuala Lumpur Malaysia

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### Background:

Community Health Care Clinic (CHCC), led by PT Foundation, formed in 1987 strives to be the leading community-based organization in Malaysia working with key affected populations on HIV and AIDS. CHCC has been providing PEP and PrEP services since it opened in 2019. The PEP and PrEP regime used is based on the Malaysian Consensus Guidelines on Antiretroviral Therapy 2017/2022.

### Description:

Throughout 2020-2022, a total of 97 clients came in for PEP, highest with a total of 55 clients, which accounts for 56.70% and the lowest being 9 clients, 9.28% of the PEP users recorded in the year 2020 and 2021 respectively.

A total of 24 people (24.74%) converted from PEP to PrEP throughout 2020-2022, 13 out of 55 (23.6%), 0 out of 9 (0%) and 11 out of 33 (33.0%) in the years 2020, 2021 and 2022 respectively.

Most of the conversion from PEP to PrEP were done during the 1st month post PEP (16 patients, 66.6%), 4 people (16.7%) during the 2nd month post PEP followed by 4 people (16.7%) during the 3rd month post PEP.

The low number of clients in the year 2021 is mainly attributed to the Covid-19 pandemic lockdown in the years 2020 and 2021, which may have affected the financial status of the nation. We did not record any patients who seroconverted to post PEP.

### Lessons Learned:

Based on the data presented above, we have captured a huge percentage of PEP to PrEP conversion (87.50%) among the MSM population. This is mainly due to the higher level of awareness among the MSM population as compared to heterosexual cisgender men.

A qualitative study among the MSM population on the willingness to use PrEP conducted in 2017 in

Malaysia, concluded that rather than perceiving PrEP as a replacement for condoms in terms of having safer sex, many participants viewed it as an additional layer protection, serving as a crucial barrier to infection on occasions where condom use was intended, but did not occur, Iskandar Azwa et al.

### Conclusion:

PEP and PrEP services need to be more accessible and integrated for the benefit of clients. However, due to the stigma, discrimination, and criminalization of same-sex sexual behavior that are still widely seen in Malaysia, delivery of PrEP is still much limited due to the reasons mentioned. A study that aims to adapt an existing app to create and test a clinic-integrated app (JomPrEP), a virtual platform to deliver HIV testing and PrEP services for MSM conducted by the Centre of Excellence for Research in AIDS (CERiA) in the University of Malaya, the University of Connecticut, and Yale University currently ongoing in hopes to get better results to improve the accessibility and uptake of PrEP in Malaysia.

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## Association Between Different Antiviral Treatment Regimens and Quality of Life in People Living with HIV

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### Objective:

Although the widespread use of antiretroviral therapy (ART) has improved the survival of people living with HIV (PLWH), their relative quality of life remains diminished compared to HIV-uninfected persons. Previous studies have shown that the adverse effects of ART drugs may be a factor contributing to this issue. We therefore speculate that ART regimens may have an impact on the quality of life of PLWH, and the purpose of this study is to explore the relationship between different ART regimens and the quality of life in the PLWH population.

### Material and Methods:

This was a cross-sectional study conducted at Chongqing Public Health Medical Center from 2021 to 2022. HIV-positive patients who were 18 years or older, and who had been on the same ART regimen for the previous 3 months or longer, were eligible to be recruited. The Health Survey Short Form -36 (SF-36) was used for quality of life evaluation. Numerical variables are described as mean  $\pm$  standard deviation or median (interquartile range); non-parametric testing (the Mann-Whitney U test) was used for univariate analysis, and multivariate linear regression was used for quality of life comparisons between different subgroups.  $p < 0.05$  was considered to be statistically significant when comparisons were made.

### Results:

A total of 414 PLWH, including 334 (80.7%) males and 80 (19.3%) females, with an average age of 44.10 $\pm$ 14.3 years, having a mean CD4+ T-lymphocyte count of 435.4 $\pm$ 200.1 cells/ $\mu$ L participated in this study. Among all participants, 159 (38.4%) participants received integrase strand transfer inhibitor- (INSTI-) based regimens and 255 participants (61.6%) received non-nucleoside reverse transcriptase inhibitors- (NNRTI-) based

regimens or protease inhibitor-based regimens, which together was referred to as non-INSTI regimens. The median physical component score (PCS) and the median mental component score (MCS) of the INSTI-based group were assessed to be 78 (IQR: 73-82) and 85 (IQR: 78-89), respectively, which was significantly higher than a median PCS of 73 (IQR: 66-78) and a median MCS of 80 (IQR: 70-85) observed in the non-INSTI group. Among the 159 participants who received INSTI-based regimens, the 81 participants (50.9%) taking Biktarvy<sup>®</sup> (bictegravir/emtricitabine/tenofovir alafenamide) had the highest median PCS (79, IQR: 75-82) and the highest median MCS (86, IQR: 84-90), which was significantly higher than a median PCS of 76 (IQR: 70-80) and a median MCS of 83 (IQR: 76-88) observed in the 42 patients (26.4%) taking Genvoya<sup>®</sup>

(elvitegravir/cobicistat/emtricitabine/tenofovir), and a median PCS of 76 (IQR: 64-81) and a median MCS of 84 (IQR: 73-88) observed in the 36 patients (22.6%) taking dolutegravir-based regimens. After adjusting for the demographic and clinical factors via multiple linear regression, the PCS and MCS scores in participants receiving INSTI-based regimens remained significantly higher than those who were receiving non-INSTI-based regimens, and the PCS and MCS scores for participants receiving Biktarvy<sup>®</sup> remained significantly higher compared to those receiving other INSTI-based regimens.

### Conclusion:

INSTI-based ART regimens (and particularly Biktarvy) are beneficial for the improvement of quality of life of PLWH.

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## Does Contingency Management Improve Retention in Substance Abuse Treatment? A Scoping Review

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### Background:

Poor retention in substance use disorder (SUD) treatment is associated with suboptimal treatment outcomes. Contingency management (CM) reinforces health-oriented behaviors and can be used to improve retention. This scoping review assessed the impact of CM on retention in SUD treatment and how it has been used for this goal.

### Material and Methods:

We searched articles published in English in MEDLINE/PubMed from January 2007 to November 2022, with keywords: 'contingency management'; 'voucher-based'; 'substance use'; 'adherence' and 'retention'. Articles covering CM implementation and its effect on retention in SUD treatment programs were included without age or context limits. We excluded systematic reviews and meta-analyses, and studies that did not include substance abuse treatment retention or adherence outcomes. We summarized findings and identified research gaps using thematic analysis of the selected studies.

### Results:

45 articles from 595 titles identified in the initial search were included for full text evaluation. The vast majority of studies were conducted in developed countries (n=40), the others were in low and middle-income countries. Randomized trials and controlled observational studies were used in 44/45 studies. Most studies focused on multiple substances (n=24). Study sample sizes ranged from 10 to 593 participants. The target population of most studies (n=42) was adults, 03 studies focused on adolescents (n=3). Study implementation period ranged from 2 to 48 weeks. The majority of studies (n=42) applied voucher-based or prize-draw CM to reward evidence of abstinence submitted by patients. The maximum reward for CM ranged from

US\$100 to US\$1364, provided for submission of evidence of substance abstinence (n=40), counselling session attendance (n=7), and/or clinic attendance (n=6). Three studies claimed to use low-cost CM incentives, with the average monetary reward from US\$6 to US\$29,4 per patient. Retention rates were evaluated at between 3 and 52 weeks upon CM completion. CM appeared to be a key factor to improve retention in SUD treatment in 32/45 studies.

### Conclusion:

This review suggests a positive impact CM on SUD treatment retention even though it does not primarily target retention. Evidence is available mostly in the context of high-income countries and for high-value CM rewards. Further research on cultural adaptation and sustainability of CM in SUD treatment in low-and-middle-income countries is required.

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## Into the New Normal: The Impact of Undisrupted ART Services on Self-Reported Adherence Rate of PLHIV in Iloilo City, Philippines at Early Stage of Post-Pandemic Transitioning

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### Introduction:

The COVID-19 pandemic has disrupted antiretroviral therapy (ART) services in the Philippines and the impact of longstanding travel restrictions were feared to remain even after the pandemic has subsided. Disruptions in ART services such as delayed ART initiation, limited methods of antiretroviral (ARV) medication dispensing, and lack of monitoring mechanisms are expected to affect treatment adherence among Filipino people living with HIV (PLHIV). This study aimed to determine the correlation between the ART adherence and accessibility of ART services at the time when COVID-related travel restrictions started to loosen in Iloilo City, Philippines.

### Material and Methods:

A cross-sectional correlational study was conducted to 249 PLHIV from Iloilo City. An online survey (Cronbach's alpha=0.71) was administered between February to March 2022, at the time when Iloilo City has started to loosen its travel restrictions. The survey gathered perceptions of PLHIV towards the accessibility and availability of ART services through a 5-point Likert scale, and gathered their self-reported medication adherence using a 10-point rating scale. Descriptive statistics and spearman rank correlations were utilized to analyze the data.

### Results:

A total of 249 PLHIV enrolled in HIV treatment facilities in Iloilo City responded to the online survey, about half of them were between 25 and 31 years

old (49.8%). The majority of the respondents were from the Family Planning Organization of the Philippines (89.6%). The majority self-identified as cisgender men (74.3%), half were employed (50.6%), and almost half were at low socioeconomic level (48.6%). Respondents generally reported high adherence to ART, at an average of 9.85 from the 10-point rating scale. High adherence to ART reported by PLHIV in Iloilo City was positively correlated to their perceived immediate access to ART services despite COVID-related travel restrictions. ( $R_s=.30$ ,  $p<0.001$ ). Moreover, high ART adherence was also positively correlated to the PLHIV's perception of being regularly monitored by their health providers for their treatment response ( $R_s=.24$ ,  $p<0.001$ ). Lastly, high adherence was also positively correlated to the respondents' perceived availability of same-day ART ( $R_s=.17$ ,  $p=0.007$ ), provision of follow-up laboratory services ( $R_s=.21$ ,  $p=0.001$ ), and perceived capacity of the treatment hub to offer differentiated ways of dispensing ARV ( $R_s=.19$ ,  $p=0.002$ ).

### Conclusion:

PLHIV in Iloilo City perceived high accessibility and availability of ART services despite the impact of COVID-related restrictions on HIV facilities, and was significantly correlated to their self-reported ART adherence. HIV facilities in Iloilo City should continuously give importance to a more person-centered and differentiated ART service delivery.



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## Strategic Synergistic Partnership between Professional Health Organizations and Provincial Health Office in Overcoming Lack of HIV Service in Lampung Province of Indonesia

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### Background:

In 2015, there were only 2 health care services providing HIV treatment serving 9 million population throughout Lampung province. Adding more HIV care services would improve access to ARV and reduce work load for the existing services.

### Description:

The first step aimed to set the provincial hospital to be a provincial center of excellence for HIV care that acts as medical service provider and learning ground for health workers in other health care services. This consists of parallel efforts of strengthening mutual cooperation between provincial hospital and health office in setting-up a comprehensive HIV care service in provincial hospital. Second step aimed to maintain and increase the quality of provincial HIV care service and start training peripheral health care services to set their own HIV care teams. This done by establishing mutual cooperation with NGO working on PLHIV peer support and conducting province-wide HIV CST trainings for community health services and municipal hospitals to setup their own HIV care team.

### Lessons Learned:

Building a committed HIV care team in provincial referral hospital is an essential step. The health professional organizations played important role providing the committed health workers and the provincial health office providing training-on-trainers for the team members. This committed trained provincial hospital HIV team not only improved the quality of client care and electronic monthly reports, but also brought HIV CST Training closer to peripheral health services. This closer

access promoted stable growth of HIV service number from only 2 services in 2015 to 201 services in 2022, while keeping peripheral HIV service confident to stay open. Finally, the growing number of HIV care services followed by significant increased number of PLHIV accessing ARV in Lampung province.

### Conclusion:

The next step aims in adding more HIV care services through HIV CST trainings, maintaining the existing HIV care services by replacing missing human resources, and increasing the quality of services through various trainings. Our efforts show that mutual understanding and committed cooperation among stakeholders can optimize the usage provided resources.

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## Barriers and Facilitators to Implementing Neurocognitive Impairment Screening among People Living with HIV in Malaysia

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### Background:

The prevalence of HIV-associated neurocognitive disorders (HAND) among people living with HIV (PLWH) has been reported at 30-50%. While most cases are asymptomatic, routine screening is needed for early intervention. This qualitative study examined barriers and facilitators to implementing neurocognitive impairment (NCI) screening into routine care for PLWH at a tertiary care hospital in Kuala Lumpur, Malaysia.

### Material and Methods:

Between 10/2021-12/2022, we conducted in-depth interviews (IDIs) with HIV care providers and NCI specialists at Universiti Malaya Medical Centre (UMMC), which provides out-patient care for 1500 PLWH. IDIs were guided by the Consolidated Framework of Implementation Research (CFIR). The interviews were transcribed and coded using deductive coding by two researchers using Dedoose.

### Results:

Twenty IDIs were conducted with five Infectious Disease (ID) physicians; eight NCI specialists; four nurses; and three Occupational Therapists (OTs). The median age and years working in the field were 41 (IQR 32-49) and 6 (IQR 2-15) years, respectively; 60% of participants were female. Barriers highlighted across all groups included insufficient staffing, time limitations due to large healthcare client loads, and lack of a suitable environment to screen patients. ID physicians and NCI specialists identified a lack of local neuropsychology expertise and language barriers to executing screening tools in Malaysia's multilingual society as challenges to screening. The ID physicians questioned prioritising NCI screening given the unknown burden of NCI in

the country and the lack of effective treatments available to justify utilising scarce resources for screening. NCI specialists highlighted the lack of an appropriate validated tool and the unlikely sustainability of screening beyond research purposes. Nurses suggested that implementation would be facilitated by establishing clear communication around optimal processes and procedures with all staff, including administrative and support staff to ensure sustainability of screening. However, they had also highlighted this would increase their already heavy workload and impact their motivation to perform screening. OTs suggested that improving the information technology infrastructure would facilitate delivery of screening and save time.

### Conclusion:

We found that the lack of trained staff, expertise, and appropriate screening tools are the main barriers to successfully implementing NCI screening in Malaysia. However, education and awareness among healthcare providers about the effects of NCI in PLWH may prove to be an important facilitator for implementation. Obtaining the views of PLWH would further inform optimal NCI screening implementation strategies. These data may also be relevant to other regional countries seeking to expand NCI screening services.

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## Stigma, Loneliness, and Mental Health Outcomes among People Living with HIV in Malaysia

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### Background:

Literature has demonstrated that HIV-related stigma and loneliness may influence mental health among people living with HIV (PLWH). However, there is limited data on the influence of these factors on mental health outcomes among PLWH in the Asia-Pacific region. In this study, we examined the underlying parameters of HIV-related stigma and loneliness and explored its association with mental health among PLWH undergoing routine HIV care in our centre.

### Material and Methods:

A sample of 211 PLWH and 101 HIV-negative controls were recruited at Universiti Malaya Medical Centre, Malaysia from October 2020 – December 2022. The inclusion criteria were 35 years and above and no acute illness at the time of recruitment. All participants completed screening for mental health (Depression, Anxiety, and Stress, DASS-21), HIV-related stigma (HIV Stigma Scale, HSS-12), perceived loneliness (De Jong Loneliness Scale, DJLS-6) and physical functioning (Short Physical Performance Battery, SPPB). Socio-demographic, lifestyle (smoking, alcohol, and substance use) and HIV-related treatment parameters were collected using standardized surveys. General linear regression model was used to assess factors independently associated with total DASS-21 scores with higher scores denoting poorer mental health outcomes.

### Results:

The mean (standard deviation, SD) age of PLWH and controls were 51.83 (SD = 9.928) and 51.03 (SD = 10.367) years, respectively. The majority were males (79.64% in PLWH, 52.48% in controls). All PLWH

received antiretroviral therapy (ART), of which 72.03% were on an efavirenz-based regimen. Compared to the controls, PLWH had higher mean scores for perceived loneliness (3.33 vs 2.48,  $p < 0.05$ ) and depression (3.08 vs 2.29,  $p < 0.05$ ). However, no difference was observed in anxiety and stress. HIV-related stigma was correlated with perceived loneliness ( $r = 0.283$ ,  $p < 0.01$ ), depression ( $r = 0.266$ ,  $p < 0.01$ ), and stress ( $r = 0.226$ ,  $p < 0.01$ ) but not anxiety in PLWH. Perceived loneliness was also correlated with poorer mental health outcomes in PLWH ( $r = 0.426$ ,  $p < 0.01$ ) and controls ( $r = 0.361$ ,  $p < 0.01$ ). General linear regression model demonstrated that increasing age ( $\beta = 0.12$ ,  $p < 0.05$ ) and higher physical function performance ( $\beta = 1.19$ ,  $p < 0.05$ ) were negatively associated with poorer mental health outcomes. Additionally, perceived loneliness was positively associated with poorer mental health outcomes ( $\beta = 1.54$ ,  $p < 0.05$ ). PLWH of Chinese ethnic descent (compared to Malays;  $\beta = 2.06$ ,  $p < 0.05$ ) and reporting no current substance use (vs prior use;  $\beta = 2.72$ ,  $p < 0.05$ ) had lower mental health outcome scores, while PLWH from lower household income ( $\leq$  RM4,850 vs RM4,851 - RM10,970;  $\beta = 2.43$ ,  $p < 0.05$ ) and those not married (vs married;  $\beta = 2.44$ ,  $p < 0.05$ ) had higher mental health outcome scores. HIV-related stigma was not independently associated with mental health in this cohort.

### Conclusion:

PLWH experienced higher rates of depression and perceived loneliness compared to HIV-negative individuals in our setting. Perceived loneliness in PLWH was correlated with HIV-related stigma and independently associated with poorer mental health outcomes. Interventions which address perceived loneliness should be explored as means to improve overall mental health in PLWH.

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## HIV Activism and Stigma: Assessing Who among Malaysian Clinicians Can Be Allies

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### Background:

HIV activism has been a cornerstone in progressing the global HIV response. However, disparities that are often rooted in stigma (e.g., low HIV prevention program coverage and rates of HIV testing) remain persistent, resulting in late presentation into care and poor treatment adherence. This calls for the strengthening of allyship from individuals who may not belong to stigmatized groups or groups who are reportedly identified as stigma perpetrators such as clinicians. This study aimed to evaluate associations between HIV activism with clinicians' sociodemographic characteristics, clinical experience, stigma constructs and clinical characteristics.

### Material and Methods:

A cross-sectional study was conducted with a sample of 74 primary care physicians across Malaysia (41% women, 59% men) with a mean age of 36.9 and mean years of practice of 11.5. The clinicians completed a survey consisting of validated scales that measured HIV activist identity, commitment and orientation, comfort in taking sexual and substance use histories, PrEP knowledge, and perception of risk compensation, alongside stigma constructs such as prejudice, stereotype and discrimination intent. Data were collected between November 2022 and December 2022 and subsequently tested for associations with stepwise

regression; first, with bivariate regression, and subsequently with multivariable regression analyses with statistically significant variables.

### Results:

Analyses were done in three main steps. The predictors of HIV activism were sociodemographic characteristics (age and gender), stigma-related characteristics (stereotype, prejudice and discrimination intent) and clinical characteristics (years of practice, comfort performing clinical tasks with members of key populations, PrEP perception of risk compensation, and PrEP knowledge). Outcome variables were measured through HIV activist identity and commitment, HIV activism orientation towards day-to-day activism, and HIV activism orientation towards structural activism.

Bivariate regression analyses were performed as the first step. Prejudice, discrimination intent, comfort performing clinical tasks with members of key populations, PrEP perception of risk compensation, and PrEP knowledge were preliminarily found to be associated with the outcome variables with statistical significance of  $p < 0.05$  and  $p < 0.001$ .

Multivariable regression was subsequently performed. Prejudice was found to be associated with the HIV activism orientation toward day-to-day activism ( $p = 0.026$ ) while PrEP perception of risk compensation was associated with the HIV activism orientation towards structural activism ( $p = 0.036$ ).

Lastly, these two variables were tested with multivariable regression for association with all outcome variables. Both variables were associated with the outcome variables ( $p < 0.05$  and  $p < 0.001$ ).

### Conclusion:

Clinicians who enacted less prejudice and had positive PrEP risk compensation perception were more likely to identify as HIV activists and engage in HIV activism. More work is needed to account for other predictors of HIV activism among clinicians including robust approaches to modelling associations in HIV activism. These findings depict the complexity of activist identity and orientation towards social change to positively shift the dial on the HIV response among clinicians as allies and stigma changemakers. An effective HIV response demands the involvement of clinicians as community advocates. The initial step to doing this is by identifying, before training and mobilizing them.

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## Changing: Lessons Learned from Immersive Learning

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In the ageing age, people with HIV(PWH) would flood in long-term service. However, people living with HIV were frequently excluded from the long-term care service in Taiwan. To change the inequality in health care, we make an effort to change the willingness of long-term care professionals to care for people with HIV. If long-term care personnel have this concept in advance, the barriers to service delivery will be reduced when people with HIV need services in the future.

With the advancement of medical treatment, " Undetectable=Untransmittable (U=U) " decreased the HIV risk during work. Most long-term care professionals need to be made aware of the critical concepts. Utilize the immersive learning method, design a series of message transmission modes and create an immersive environment to promote long-term care professionals' easy understanding of the complete information.

In 2022, we will use the immersion learning module to conduct activities for long-term care professionals in 4 cities and conduct a survey on care willingness and attitudes towards people with HIV before and after the workouts. One month after the end of the series of activities, we found that their knowledge about caring for people with HIV had improved, and their willingness to take care of PWH had become significantly positive.

With a friendly attitude among long-term care professionals, a friendly and positive care service environment should provide high-quality care and improve the quality of life and happiness when PWH faces ageing health challenges. Therefore, we wanted to demonstrate the transformative effect of immersive learning modules on training long-term care professionals as a model for developing health and equitable care systems in Asian countries.

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## Breaking the Link: Unveiling the Mediating Role of Stigma in Food Insecurity and Depression among Men Who Have Sex with Men in Kathmandu, Nepal

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### Background:

Previous studies have indicated the association between stigma and depression among frequently stigmatized groups such as men who have sex with men (MSM). While this association has been suggested in the literature, there is a dearth of evidence that examines whether food insecurity mediates this relationship and if stigma plays a statistically significant role in the association between food insecurity and depression in MSM.

### Material and Methods:

This cross-sectional study conducted between October and December 2022 aims to identify the factors associated with food insecurity, stigma, and depression among a sample of 250 MSM in Kathmandu, Nepal, recruited through respondent-driven sampling. Multiple linear regression analysis was used to examine the associated factors. Similarly, an unadjusted model including the exposure, mediator, and outcome variables and an adjusted model that controlled for sociodemographic, behavioral, and health-related confounders was used. Bootstrapping was utilized to estimate the coefficients of these effects and the corresponding 95% confidence intervals.

### Results:

Depression, stigma, and food insecurity rates were 19.6%, 24.4%, and 29.2%, respectively, among MSM. Food insecurity was associated with higher age ( $b=0.094$ ; BCa 95% CI= 0.039, 0.150) and monthly income ( $b=-1.806$ ; 95% CI= -2.622, -0.985).

Depression was associated with condomless sex ( $b=-1.638$  95% CI= -3.041, -0.092). Stigma was associated with higher age ( $b=0.196$ ; 95% CI= 0.084, 0.323) and PrEP uptake ( $b=2.905$ ; 95% CI= 0.659, 5.248). The impact of food insecurity on depression mediated by stigma and the proportion of indirect effect mediated via stigma was 27.2%.

### Conclusion:

Our findings show that stigma plays a role in the relationship between food insecurity and depression among Nepali MSM. Additionally, food insecurity affects the relationship between stigma and depression in this population. Reducing food insecurity and addressing the stigma surrounding sexual orientation should be a priority when addressing mental health concerns among MSM in Nepal and other resource-limited countries with similar socio-cultural settings.

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## **Incongruence and Tensions between Theory and Practice in Community-Based Participatory Research: Lessons Learned from Researching with Sex Workers in Singapore**

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This project was a qualitative study on HIV/STI risks in the sex work industry in Singapore, and aimed to adopt a community-based participatory research (CBPR) approach. The project was conducted in partnership with local sex workers' rights group, Project X, and recruited community members to be part of the research team.

The data collection phase of the project lasted for about six months, involving five focus group discussions and fifty-three semi-structured interviews, the latter conducted primarily by three community interviewers. From the outset, Project X's Executive Director was part of the research team to centre the interests of sex workers in project design. The three community interviewers were trained before conducting interviews, but after noticing that the interview guides (developed by the academics) covered topics beyond the members' own experiences, we introduced ongoing training, such as collaboratively rewriting the interview guide and conducting short pre-interview briefings with the community interviewer.

The recruitment of community interviewers tended to alienate certain segments of the industry. The three members were all under 25 years old, Singaporean, fluent in English, attended higher education and worked as online-based freelancers. The 'steep learning curve' demonstrated that we could not take for granted that community members were necessarily 'cultural' experts across this diverse group. Moreover, it became clear that the sex work industry tends to attract individuals seeking flexibility and independence, such that the long-term, formal investment in a research project (e.g. minimum four-month commitment,

conducting interviews weekly) is almost antithetical to the needs and interests of most sex workers.

The constant and processual nature of power negotiation in practice suggests an incongruence between the ideals of CBPR and the strict, formal models often promoted. Observing the tensions within complex internal dynamics, and the positive outcomes of adaptive research, this paper calls for a re-imagination of research processes untied to institutional structures, to accommodate the flexible needs and interests of a wider range of community members. We believe that CBPR has immense potential and allowing for flexibility will be integral in promoting CBPR in the sex work community.

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## Satisfaction of People Living with HIV (PLHIV) Towards Teleconsultation Service in Hospital Sungai Buloh: A Cross-Sectional Study

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### Introduction:

Teleconsultation has the possibility to improve health care delivery and management of numerous chronic diseases and infectious diseases including HIV. To evaluate the implementation of teleconsultation in HIV care, it is crucial to understand patients' satisfaction with the care that they received. Hospital Sungai Buloh implemented teleconsultation in their out-patient HIV clinic in 2017, however no evaluation on the service quality has been performed to date. This study aims to determine the level of satisfaction of PLHIV utilising this service and assess the factors associated with their satisfaction.

### Material and Methods:

A cross-sectional study was conducted among PLHIV attending the teleconsultation service from January to December 2022 in Hospital Sungai Buloh. Their satisfaction with service received were measured using a validated Telemedicine Satisfaction Questionnaire (TSQ) which consists of 14 questions with a total score ranging from 14 (lowest score) to 70 (highest score). The following factors were measured for association with high satisfaction using bivariate analysis; socio-demographic characteristics such as age, sex, ethnicity, education, occupation, monthly income, residential area and treatment characteristics such as years of living with HIV and years of follow-up at Hospital Sungai Buloh.

### Preliminary Results:

A total of 115 PLHIV were sampled from the target of 2022. The participants were mostly male (n=110, 96.5%) with a mean age of 37.4±6.8 years old. The ethnicity of this study sample was distributed mainly among Malay (n=64, 56.1%), followed by Chinese (n=42, 36.8%), and Indian (n=3, 2.6%). Most of the participants received tertiary education level (n=60, 52.6%) with an average monthly income earned

were RM 4,437.79±RM 3039.12). The majority of them were employed (n=100, 87.7%), currently living in urban areas (n=85, 74.6%), and the same state jurisdiction of the hospital; Selangor (n=62, 54.4%). The average number of years of participants had been diagnosed with HIV was 6.8±2.9 years and follow-up in this hospital was 6.3±2.6 years. The mean score for the satisfaction of teleconsultation among participants was high 65±6.3. Most of the participants rated high satisfaction with this service (n=109, 95.6%) and moderate satisfaction (n=5, 4.4%). Male PLHIV experienced a higher satisfaction level compared to female (OR = 36.0, 95% CI [3.72, 348.97], p=0.009). The other factors assessed including age group, ethnicity, educational level, occupational status, monthly income, residential area and treatment characteristics were not associated with the satisfaction level.

### Conclusion:

The preliminary results show that overall satisfaction level among PLHIV with teleconsultation services in Hospital Sungai Buloh was high. Woman living with HIV appeared to favor the service less compared to males. However, larger sample numbers are needed to confirm these findings and identify other drivers of satisfaction level. Identifying these factors will enable healthcare providers to implement a suitable strategy based on PLHIV needs and limitations to provide high-quality service delivery which will lead to better health outcomes and end-user satisfaction.



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## Physical, Emotional, and Psychosocial Challenges Associated with Daily Dosing of HIV Medications and Treatment Aspirations among People Living with HIV in Yunnan, China

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### Background:

Antiretroviral treatment (ART) can improve health outcomes among people living with HIV (PLHIV) and prevent onward HIV transmission. The worldview regarding health has shifted from conquering diseases to improving overall wellbeing and quality of life. This study therefore investigated treatment and non-treatment challenges among PLHIV and quantified the percentage of PLHIV reporting these various challenges.

### Material and Methods:

144 participants aged 18 years or older with positive diagnosis of HIV-1 were recruited from Yunnan Provincial Infectious Disease Hospital, using non-probability sampling approaches and surveys were completed offline. Outcomes were self-rated overall health, aspiration for novel treatments, and self-reported virologic control. Polypharmacy was defined as taking 5 or more pills a day. Descriptive analyses were used to explore attitudes towards treatment.

### Results:

Mean age of the 144 participants was 33 years, 64.6% were men. At the time of the survey, 97.7%(126/129) had viral load(VL) of < 50copies/mL and the mean CD4 lymphocyte count was 558 cells/ul, 99.2%(126/127) maintained a CD4 count >200 cells/μL. People diagnosed with HIV before 2010 was 4.86%, those diagnosed between 2010 and 2016 was 38.9%, and between 2017 and 2022 was 53.47%. With 90.2% were aged < 50 years, most patients (70.2%) didn't report non-HIV pills. Overall, prevalence of polypharmacy was 20.8%. The percentage who missed ART ≥ 1 time in the past

month was 30.6%. 51.4% acknowledged that "Having to remember to take my HIV medication every day causes me stress or anxiety", 69.6% indicated that "Taking pills for HIV every day effects my day-to-day life or work". Top three improvements to HIV medicines was: 'reduced long-term impact on my body'(67.3%), 'less HIV medicine each day but just as effective' (59.7%); longer-lasting medicine so I don't have to take it every day' (49.3%).

### Conclusion:

In our cohort, 97.7% PLHIV with suppressed VL and 99.2% maintaining a CD4 count >200 cells/μL, and most (70.2%) of them didn't report non-HIV pills. However, 51.4% acknowledged that "Having to remember to take my HIV medication every day causes me stress or anxiety". Many PLHIV perceived gaps in their care and aspired for novel treatments. Providing flexible treatment options can help patients improve health-related quality of life.

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Abstract number 181 has been withdrawn.

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## Legality of Telehealth Implementation in HIV Care For At-Risk Key Population in Indonesia

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Abstract

### Background:

COVID-19 caused a detrimental impact to health system worldwide, yet it catalyzed the implementation of telehealth as response to foster the health system resiliency in many countries. Many developed countries have implemented telehealth with a more advance technology and robust regulation. Indonesia include health digitalization as one of its health transformation strategies to cope and adapt with the evolution of the modern health services.

### Description:

HIV is no longer a burden to public health in developed countries. HIV has become a chronic manageable condition. Antiretroviral treatment safe lives and prevent new HIV infections. Yet Indonesia is still one of the few countries in the Asia Pacific with high HIV epidemic burden. Implementation of telehealth can effectively and efficiently foster all cascade of HIV care. This paper uses a socio-legal approach to explore the legal issues around the implementation of telehealth in the cascade of HIV from prevention, testing and treatment in key affected population in Indonesia.

### Lesson Learnt:

In Indonesia, telehealth is implemented in almost all of HIV care cascades which include digital outreach (to reach more marginalized at-risk KP), series of health education, prevention, care and support which provided via chat, telephone, video calls or digital communication platforms such as Zoom and WhatsApp. Until now, there is no guidelines or regulations in Indonesia that specifically regulate the implementation of telehealth between clients and health professionals as providers. Like other telehealth users in general, at-risk KP as telehealth users are also entitled to good HIV services. Data

security and protection and privacy rights also need to be taken into consideration.

### Conclusion:

The implementation of telehealth is expected to be able to efficiently increase the coverage and quality of HIV care in Indonesia and play significant role in reducing stigma and discrimination related to HIV & PLHIV. Telehealth needs to be further regulated by laws and regulations to ensure its quality of health service delivery, its standards, right to health enforcement as implied by the constitution.

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## Psycho-Social and Behavioral Impacts of COVID-19 on People Living with HIV: Second Report From 11 Antiretroviral Therapy Sites in Northern Vietnam

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### Background:

The effects of prolonged Coronavirus disease 2019 (COVID-19) pandemic have been far-reaching, affecting not only individuals' health but also the economy and healthcare system. Socially marginalized groups including people living with HIV/AIDS (PLHIV) bore the burden disproportionately. In June/July 2020, shortly after the first COVID-19 outbreak in Vietnam, we conducted a cross-sectional, single-center survey on psychosocial-behavioral impacts of COVID-19 in the National Hospital for Tropical Diseases (NHTD) in Hanoi. Then, Vietnam has been experiencing the largest 4th COVID-19 outbreak since April 2021. In response, many regions enforced strict city lockdowns and a stay-at-home order until Vietnam entered a new normal stage in October 2021. The impact of COVID-19 varies depending on pandemic phases and regional responses. This study aimed to explore long-term psychosocial-behavioral impacts of COVID-19 and the changes of impacts between different pandemic phases among PLHIV on antiretroviral therapy (ART).

### Material and Methods:

The second survey was conducted in 11 ART sites in Northern Vietnam during the largest 4th COVID-19 outbreak in 2021. In this survey, anti-SARS-CoV-2 IgG antibodies were tested and psychosocial-behavioral impacts of COVID-19 were assessed using self-reported questionnaire. Descriptive analyses were performed to evaluate the incidence of SARS-CoV-2 infection, preparedness to COVID-19, the impacts of COVID-19 on access to ART, economic security, and risky health behaviors among the study participants. In NHTD, the changes

of impacts between the 2020 and the 2021 surveys were evaluated, and depression was assessed using the Center for Depression Epidemiology Research (CES-D). The prevalence of depression (defining the CES-D score of  $\geq 16$ ) and its associated factors were evaluated, comparing the findings with previous studies conducted in NHTD in 2016. Univariate logistic regression models were performed to investigate factors associated with depression.

### Results:

In total, 7,808 HIV-infected outpatients participated in the second survey. Most participants were practicing prevention measures against COVID-19 and the overall prevalence of SARS-CoV-2 antibodies was as low as 1.2%. HIV treatment was generally maintained and there was no increase in risky health behaviors observed during the 4th outbreak. Economic impacts remained significant, with rising unemployment (17.8%). On the other hand, the prevalence of depression in participants from NHTD was 16.7%, which was lower than that in the previous survey conducted in NHTD in 2016 (27.9%). In univariate logistic regression models, those who had binge drinking (>5 drinks a time) in the past month, those who lost their jobs or experienced reduced or increased working hours due to COVID-19, and those who perceived difficult financial situation were more likely to experience depression. While social support was a strong protective factor for depression in previous studies, this study found no such association, as nearly all participants in NHTD (98.1%) reported receiving social support during the outbreak. Needs for continuous provision of ART and HIV service and flexible ART delivery models were reported as effective support for continuing ART during the pandemic.

### Conclusion:

Social support may have helped alleviate the negative socio-economic impacts of COVID-19 and promote mental health in PLHIV.

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## Sociodemographic Characteristics, Community Engagement and Stigma Among Men Who Have Sex with Men (MSM) Who Attend MSM-Led Versus Public Sexual Health Clinics: A Cross-Sectional Survey in China

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### Background:

Little research has examined differences between gay, bisexual, and other MSM (GBMSM) who attend community-led clinics versus GBMSM who attend public STI clinics. Understanding these differences is vital in designing relevant and people-centred service delivery strategies for GBMSM in China. This study examined GBMSM who attended GBMSM-led clinics compared to those who attended public STI clinics.

### Material and Methods:

Data used in this analysis were derived from a cross-sectional formative research study among GBMSM aged  $\geq 18$  years in Guangzhou, China. The study was conducted from May to August 2022. Participants were enrolled from a GBMSM-led clinic run by a community-based organization staffed by GBMSM volunteer or, a public STI clinic staffed by physicians. Chi-squared tests were used to compare sociodemographic characteristics, and linear regression was used to compare community engagement, community connectedness, social cohesion, internalized homonegativity, and perceived homonegativity among all GBMSM.

### Results:

We recruited 94 participants (including 45 at the GBMSM-led clinic and 49 GBMSM at the public STI clinic). The overall mean age was 26.8 years old. Most of the participants had never been married (89/94, 95%), and self-identified as gay (79/94,

84%). Table 1 summarizes our main study findings. Our analysis showed no large differences in sociodemographic characteristics or other factors between the two groups. Men at the GBMSM-led clinic may be more likely to self-identify as gay than bisexual or another sexual orientation ( $p=0.22$ ). Men who were tested at the public clinic were more likely than those at the GBMSM-led clinic to present with symptoms ( $p=0.007$ ). We observed a trend of higher internalised homonegativity in GBMSM at the public STI clinic ( $\beta=-1.52$ ,  $p=0.10$ ). Community engagement may be higher among men presenting to GBMSM-led clinics ( $\beta=0.58$ ,  $p=0.065$ ).

### Conclusion:

Our data suggest that men in GBMSM-led clinics may be more willing to engage in community activities and have less internalised homonegativity compared to men in public STI clinics. These data have implications for designing community engagement strategies for GBMSM, delivering anti-stigma interventions, and promotion of asymptomatic STI testing.

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## Telehealth Evaluation Among People Living With HIV in Australia

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### Background:

As a result of COVID-19, telehealth, including telephone and video conferencing, has been widely utilised for HIV care. During the COVID-19 pandemic in Australia, many sexual health clinics and hospitals introduced telehealth consultations for routine check-ups and monitoring for people living with HIV. The aim of this study was to evaluate patient acceptability and experiences of using telehealth for routine HIV care with the secondary aim of identifying preferred models of HIV routine care for the future.

### Material and Methods:

We conducted an anonymous, online survey in English among people living with HIV throughout Australia between November 2021 and December 2022. The survey was advertised by posters and postcards with a QR code. This survey asked about experiences of using telehealth since COVID-19, preferences for future consultations, and suggestions for enhancing telehealth consultations. Descriptive statistics were calculated.

### Results:

A total of 89 participants (80 males, 8 females and 1 non-binary person) were included in the study. The majority of participants were recruited from Melbourne Sexual Health Centre (50, 56.2%), were between 36-55 years old (49, 55.1%), spoke English at home (74, 84.1%) and had been living with HIV for more than 5 years (68, 76.4%). Among the participants, 69 reported having a telehealth

consultation since the COVID-19 pandemic began. Nearly half of those (32, 46.4%) were not given a choice to have telehealth for at least one of their consultations. The aspects of telehealth most liked by participants were: 1) the convenience of not leaving home or work for the consultation; 2) less travel time; and 3) avoiding contact with other people. The three most disliked aspects of telehealth were: 1) not being able to be screened for STIs and/or have a physical examination at the same time; 2) the perceived impersonal nature of the experience; and 3) difficulties discussing other health concerns. Among all participants, the preference for future consultations was to have a mix between in-person and telehealth (40, 44.9%), however nearly a quarter prefer in-person consultations only (20, 22.5%). The remaining participants preferred telehealth only with attending in-person when necessary (e.g. for bloodwork) (11, 12.4%) or did not have a preference (7, 7.9%).

### Conclusion:

Telehealth consultations for routine HIV care and in conjunction with in-person consultations are acceptable for a majority of people living with HIV in Australia.

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## **Common Dyadic Coping Mediated the Associations between We-Disease and Relational and Individual Outcomes among HIV-Serodiscordant Couples: The Common Fate Mediation Model**

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### **Background:**

Given that HIV has evolved into a lifelong and manageable condition, improving and ensuring the quality of life for people living with HIV (PLWH) become increasingly important. Living with HIV is a life-altering experience that poses substantial challenges for both PLWH and their partners. According to Bodenmann's Systemic Transaction Model (STM), common dyadic coping refers to both partners working together to alleviate the negative effects of stress. There is a critical need to identify how HIV-serodiscordant couples cope with HIV as a unit.

**Purpose:** This study examined the mediating role of common dyadic coping in linking we-disease appraisal and relationship satisfaction as well as quality of life.

### **Material and Methods:**

This cross-sectional study included 231 Chinese HIV-serodiscordant couples. We conducted a convenience sampling and recruited couples via grassroots organizations between June and October 2022. Participants completed measures of we-disease appraisal, common dyadic coping, relationship satisfaction, and quality of life. We examined the mediation effect of common dyadic coping in the association between we-disease appraisal and outcomes with the common fate mediation model.

### **Results:**

PLWH and their partners were middle-aged. The average time since HIV diagnosis was 4.18 years. Most of the couples were same-sex male couples.

Common dyadic coping mediated the effect of we-disease appraisal on relationship satisfaction. Moreover, common dyadic coping significantly mediated the effect of we-disease appraisal on PLWH's quality of life but was marginally significant on partners' quality of life.

### **Conclusion:**

Our findings highlight the importance of common dyadic coping during dyadic illness management among Chinese HIV-serodiscordant couples.

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## Health Related Quality of Life Among HIV Affected Individuals- A Cross Sectional Study

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### Introduction:

Identifying the level of health related quality of life (HQoL) and their influencing factors in human immunodeficiency virus (HIV) positive people is of extreme importance in implementing an interventional program to support this group. This cross sectional study was an attempt to determine the level and factors associated with HQoL among the individuals affected with HIV.

### Material and Methods:

A convenient sample of 82 HIV-infected people from three NGOs and one Infectious Disease Hospital (IDH), were interviewed using an interviewer administered, semi structured questionnaire developed by adopting the "WHOQOL-HIV BREF instrument".

### Results:

A majority of the respondents were with low Quality of Life (QoL) in all the domains of HQoL. The proportion of respondents with low QoL was highest in the domain of social relationship (64.6%) followed by psychological domain (59.8%), physical domain (58.5%), level of independence domain (56.1%), environmental domain (52.4%) and spirituality domain (52.4%) of HQoL. Bivariate analysis revealed that the overall perception of QoL was better in the respondents living in urban area, who were employed and asymptomatic of the centre for disease control (CDC) stage of HIV.

### Conclusion:

The perception of overall health was higher in females, all respondents less than 35 years of age, asymptomatic of the CDC stage of disease and with a current CD4 count greater than 200 cell/mm<sup>3</sup>. These findings highlight the need for enhanced socio-psychosocial support and a better environment for improving the health related quality of life among individuals affected with HIV.



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## Measuring the Disparity in the Distribution of HIV and Sexually Transmitted Infections in Both Heterosexual and Homosexual Populations in Australia Using Gini Coefficients

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### Background:

The risk of HIV and sexually transmitted infections (STIs) varies substantially across population groups in Australia. This study aims to measure the disparity in the distribution of HIV/STIs among attendees in a clinical setting using the Gini coefficient, a measure of inequality to describe the distribution of HIV/STIs.

### Material and Methods:

We used demographic and sexual behaviour data from attendees of Melbourne Sexual Health Centre, between 2015-2018. We applied a machine learning-based risk assessment tool, MySTIRisk, to determine the risk scores. Based on individuals' risk scores and HIV/STIs diagnoses, we calculated the Gini coefficients for HIV, syphilis, gonorrhoea, and chlamydia infections for different subgroups.

### Results:

Among all clinic attendees, the Gini coefficients were highest for syphilis (0.60, (95% confidence intervals, 0.57-0.64)) followed by HIV (0.57, 0.52-0.62), gonorrhoea (0.38, 0.36-0.42) and chlamydia (0.31, 0.28-0.35). Men who had sex with men (MSM) had lower Gini coefficients compared to heterosexual men or women; HIV (0.54 vs. 0.94 vs. 0.96), syphilis (0.50 vs. 0.86 vs. 0.93), gonorrhoea (0.24 vs. 0.57 vs. 0.57) and chlamydia (0.23 vs. 0.42 vs. 0.40), respectively. The Gini coefficient was

lower among 25-34-year-olds than in other age groups for HIV (0.66 vs. 0.83-0.90), gonorrhoea (0.38 vs. 0.43-0.47) and for some age groups for chlamydia (0.31 vs. 0.39-0.47). For syphilis, the oldest age group ( $\geq 45$  years) had a lower Gini coefficient than 18-24-year-olds (0.61 vs. 0.70).

### Conclusion:

Understanding the distribution of infection within a specific population allows public health professionals to appropriately target interventions. Our study found that HIV/STIs are more evenly distributed in MSM populations suggesting interventions should be widely disseminated in MSM communities. In contrast, interventions in heterosexual men and women should be more targeted at higher-risk individuals.

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## Trend of Syphilis Prevalence Associated With High Risk Group of the Thai Red Cross AIDS Research Centre Anonymous Clinic in Bangkok, Thailand From 2018-2022

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### Background:

Syphilis is a sexually transmitted disease that still being public health problem in Thailand. Department of Disease Control of Thailand (DDC) set the goal to reduce the incidence of syphilis by 90% within 2030. Men who have sex with men (MSM) is the high-risk group of syphilis diagnosis. This study aimed to determine the trend and characteristics of individuals with diagnosis of syphilis at The Thai Red Cross Anonymous Clinic (TRC-AC), Bangkok, Thailand during pre-pandemic (2018-2019) and pandemic of COVID-19 (2020-2022).

### Material and Methods:

Clients who first visited STI screening at TRC-AC during January 1, 2018 to December 31, 2022 were enrolled. Diagnosis of syphilis was performed by reverse algorithm. Anti TP was used as a screening test and reactive results were confirmed by rapid plasma regain (RPR). RPR titer with value greater than 1:8 was considered as syphilis infection. Adjusted odd ratios (aORs) and 95% confidence interval (CI) were calculated in multivariable logistic regression analysis to determine the risks of syphilis diagnosis with heterosexual (HS), MSM, transgender (TG), and sex worker (SW). The demographic factors of clients were determined for risk of having syphilis.

### Results:

During the 5-year periods, Syphilis was identified in 2,489 individuals out of 57,235 clients (4.5%) visited at the TRC-AC. Clients diagnosed with syphilis were male (2,364/2,489, 95%), median age (IQR) was 28

(17-39) years and MSM (1,819/2,489, 73.1%). Among individuals with syphilis diagnosis, HIV serology was performed in 2,129/2,489 (85.5%) individuals and 944 (37.9%) had positive HIV serology.

Syphilis prevalence from 2018 to 2022 was 4.4% (592/13,435), 4.0% (729/18,330), 4.3% (478/11,051), 5.5% (351/6,432), and 4.2% (339/7,987), respectively. The syphilis prevalence was not statistically declined during COVID-19 pandemic. From our analysis, risk of exposure, education, income, and HIV status were associated with syphilis diagnosis ( $p < 0.05$ ). The risk of exposure groups, MSM (aOR=5.5, 95%CI: 4.9-6.3), TG (aOR=5.0, 95%CI: 4.1-6.1), and SW (aOR=3.7, 95%CI: 2.4-5.8) were higher risk diagnosed with syphilis than HS group. The bachelor's degree upwards was lower risk of syphilis than the undergraduate education group (aOR= 0.7, 95%CI: 0.6-0.9). Among individuals with income less than 50,000 bath were higher risk of syphilis [less than 10,000 bath (aOR= 2.1, 95%CI: 1.7-2.7), 10,001-20,000 bath (aOR= 2.1, 95%CI: 1.7-2.7), and 20,001-50,000 bath (aOR= 1.6, 95%CI: 1.2-1.9), respectively]. The syphilis diagnosed in individuals with positive HIV status was higher than negative status (aOR= 4.7, 95%CI: 4.3-5.1).

### Conclusion:

The rate of syphilis is high among MSM populations. People with HIV had greater risk for syphilis acquisition. The prevalence of syphilis has not declined despite pandemic of COVID-19. The extensive measures to control transmission are required to achieve the goal in 2030.

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## Nutritional Status and Some Associated Factors among People Living with HIV at the HIV Outpatient Clinic of Bach Mai Hospital, Hanoi in 2019: A Cross-Sectional Study

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### Background:

Malnutrition remains a health issue for people living with HIV (PLWHIV) worldwide, including Vietnam. HIV, in particular, interferes with nutritional health by raising energy requirements, decreasing food intake, and negatively affecting nutrient absorption and metabolic activity. A well-nourished status can boost the immune systems, reduce infection frequency, shorten the duration of these illnesses, and slow the progression to AIDS. This study aims to describe malnutrition and associated factors among PLWHIV receiving outpatient care at a referral hospital in Hanoi, Vietnam.

### Material and Methods:

We conducted a cross-sectional nutritional assessment of 408 outpatients aged 18 years or older of the Bach Mai Hospital in Hanoi between July 2019 and May 2020. We used Subject Global Assessment (SGA), Prealbumin level (Prealbumin), Body Mass Index (BMI), Food Frequency Questionnaire, and Dietary Records to measure nutritional status. Logistic regression models were used to identify factors associated with nutritional status (1. Well-nourished; 2. Mild/moderate/severe of malnourished) by SGA, BMI, and Prealbumin criteria.

### Results:

Our results showed that there were 154 (37.7%) patients who had been malnourished by SGA standard and 64 (15.7%) study subjects who had been Chronic Energy Deficiency-CED (by BMI). Regarding the Prealbumin criteria, the number of

malnourished patients was 32 (7.8%). The final multivariate regression model highlighted male PLWHIV had a lower risk of malnutrition by SGA than females (aOR: 0.53; 95%CI: 0.31 to 0.92; p<0.05); patients's family members live with HIV had a lower risk of malnutrition by SGA than others (aOR: 0.52; 95%CI: 0.29 to 0.89; p<0.05); and people with having a reducing diet would increase the SGA malnutrition among study subjects (aOR: 14.38; 95%CI: 8.72 to 24.37; p < 0.001). While Prealbumin malnutrition was higher among PLWHIV who skipped meals and did not eat enough nutrition by self reported than in others (aOR: 17.55; 95%CI: 6.95 to 97.35; p<0.001). Among the patients, 54.3% did not consume enough protein, and 59.6% did not consume enough overall energy. Insufficient total energy intake was present in 55.8% of patients, while inadequate protein consumption was 28.9%.

### Conclusion:

We found a high prevalence of malnutrition among PLWHIV treated at the Bach Mai hospital, and some risk factors included female, people do not have family members living with HIV, and a low-calorie diet. Our results further assert the importance of having a sufficient and comprehensive diet. We suggest that guidelines for national and local HIV/AIDS treatment and consultation should include nutritional evaluation and assistance among PLWHIV in the future.

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## Beyond Boundaries: Medical Surveillance and Social Barriers to Accessing Public Health Services for Migrant Sex Workers in Singapore

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### Introduction:

The Medical Surveillance Scheme (MSS) was introduced in 1976 to regulate STIs and govern sex workers in Singapore. While this scheme promotes access to health resources such as testing and treatment, only a small number of migrant sex workers (MSW) are selected for the scheme. Undocumented MSWs, who occupy the largest proportion of the sex industry, face increasing exclusion and precarity. This paper examines how MSWs are “invisibilized” in the public health system and the social barriers and risks they are thus exposed to.

### Material and Methods:

We draw on a qualitative study involving focus group discussions (FGDs) and semi-structured in-depth interviews (IDIs) in Singapore. We conducted four FGDs (n=14), of which peer interviewers (n=3) were identified and trained to lead interviews alongside a researcher. IDIs (n=53) were conducted among sex workers (n=67) stratified by migrant status, types of work venues and geographical characteristics. Interviews explored themes including sex work experiences, personal migrant history, sexual health, occupational hazards, community support systems, and recommendations for policymakers. Data were analyzed through inductive thematic analysis.

### Results:

First, interviewees described how MSWs are categorized, regulated and excluded from the public

health system of Singapore through the MSS state apparatus. Workers admitted to the MSS must undergo mandatory STI testing and are constituted as a key population characterized by danger and impurity. Moreover, many MSWs do not qualify to join the MSS due to the disciplinary controls around race, nationality, and gender. Thus, they remain undocumented, and unable to access public health services. Second, interviewees described how exclusion from the MSS exacerbates fragilities of everyday life, which are entwined with social barriers and risks, including (1) greater difficulties in living arrangements, navigating a public health system that is not in their native languages, and limited employment choices; and (2) occupational hazards including sexual illness, sexual violence, manipulation, state violence and social stigmatization.

### Conclusion:

Given the limits of MSS and the social barriers and risks that it engenders for undocumented migrant sex workers, more work must be done to bridge inequities to healthcare access, and to create safe spaces where all sex workers can access support systems without fear of retaliation and deportation

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## How Pay-It-Forward Works: A Qualitative Thematic Analysis of the of the Participant Experience in an Approach to Facilitate Gonorrhoea and Chlamydia Testing in Gay, Bisexual and Other Men Who Have Sex with Men

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### Background:

The pay-it-forward approach is an effort to increase rates of gonorrhoea and chlamydia testing among gay, bisexual and other men who have sex with men (GBMSM). In the pay-it-forward approach, the participant is given the gift of an STD test, paid for by a member in their community. The participant is then given the opportunity to pay for another individual's STD test. We conducted a pay-it-forward feasibility study to increase gonorrhoea and chlamydia testing among GBMSM. This study aims to understand the participant experience in the pay-it-forward approach and the mechanism by which it motivates testing.

### Material and Methods:

Semi-structured interviews were conducted at two different STD testing sites in Guangzhou, China. The responses were translated verbatim, and a coding framework was developed based on the questions and responses we were receiving. We conducted a theoretical thematic analysis to form overall themes and overarching factors from each of the two clinics. The responses were analyzed to thematically describe the experience of the participants at four steps of implementation. We sought to understand the pay-it-forward related barriers and facilitators to test uptake and donating money or writing a message.

### Results:

31 MSM were interviewed. We identified four sequential steps in implementation: before participation, PIF impression, receiving and/or writing the postcard, decision to pay it forward. The themes that emerged from this analysis were worry surrounding STD testing, detachment from the LGBTQ community, unspecified gratitude, connection to the recipient, and a sense of social responsibility and altruism.

### Conclusion:

Based on this thematic analysis, we conclude that the pay-it-forward model highlights the need for connection, support, and health services for gay men in China. The pay-it-forward model has the potential to be effective in increasing rates of STD testing, and this qualitative analysis provides a deeper understand for how participation affects these men.

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## A Community-Based Participatory Research Project to Develop an Occupational Health and Safety Framework for Sex Workers

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### Introduction:

Sex workers face inequities that lead to greater vulnerabilities to HIV, sexually transmitted infections (STI), and violence. These inequities result from many factors that span across individual stressors, interpersonal violence, and structural discrimination. With the premise that sex work is legitimate work that should be decriminalised, we present an occupational health and safety framework to holistically describe the factors needed to ensure safe work environments for sex workers.

### Material and Methods:

A qualitative study involving focus group discussions (FGDs) and semi-structured in-depth interviews (IDIs) were adopted. Four FGDs were conducted (n=14), where peer interviewers (n=3) were identified and trained to lead interviews alongside a qualitative researcher. Subsequently, IDIs were conducted among 53 sex workers in Singapore. Interviews explored themes around sex work experiences, support structures, and recommendations for policymakers. Data were analyzed through inductive thematic analysis.

### Results:

We adopted the World Health Organization Healthy Workplace Framework and Model to frame our findings. Physical work environments revealed varying risks and support structures. Types of sex work venues shaped specific risks, including exposure to violence from clients or increased surveillance from police. The availability of

emergency support also differed across locations. Psychosocial work environments revealed occupational hazards around trauma, fears, and stigma. Sex workers face heightened risks of trauma because of violence, substance use to cope with the demands of sex work, and fears of getting caught by the police, having their professions inadvertently exposed to their friends and family, and encountering stigma associated with sex work. Personal health resources involved the lack of sexual and reproductive health empowerment (e.g., HIV/STI testing and treatment, vaccinations), lack of awareness and resource to fully exercise legal or their human rights, and resources to exit or retire from sex work. Enterprise community involvement included relationships with other sex workers that differed across networks, some of which characterized by strong support while others by competition.

### Conclusion:

An occupational health and safety framework identified holistic factors that shape inequities that sex workers face, which place them at disproportionate risks of HIV/STI acquisition and violence. Efforts to integrate such a framework is urgently needed to equalize health outcomes for sex workers.



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## Factors Motivating Drug Use, Drug Use Cessation, and Managing One's Ongoing Recovery: A Retrospective Case Notes Review of Chemsex Recovery Services among Sexual Minority Men in Singapore

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### Introduction:

Holistic approaches are needed to facilitate recovery from substance use dependence or addiction. Despite the availability of long-established psychological frameworks and models to describe trajectories of chemsex recovery, more work should focus on individual experiences that characterise such trajectories. Especially in Singapore, where drug use is heavily criminalized, less is known about the struggles people who use drugs face during recovery and the support they need from the community. This qualitative study explored factors motivating drug use and drug cessation, as well as factors influencing their recovery.

### Material and Methods:

Data were derived from clinical notes provided by The Greenhouse Community Services Limited between 2020 to May 2022. The Greenhouse Community Services provides chemsex recovery services for vulnerable communities. This includes notes from four different forms, namely the intake assessment, progress notes, case closing summary, and the care plan review. Thematic analysis was utilized to generate themes.

### Results:

Our study generated several themes around factors facilitating drug use, motivations to stop using drugs, as well as general struggles around one's

ongoing recovery. We identified two sub-themes around factors facilitating drug use, including (i) managing trauma and trauma triggers; and (ii) managing feelings and emotions. Managing one's relationships was found to be a key factor that motivated one's desire to stop their drug use. Twelve sub-themes were highlighted as contributors to the recovery struggles of the clients. They were further grouped into four sub-themes: uncovering personal identities; losing motivation and drive; overcoming struggles; and preparing for aftercare.

### Conclusion:

This study adds insight to the processes that characterise the management of one's ongoing recovery, providing opportunities for interventions to better support individuals as they recover from chemsex. Psychoeducation such as introducing coping strategies and developing social support group should be key treatment targets for this population.

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## Development of the HIV Care Continuum & Beyond Initiative: Key Focus Areas to End HIV in the Asia-Pacific Region

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Approximately 6 million people are living with HIV (PLHIV) in the Asia-Pacific region; however, only 76% know their status, and of these, 86% are on antiretroviral therapy. Urgent action is needed to identify PLHIV or those at high risk of acquiring HIV to optimize linkage to HIV testing and care services. The HIV Care Continuum & Beyond Initiative was developed to convene regional stakeholders to comprehensively review and assess current progress and identify focus areas to reach HIV treatment-related targets. The initiative was implemented between December 2021 and October 2022, and established a steering committee of 12 experts, including HIV healthcare professionals, researchers, community leaders, and patient advocates from 6 territories: China, Hong Kong Special Administrative Region, Singapore, South Korea, Taiwan, and Thailand. The committee's goals were to develop and refine recommendations for HIV programs at local and national levels based on quantitative and qualitative assessments. A multi-lingual literature review was conducted to summarize information on overall care continuum progress and policies, access to prevention and treatment services, and planned research. The results of the review informed interview guides for 13 semi-structured anonymous interviews of PLHIV, community experts, healthcare professionals, and policymakers across the 6 territories. A modified Delphi method was used to achieve consensus over the course of 4 virtual meetings. Four focus areas to improve regional HIV outcomes were identified: (1) stigma and discrimination; (2) HIV prevention; (3) HIV testing, diagnosis, and treatment; and (4) quality of life of PLHIV. Proposed initiatives to reduce the regional impact of HIV and increase awareness of "undetectable = untransmittable" included: (1)

engaging community-led/based healthcare systems to deliver treatment, (2) providing access to and education on testing options (eg, self-testing), (3) offering free and same-day treatment initiation, (4) standardizing data collection methods to improve surveillance and research, and (5) expanding efforts to understand barriers to achieving quality-of-life goals. The HIV Care Continuum & Beyond Initiative identified key focus areas to improve health outcomes for PLHIV, reduce the HIV burden in the Asia-Pacific region, and help communities achieve global HIV targets.





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## Improving PrEP Adherence Among MSM in China: Co-creation of Intervention Materials with the Community

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### Background:

The effectiveness of HIV pre-exposure prophylaxis (PrEP) in preventing HIV infection relies heavily on the user's medication adherence. This study aims to develop PrEP adherence enhancement materials through co-creation with Chinese men who have sex with men (MSM).

### Material and Methods:

Between September 2021 to November 2022, we recruited 16 adult Chinese men who have sex with men (MSM) with PrEP using experience from an ongoing PrEP demonstration project to join the co-creation group. The group meets monthly for co-creation sessions moderated by two research assistants. Each co-creation session includes three steps: needs assessment, co-creation, and evaluation. First, after ice-breaking, MSM collectively identified barriers and facilitators to PrEP adherence based on their user experience, followed by brainstorming about multi-media materials for PrEP adherence promotion that can be delivered via a chat app (WeChat). Each member continued to complete the development of the proposed intervention ideas after the meeting, and all members evaluated the final products on relevance, feasibility, and elaboration via a 3-item 10-point Likert scale. The notes of the co-creation sessions and group chat logs were collected for content analysis.

### Results:

Sixteen MSM (mean age=29.7, SD=6.1) participated in three co-creation sessions and developed 11 intervention materials. In the need assessment step, commonly mentioned barriers to PrEP adherence include perceived and experienced side effects and

concerns about drug interaction between PrEP and other medications. The 11 final products include six posters, two videos, and three text-based messages. The major thematic foci are (1) how to cope with PrEP side effects (n=3), (2) general knowledge about PrEP (n=2), (3) PrEP adherence (n=2), (4) PrEP efficacy explanation (n=1), (5) drug interaction between PrEP and other medications (n=1), and (6) PrEP stigma reduction (n=2). The mean scores of the submission's relevance, feasibility, and elaboration were 8.3/10, 7.7/10, and 7.4/10, respectively.

### Conclusion:

Co-creation method could help to identify the significant barriers and engage the community to develop tailored PrEP adherence enhancement materials for Chinese MSM.

LB\_1

## Interaction Between Masculinizing Hormone Therapy and Daily Oral F/TDF and F/TAF PrEP in Transgender Men: Analysis of Testosterone Concentrations from the IMACT Study

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### Background:

Potential drug-drug interactions (DDI) between gender-affirming hormone and antiretroviral pre-exposure prophylaxis (PrEP) among transgender men are limited. We evaluated within the iMACT study the potential DDI between masculinizing hormone therapy (MHT) and daily oral PrEP among transgender men receiving MHT in Thailand. Herein, we report the impact of daily oral PrEP on plasma total testosterone (TT) concentrations.

### Material and Material and Methods:

Between May and October 2022, HIV-negative transgender men who had not undergone oophorectomy were enrolled and randomized (1:1) to receive either oral emtricitabine/tenofovir disoproxil fumarate (F/TDF)-based PrEP or emtricitabine/tenofovir alafenamide (F/TAF)-based PrEP. MHT, testosterone enanthate 200 mg intramuscular, was administered at baseline and every 2 weeks until week 12, while PrEP was prescribed from weeks 6 until the end of study at week 16. Intensive PK sampling was performed at week 4 (MHT only) and week 12 (PrEP and MHT) for TT; and week 12 (PrEP and MHT) and 16 (PrEP only) for PrEP assessment.

### Results:

TT data was available for analysis in 11 participants (6 in F/TDF and 5 in F/TAF group). The median (IQR) ages were 31 (26-37) years and 27 (25-29) years, and the body mass index were 24.8 (21.9-25.5) kg/m<sup>2</sup> and 24.9 (23.2-25.4) kg/m<sup>2</sup> for F/TDF and F/TAF groups, respectively. The area under the curve (AUC) and maximum concentration (C<sub>max</sub>) geometric mean ratios (GMRs) (90%CI) at week 4 (reference) and week 12 for TT were as follows: F/TDF group, 1.09 (0.97-1.22, p=0.21) and 1.09 (0.99-1.20, p=0.16); and F/TAF group, 1.10 (1.02-1.17, p=0.03) and 1.10 (0.99-1.21, p=0.12), respectively.

### Conclusion:

Plasma TT concentrations were within the bioequivalence range when oral PrEP was co-administered with MHT. TT exposures trended slightly higher with F/TAF but expected to be clinically insignificant. Plasma measurements of FTC, TAF, and TFV; and intracellular and tissues rectal measurements of TFV-DP and FTC-TP levels are ongoing.

## LB\_2

## Evaluation of a Multilingual HIV and Syphilis Testing Project for International Migrants in Tokyo, Japan

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### Background:

In Japan, international migrants constitute less than 3% of the total population; however, they are disproportionately affected by the HIV epidemic: 16% of the newly diagnosed HIV cases annually in Japan are among international migrants, among whom 28% were not aware of their HIV status until the onset of AIDS symptoms. While local public health centers offer free and anonymous HIV testing for all clients regardless of nationality, the services are primarily offered in Japanese, creating significant barriers for international clients. To address this issue, we implemented a free and anonymous multilingual HIV testing project in the Tokyo metropolitan area to explore strategies to enhance access to HIV/syphilis testing among international migrants.

### Material and Methods:

As part of a research project aimed to enhance access to HIV prevention and care among international migrants, funded by Japan's Ministry of Health, Labour, and Welfare, we organized a multilingual free and anonymous facility-based HIV/syphilis testing event targeted for international migrants between November 2021 and March 2023. Participants were recruited through a multilingual (Japanese, English, Chinese, Vietnamese, Nepali) social media campaign on Facebook and dating apps, and direct referral by community partners. During the test, participants were provided an opportunity to speak individually with a Japanese social worker about their life in Japan and how to access HIV pre-exposure prophylaxis (PrEP). In addition, for participants who preferred non-Japanese communication, we arranged for a professional medical interpreter in their preferred language via videoconferencing software.

### Results:

Of the 71 individuals who made online appointments, 43 (60%) completed the test at the facility. No HIV-positive cases were detected, but two participants tested positive for syphilis. The participants came from 18 countries/regions, with the majority identifying as men (90%), in their 20s-30s (85%), and having lived in Japan for more than two years (83%). Nearly half of the participants learned about the project via dating apps (46%), friends (25%), and Facebook (17%). Forty-four percent had not tested for HIV before. Among those who took the HIV test for the second time or more, 29% had not tested for HIV for over 12 months. The most common reasons for participating in the HIV test included "I want to know my status" (75%), "I had risky behaviors" (18%), and "I have HIV tests regularly" (17%). Furthermore, about half of the participants received PrEP consultations.

### Conclusion:

Our HIV/syphilis testing project demonstrated the feasibility of expanding testing services among international migrants in Japan, with over 40% of participants testing for HIV for the first time. Although PrEP is not officially approved nor widely available in Japan, there is a substantial interest in PrEP among international migrants. The high rate of non-attendance among those who made online appointments suggests that some people may feel uncomfortable taking in-person tests. Future investigations into how to effectively engage international migrants in Japan's HIV/sexual health care system – particularly among those with limited Japanese and English language skills – and make testing services more easily accessible in non-health facility settings are highly warranted.

## LB\_3

## Differentiated HIV Services for Key Populations: The New Initiatives by NGO in Delivery HIV Self-Testing and Other Support Services in Malaysia via the JOM TEST Programme a.k.a JOM TEST 2.0

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### Background:

The HIV epidemic in Malaysia predominates in urban centres and among the key populations of FSW, MSM, TGW, and PWID. The DHSKP program was established in 2019 under recognition by MOH Malaysia as a national HIV program with an aim to reduce the transmission and impact of HIV among the KP in the country to scale up HIV prevention, testing, and treatment adherence services.

Part of the differentiated services under the DHSKP program is the JOM TEST Program, the first HIV Self-Testing pilot study conducted in Malaysia for 1 year from November 2020 to October 2021 for people vulnerable to HIV infection to do self-testing (using both oral fluid and blood-based) in the comfort of their home. It's a service user-centred platform, with a diverse team of highly trained and knowledgeable professionals, tailored to the community's needs.

### Description:

A total of 3,005 have registered in the program, up to October 31st 2021, only 2,868 participants showed their interest in the study with 1,077 having done the testing and successfully updated their results via the website. Within the study period, we have reached the MSM population reported as the most participated in the study with 77.34%, whereby the TG/Non-Binary population were reported as the least. The participants' age ranged between 20-24 and 25-29, 45% and 27% respectively, are among the highest compared to the rest.

### Lessons Learned:

The pilot study has proven that HIVST was able to reach key populations who are hard to reach by

community health workers and up to 50% of first-time testers. Therefore, both MAC and MOH recognise the necessity to increase the choice of HIV testing modality in Malaysia through HIVST and its implementation. Currently, both MAC and MOH are working on the Policies and Procedures of the National HIV Self-Testing Guidelines where the JOM TEST platform will be recognised as the national HIVST platform linking to services in both public and private healthcare facilities.

### Conclusion/ Next step:

The JOM TEST 2.0 is the new interphase implemented with the integration of other health and support services such as Online Mental Health Screening and ChemFun Online Intervention.



## LB\_4

## Transient HIV Reservoirs Increase and Similar T Cell Immune Response After Coronavac Vaccination in People Living with HIV

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### Background:

CoronaVac, also known as the Sinovac inactivated SARS-CoV-2 vaccine, has been widely implemented and shown great effectiveness in preventing hospitalizations, ICU admissions, and deaths caused by SARS-CoV-2. However, the effects of CoronaVac on the HIV reservoir and T cell repertoires in people living with HIV (PLWH) need further research.

### Material and Methods:

This is a clinical trial in which 15 PLWHs were administered at least two dose of CoronaVac. Blood samples were collected from the participants before the first dose (0w), and at 2w and 12w after the second dose. The levels of cell-associated HIV RNA (CA HIV-RNA), HIV DNA, and T cell receptor (TCR) repertoire profiles were assessed. The TCR clustering and CDR3 annotation were exploited to further discover groups of patient-specific TCR clonotypes with potential SARS-CoV-2 antigen specificities.

### Results:

A significant increase in CA-HIV-RNA was observed in 2w ( $431.5 \pm 164.2$  copies/106 cells,  $P = 0.039$ ) and 12w ( $330.2 \pm 105.9$  copies/106 cells,  $P = 0.019$ ) after two doses of CoronaVac from 0w ( $73.6 \pm 23.7$  copies/106 cells). CA HIV-DNA increased significantly from 0w ( $435.7 \pm 79.3$  copies/106 cells) to 2w ( $668.6 \pm 129.0$  copies/106 cells,  $P = 0.029$ ) after two doses of CoronaVac. There were no differences in the TCR repertoire diversity and CDR3 length usage in PLWHs after CoronaVac vaccination. VJ certain clonal expansion (TRBJ2-7, TRBJ2-1, TRBV20-1 and TRBV5-1) and the preferential recombination usage of V(D)J gene segments (TRBV7-9-TRBD2-TRBJ2-7) after vaccination were observed. We also

found the dominant characteristic motifs of the CDR3 sequence (SSGGGTNEQYF) after vaccination.

### Conclusion:

The transient CA-HIV-RNA, HIV DNA increase and similar T cell immune response were identified after CoronaVac vaccination in PLWHs. These findings provide important insights into the HIV reservoir, TCR repertoire and SARS-CoV-2 vaccination in PLWHs.

LB\_5

## Severe Anemia, Severe Leukopenia, and Severe Thrombocytopenia of Amphotericin B Deoxycholate-Based Induction Therapy in Patients with HIV-Associated Talaromycosis: A Subgroup Analysis of a Prospective Multicenter Cohort Study

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### Background:

This study's objective was to investigate the predictors for severe anemia, severe leukopenia, and severe thrombocytopenia when amphotericin B deoxycholate-based induction therapy is used in HIV-infected patients with talaromycosis.

### Material and Methods:

A total of 170 HIV-infected patients with talaromycosis were enrolled from January 1st, 2019 to September 30th, 2020.

### Results:

Approximately 42.9%, 20.6%, and 10.6% of the enrolled patients developed severe anemia, severe leukopenia and severe thrombocytopenia, respectively. Baseline hemoglobin level <100 g/L (OR=5.846, 95% CI: 2.765~12.363), serum creatinine level > 73.4 μmol/L (OR=2.573, 95% CI: 1.157~5.723), AST/ALT ratio >1.6 (OR=2.479, 95% CI: 1.167~5.266), sodium level ≤136 mmol/liter (OR=4.342, 95% CI: 1.747~10.789), and a dose of amphotericin B deoxycholate >0.58 mg/kg/d (OR

=2.504, 95% CI:1.066~5.882) were observed to be independent risk factors associated with the development of severe anemia. Co-infection with tuberculosis (OR=3.307, 95% CI: 1.050~10.420), and platelet level (per 10×10<sup>9</sup> /L) (OR= 0.952, 95% CI: 0.911~0.996) were shown to be independent risk factors associated with the development of severe leukopenia. Platelet level <100×10<sup>9</sup> /L (OR = 2.935, 95% CI: 1.075~8.016) was identified as the independent risk factor associated with the development of severe thrombocytopenia. There was no difference in progression to severe anemia, severe leukopenia, and severe thrombocytopenia between the patients without fungal clearance and with fungal clearance at 2 weeks. 10mg on the first day of amphotericin B deoxycholate was calculated to be independent risk factors associated with the development of severe anemia (OR= 2.621, 95% CI: 1.107~6.206).

### Conclusion:

The preceding findings reveal risk factors for severe anemia, severe leukopenia, and severe thrombocytopenia. After treatment with Amphotericin B, these severe adverse events are likely unrelated to fungal clearance at 2 weeks. 5mg on the first day of amphotericin B deoxycholate seems to be able to lower the risk of severe anemia. These findings may contribute to the development of effective prevention and management strategies for patients who are at risk of developing these severe adverse events.

LB\_7

## Efficacy and Tolerability of Tenofovir–Lamivudine–Dolutegravir (TLD) As a Switch Therapy: Report From a Multicenter Cohort of Virologically Suppressed On-ART Patients in Northern Vietnam

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### Background:

In response to the WHO's updated recommendations on antiretroviral treatment (ART) in 2018, Vietnam introduced an integrase inhibitor (dolutegravir), in a form of fixed dose combination of Tenofovir–Lamivudine–Dolutegravir (TLD) as preferred first- and second-line regimens for people living with HIV in 2020. However, tolerability profile of TLD in Vietnam's clinical setting has not been reported. This study aims to estimate the risk of TLD discontinuation and virological failure (VF, defined as a viral load of >200 copies/ml) among Vietnamese HIV-infected individuals who initiated TLD.

### Material and Methods:

We performed a multicenter, observational study of virologically suppressed on-ART patients (defined as a viral load of <50 copies/mL) from SATREPS cohort who started TLD from January 2020 to October 2021 for the first time. We calculated the TLD discontinuation rate regardless of the reason and for toxicity, and estimated the cumulative risk of VF with Kaplan-Meier curve. The drug resistance mutations among patients who had viral load >1000 copies/mL were also evaluated.

### Results:

Among 2,473 on-ART patients from 11 facilities who registered in SATREPS cohort, 1,679 patients were included in study. In total, 171 (10.2%) experienced TLD discontinuation. Of those, 151 patients were counted from two hospitals. The main reason for TLD discontinuation in these two hospitals were

drug stockout. On the other hand, TLD discontinuation due to toxicity was rarely reported (16, 1.0%) and renal failure was the most common toxicity (12, 0.7%). Over a median follow-up of 535 days, 58 patients (3.5%) experienced VF after initiation of TLD with an incidence rate of 2.94 per 100 person-years. Among 19 patients who had viral load >1000 copies/mL, 4 (21.1%) showed drug resistance mutations. None has mutations with integrase inhibitor. Comparing to other hospitals, two hospitals with higher rate of TLD discontinuation due to drug stockout showed higher probability of VF ( $p < .0001$ )

### Discussions:

Overall, the excellent efficacy and optimal tolerability of TLD was observed in this cohort as switching ART. However, TLD interruption due to unstable drug procurement could hamper durable viral suppression and risk the development of drug resistance mutations.

## LB\_8

## Assessing Health Equity for Immigrants Living with HIV/AIDS in Japan: Natural Experiment Under the COVID-19 Pandemic

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### Background:

As the COVID-19 pandemic subsides, Japan has resumed welcoming young immigrants who can supplement the shrinking population of ethnic Japanese who are of working age. The Japanese constitution promises universal healthcare coverage for all people of Japan. However, healthcare access may be challenging for people living with HIV/AIDS (PLWHA) who are not of Japanese nationality due to language issues, limited understanding of the local healthcare, lack of health insurance, anticipated stigma and discrimination. Rarely has health equity (i.e. access to equal opportunities for health) been assessed between Japanese and immigrants. Most national statistics in Japan cannot be disaggregated by minority status. However nationality of all PLWHA must be submitted to the Ministry of Health, Labor and Welfare (MHLW) in Japan within 7 days of diagnosis. Throughout the COVID-19 pandemic, the proportion of foreign nationals living in Japan remained stable at less than 3% and inbound international travel was exceedingly rare. These controls created a kind of natural experiment to identify health disparities and understand any impact on health equity.

### Material and Material and Methods:

We descriptively assessed the epidemiological trends from the most recent HIV/AIDS surveillance data collected by MHLW. We were specifically compared 2018 to 2019 (pre-COVID) and 2020 to 2021 (post-COVID) disaggregated by Japanese and foreign nationality. Endpoints of interest were diagnoses, infection route and indicator diseases.

### Results:

There were 3,335 new diagnoses of HIV, and 1,370 for AIDS, between 2018 and 2021. The proportion of

PLWHA with a foreign background increased from an average of 14.8/11.0% (HIV/AIDS) to 16.7/15.9% post-COVID. There was a larger increase during the pandemic in late disease diagnosis (i.e. AIDS) among non-Japanese PLWHA from 22.0% to 29.7% compared to 28.7 to 30.9% for Japanese PLWHA. Roughly one out of three non-Japanese PLWHA in Japan were female whereas only one out of twenty Japanese PLWHA were female. Seventy-five percent of Japanese PLWHA were infected via same-sex sexual contact whereas only about 58.0% of foreign PLWHA were infected in the same way. Infection route for newly diagnosed AIDS cases among non-Japanese PLWHA was roughly equal between heterosexual and same-sex sexual contact, whereas infection through same-sex sexual contact accounted for three times as many new AIDS cases among Japanese PLWHA. Across all endpoints, non-Japanese PLWHA had higher proportions of data categorized as "unknown" than Japanese PLWHA. The proportion of unknown location of infection (domestic vs overseas) increased for all PLWHA during the pandemic (Japanese HIV: 8.5 to 10.5% vs Foreign HIV: 22.3% to 28.1%; Japanese AIDS: 13.6 to 18.0% vs Foreign AIDS: 15.7 to 21.2%).

### Conclusion:

Non-Japanese PLWHA shoulder a relatively larger burden of HIV/AIDS infections than Japanese and are more often diagnosed at a late stage. The COVID-19 pandemic may have exacerbated this burden with more PLWHA being diagnosed late and less accurate reporting (i.e. more "unknown" data). Investment into more equitable and easily accessible HIV prevention and care services among migrant communities and approval of self-testing in Japan may help to facilitate identification of PLWHA and linkage to antiretroviral therapy for all people of Japan.



## LB\_9

## The Relationship between Mixing Alcohol and Recreational Drugs and Retention in Care among Patients Newly Diagnosed with HIV-Infection

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### Background:

Recreational drugs and alcohol use were related to being late on treatment, with poor antiretroviral therapy adherence, with more mental health problems, and may further reduced rate of retention in care. The study aims to examine the impact of mixing alcohol with recreational drugs use on the probability of retention in care among patients newly diagnosed with HIV-Infection.

### Material and Methods:

A longitudinal prospective study was conducted to enroll 251 patients with newly diagnosed HIV-infection at an AIDS-designated, university-affiliated hospital of Taiwan from 2016 to 2018. Data was collected using Pittsburg Sleep Quality Index (PSQI), Center for Epidemiologic Studies Depression Scale (CES-D), and Drug Use Disorders Identification Test Extended (DUDIT-E). Retention in care was defined as 2 clinic visits during 12 months, spaced at least 90-180 days apart. Mixed-effects logistic regression was used to determine the relationship between mixing alcohol and with recreational drugs use on the probability of retention in care among patients newly diagnosed with HIV-Infection.

### Results:

Of the 251 patients, 38.6 % of patients have only used alcohol or recreational drugs and 16.7% mix used alcohol and recreational drugs in the past month at the time of diagnosis with HIV. Overall, 78.9% patients were always retained in care and the proportion of patients retained in care decreased

from 100% to 83% ( $p < 0.001$ ) over the 2-year observation period. Patients with mix used alcohol and recreational drugs had lower rate of retention in care (73.8%) than those have only used alcohol or recreational drugs (77.3%) and non-user (82.1%). Mixed-effects logistic regression models showed that rate of retention in care significantly decreased as the follow-up time increased ( $\beta = -0.245$ ,  $p < 0.001$ ), and patients with illiteracy or with graduate degree were less likely to be retained in care than patients with college degree ( $\beta = -5.26$ ,  $p = 0.004$ ;  $\beta = -2.009$ ,  $p = 0.021$ ). Adjusting for patient and clinic factors, mixing alcohol and recreational drugs tended to have lower retention rate ( $\beta = -0.214$ ,  $p = 0.612$ ).

### Conclusion:

The proportion of patients retained in care decreased as the follow-up time increased. HIV-infected patients with lower or higher education level were less to be retention in care. Patients with mixing alcohol and recreational drugs tended to have lower retention rate than non-user. Further studies are needed to identify whether frequency of mixing alcohol and recreational drugs use among HIV-infected patients impacts the outcomes of treatment.

## LB\_10

## Incidence and Distribution of Indicator Conditions Associated with HIV in Taiwan: A Nationwide, Case–Control Study from 2009 to 2015

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### Background:

Late presentation of HIV is a problem in Taiwan. To further increase the likelihood of an early diagnosis of HIV through indicator condition (IC)-guided HIV testing in Taiwan, understanding the change in the incidence and distribution of ICs before an HIV diagnosis is made is crucial. We first compared the incidence of IC categories within five years prior to the index HIV diagnosis date between patients with and without HIV. Then we estimated the change in the incidence of these IC categories in patients with HIV throughout the five consecutive 1-year intervals starting from the index HIV diagnosis date between 2009 and 2015.

### Material and Methods:

We conducted a retrospective, nationwide study using data from the Notifiable Diseases Surveillance System of the Taiwan Centers for Disease Control and the National Health Insurance Research Database. We first enrolled newly diagnosed HIV cases between 2009 and 2015 and then matched the enrolled cases to controls at a ratio of 1:8 based on age group, sex, and year/month of HIV diagnosis. We selected 24 ICs and divided them into four categories: category 1, AIDS-defining opportunistic illnesses (AOIs); Category 2, diseases associated with impaired immunity but not AOIs; Category 3, sexually transmitted diseases (STD); and Category 4, mononucleosis. We retrospectively investigated the

occurrence of ICs within the five years prior to the index date for both cases and matched controls.

### Results:

In all, 14,347 patients with HIV were matched to 114,664 controls. In the five years prior to HIV diagnosis, the patients in the case group had a higher incidence of all selected ICs, except hepatitis A virus infection, than those in the control group did. Moreover, 40.61%, 11.28%, 12.13%, 24.88%, and 0.97% of the patients with HIV had experienced ICs from all categories, categories 1, 2, 3, and 4, respectively, whereas 1.39%, 0.07%, 0.35%, 0.9%, and 0.03% of the controls did, respectively (all  $P < 0.001$ ). The median day (IQR) between the date of each IC category diagnosis and the date of HIV diagnosis was 18 (8-133), 635 (198-1237), 414 (17-1083), and 140.5 (36.5-635.5) for categories 1, 2, 3, and 4, respectively. Among HIV cases, the most common IC was syphilis (19.75%), followed by pneumocystis jirovecii pneumonia (5.88%) and herpes zoster infection (5.84%). In category analysis, the most common IC was syphilis (19.75%), followed by gonorrhea (3.26%) for the STD category; herpes zoster infection (5.84%) and seborrhea dermatitis (2.45%) for the impaired immunity category; and pneumocystis jirovecii pneumonia (5.88%) and esophageal candidiasis (5.52%) for the AOI category. The incidence of these IC categories in patients with HIV remained stable throughout the five consecutive 1-year intervals starting from the index HIV diagnosis date from 2009 to 2015 (all  $P$  for trend  $> 0.05$ ).

### Conclusion:

The study findings reveal opportunities for scaling up IC-guided testing in primary care in Taiwan. We recommend the integration of IC-guided HIV testing in both HIV and non-HIV specialty guidelines for HIV testing.

## LB\_11

## Unlocking the Potential of HIV Voluntary Counseling and Testing Service in a Metropolis: An Internet-Based Urban Network in Guangzhou China

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**Background:** As a metropolis located in southern China with 14 million population, Guangzhou has established an urban network for HIV voluntary counseling and testing (VCT) service. This urban VCT network includes 12 center for disease control and prevention (CDC) at both the city and district levels, as well as 214 primary health care institution (PHCI) at the community level. Unfortunately, many people were unaware of the VCT services offered by PHCIs and preferred to receive testing at CDCs. This led to the underutilization of the entire urban VCT network and hindered its ability to effectively prevent the spread of HIV/AIDS. To address this issue, we implemented an Internet-based urban network to promote and increase access to VCT services. This approach aimed to unlock the potential of the VCT services provided by PHCIs and improve the overall utilization of the urban VCT network.

### Description:

Based on WeChat (a Chinese social application like WhatsApp) Mini-Program Framework, we developed an online VCT service applet named "ChaBei". This applet can be accessed directly through WeChat without any additional installation. "ChaBei" offers consultation services that allow individuals to communicate with experts online, as well as an appointment function for accessing VCT service offline. After conducting internal testing with 12 CDCs in 2018, we began to promote "ChaBei" to PHCIs since 2019. Our goal was to expand the reach of the VCT service by increasing awareness and accessibility through the use of this innovative and user-friendly online platform.

### Lessons Learned:

Since 2019, the number of VCT sites on "ChaBei" has increased from 108 to 179 (2022), covering all 11

districts of Guangzhou City. In 2019, of the total 10,528 online appointments made through "ChaBei", 87.9% of individuals sought VCT services at CDCs. However, due to the impact of COVID-19, the VCT service hours of CDCs were shortened each year from 2020 to 2022. As a result, the total number of online appointments made through "ChaBei" decreased slightly to 7,261 in 2022. Nevertheless, the proportion of appointments made at PHCIs increased significantly from 12.1% in 2019 to 63.24% in 2022. This highlights the success of our efforts to promote and utilize PHCIs as a key component of the urban VCT network.

### Conclusions/Next steps:

The Internet-based urban VCT network that we established in this case serves as a solution to connect and promote urban VCT resources. It provides a significant opportunity to unlock the potential of VCT services at PHCIs and improve the overall utilization of the urban VCT network through joint efforts from all PHCIs, especially during challenging times such as the COVID-19 pandemic. Moreover, this model can be applied effectively in many cities, promoting the development of a nationwide network that enables people to access VCT services more conveniently. Overall, our Internet-based urban VCT network demonstrates a promising approach to enhance the accessibility and effectiveness of HIV/AIDS prevention efforts in China and beyond.

## LB\_12

## Experiences and Barriers of Pre-exposure Prophylaxis Service Implementation among Key Populations in Thailand

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### Background:

Pre-exposure prophylaxis (PrEP) has shown effectiveness for HIV prevention among high-risk populations. In Thailand, PrEP has been an essential element of the national combination prevention package and included in the Universal Health Coverage (UHC) since 2019. However, there has been slow progress in scaling up the service and uptake among some key populations. As a part of the national monitoring and evaluation framework for Thailand's UHC, this qualitative study aims to describe experiences and barriers concerning PrEP initiation and retentions among service providers from both hospital and Key Population Led Health Service (KPLHS)'s settings under the country's UHC roll-out.

### Material and Methods:

Between September to October 2020, we conducted 10 focus group discussions (FDGs) with PrEP service providers from both hospitals and KPLHS across the country using a semi-structured interview guide. A purposive sampling was used to recruit participants from PrEP service centers with over 10 active PrEP clients and 1 year experience from different service delivery models and geographical settings. All interviews were recorded and transcribed verbatim to identify providers' experiences, attitudes, and perceived barriers regarding PrEP service delivery in Thailand.

### Results:

Ten FDGs among 35 PrEP service providers were conducted of which 21 were from hospitals and 14

were from KPLHS. Overall, most service providers had positive attitudes towards PrEP and perceived that it is an effective tool for HIV combination prevention. Men who have sex with men (MSM) was perceived to be the easiest to reach group while PrEP uptake remains a challenge in other key populations of which people who inject drugs (PWIDs) was the most difficult to reach group. Integration of PrEP clinic with other HIV services at hospital made most HCPs unable to adopt an active approach in recruiting new clients like at KPLHS setting. Challenges in delivering PrEP services included high workload, limited benefit package coverage, structural resources, and manpower especially at hospital setting.

### Conclusion:

Additional services to address different health needs should be considered to increase PrEP uptake among difficult to reach populations. More service integration and collaboration between hospital and KPLHS settings would be essential in optimizing PrEP uptake and retention. Continuing support particularly in raising awareness about PrEP, improving facilities and manpower, service coverage and capacities and knowledge of providers would be essential for successful of the national PrEP programme.

## LB\_13

## Participation in AIDS Vaccine Research: A Qualitative Study

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### Objective:

The specific aims of this study are to explore gender-related barriers and social impact (benefits and harms) of participation in AIDS vaccine research. Implications of the findings are considered, and recommendations for recruitment and retention strategies and other interventions with study volunteers are provided.

### Material and Methods:

A total of 110 in-depth interviews were conducted with past and current AIDS vaccine trial participants in a tertiary hospital in Kerala, and current participants of an epidemiological study in preparation for future trials based in an impoverished urban neighborhood. Data were collected among equal numbers of male and female research participants, including socially vulnerable segments of the population. Focus group discussions (19) were conducted with community residents in the preparatory site and community advisory board (CAB) members and volunteer peer leaders in both sites. Key informant interviews (29) were conducted with clinical research staff, including community mobilizers in each site. Interview and focus group guides explored a range of social and contextual factors that could impact decision-making around participation and the experience of participation.

### Results:

Emerging findings suggest that gender influences how men and women are able to enter into HIV vaccine research. They grapple in distinct ways with issues of consultation, decision-making, information gathering and confidentiality; with women more inclined to seek approval from significant others compared to men. A gender dimension is evident in the manner in which participants balance socially sanctioned roles, responsibilities and time. Participants in both sites mentioned stigma as a barrier to volunteering. These data also reveal that once the decision to participate is made, most participants remain committed to the study. A majority are motivated by a sense of altruism and

contributing to the discovery of an HIV vaccine for the common good.

### Conclusion:

Findings indicate that men and women have different needs and pathways to decision-making around participation. There is a need to tailor recruitment and retention strategies to reflect these differences. Social impact plays a role in decision-making about participation and in experience of participation and must be considered in designing interventions throughout the study period.

## LB\_14

## Factors Associated with HIV Stigma and Quality of Life in People Living with HIV in Taiwan

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SDGs Goal 10 aims to reduce inequality as HIV disproportionately affects vulnerable communities. Stigma and discrimination contribute to high HIV prevalence, limiting healthcare and housing access. The "90-90-90" targets were set in 2020 to end AIDS by 2030, with an additional goal of improving health-related quality of life for those with suppressed viral loads. Taiwan has already achieved the UNAIDS goal with "90-93-95" targets. However, HIV-infected individuals still face stigma, impacting their quality of life. This study explores factors related to stigma and quality of life among HIV-infected individuals.

### Material and Methods:

This study adopted a cross-sectional research design and recruited participants from May 2020 to November 2020 at designated HIV treatment hospitals. The research tools included a basic information form, the Chinese Courtesy Stigma Scales, and the WHOQOL-HIV BREF (PLWH) Chinese version. The collected data were entered into a computer and analyzed using SPSS for Windows 19.0.

### Results:

A total of 269 HIV-infected individuals were recruited, with a mean age of 26.93±7 years and 98.1% of them being male. Among them, 75.5% had a bachelor's education level, and 25.3% of the PLWH reported recreational drug abuse. The scores of perceived stigma among PLWH ranged from 22-88 points, with an average score of 65.75±12.27 points (range 22-88). The quality of life scores among PLWH ranged from 37.5-120 points (range 24-120), with an average score of 83.20±14.39. ANOVA analysis showed that those who were younger than 20 years old, had recreational drug abuse, was currently receiving HAART, and had CD4 counts greater than 501 had lower levels of perceived

public stigma. A significant positive correlation was found between lower levels of stigma and quality of life ( $r=.464, p<.001$ ).

### Conclusion:

It is recommended that healthcare providers proactively pay attention to the level of stigma experienced by PLWH who are over 20 years old, have not received HAART treatment, and have CD4 counts below 200, and provide appropriate care and referral if necessary to help improve their quality of life. This will enable Taiwan to move towards achieving the 2030 UNAIDS goals.

LB\_15

## Quality Improvement (QI) Approach in Tackling HIV-Related Stigma and Discrimination (S&D) Among Healthcare Workers in Selected Health Facilities in Malaysia: The initial Phase

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### Background:

Malaysia is echoing UNAIDS recognition of stigma and discrimination among patient living with HIV (PLHIV) in health facility as one of the challenges that can compromise services delivery and access to care. This led to a mutual partnership between policymaker (HIV/STI/Hep C Sector, MOH), research institute (IHSR) and civil societies representative (Malaysian AIDS Council (MAC)) that used quality improvement approach to reduce S&D among healthcare workers in selected health facilities.

### Material and Methods:

The study was conducted between 2020 and 2022 in 11 public health facilities (hospital and primary care clinics) representing six states and a federal territory in Malaysia. A total of 3883 healthcare workers and 1832 PLHIV were involved in the baseline survey which measured S&D status among them. Two sets of standardized validated self-administered questionnaire were distributed online representing eight and seven S&D indicators for healthcare workers and PLHIV. Each facility identified a core team who then received initial training on how to conduct QI study. This was supported with continuous virtual coaching by IHSR and the Sector. MAC's role was to sensitize case worker who is working in each facility to assist in getting respondents among PLHIV. Milestones were set for facilities to present their planned remedial strateg(ies) before starting. Two cycles were involved in post remedial phases.

### Results:

The facilities' intervention strategies were categorized into structure support, process improvement and people-related intervention. These strategies were designed based on the contributing factors identified in the pre-remedial phase of the study. In cycle 1, improvement was seen for the indicators used for healthcare workers, while minimal improvement seen in Cycle 2. For PLHIV, improvements were seen in most of the seven indicators measured.

### Conclusion:

Although improvement in S&D status were observed in post-remedial Cycle 1, they plateaued in Cycle 2. Scaling-up must take into consideration contextual factors to ensure sustainability.

LB\_16

## Syphilis and PrEP Care Continuum among GBMSM in a Single-Center PrEP Care Provider in Taiwan Throughout 2018 to 2022

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### Introduction:

Comprehensive strategies were integrated into the PrEP care programs to prevent other sexually transmitted infections. However, whether the discontinuation of comprehensive PrEP care programs brings a higher risk of syphilis remains unknown. This study aimed to describe the different levels of the continuum in PrEP care and its relationship to syphilis.

### Material and Methods:

A single-center cohort study was conducted retrospectively at hospital-based clinics in southern Taiwan between 2018-2022. GBMSM PrEP users were included, but those who just joined PrEP care in the last observation year were excluded. Participants were categorized into four levels of retention in PrEP care: (1) pop-up: only participated for any one year, (2) discontinuation: participated more than one year, but had dropped out before the last observation year, (3) persistence: participated more than one year, and has continuously retained, (4) stop and start: participated more than one year, had dropped out but had reinitiated before the last observation year.

Participants were screened for syphilis at least once a year when retained in PrEP care. Diagnosis of syphilis was defined as rapid plasma reagin elevated by 4-fold compared with previous examinations. ANOVA tests and multivariable logistic regression models were used.

### Results:

Among 154 GBMSM, 53% were in the pop-up group, 12% in the discontinuation group, 20% in the

persistence group, and 15% in the stop-and-start group. Discontinuation group showed a trend of high risks such as more anal sex partners, condomless anal sex, and had the highest prevalence of syphilis (33.3%). In the multivariable analysis, the discontinuation group was not significantly different from the persistence group.

### Conclusion:

The majority of PrEP users were not continually engaged in PrEP care and have a higher prevalence of syphilis. Linkage to STI screening and treatment, in addition to regular screening, is needed for those who did not constantly remain in PrEP care.



LB\_17

## Recent HIV Diagnosis in Thai Population at Anonymous Clinic, Thai Red Cross AIDS Research Centre, Bangkok, Thailand

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### Background:

Recent HIV diagnosis are used to monitor HIV incidence trends for description of epidemiology. The proportions of recent HIV diagnosis are essential data for HIV monitoring and prevention of transmission.

### Material and Methods:

Positive samples of HIV serology from clients who attended at Anonymous Clinic, Thai Red Cross AIDS Research Centre, Bangkok, Thailand during January 2021 until 30 September 2022 were enrolled in Recent HIV Diagnosis Study. The Asante<sup>TM</sup> (HIV-1 Rapid Recency Assay) was used for detection of the participants with recent HIV diagnosis. Positive samples by Asante were then confirmed by HIV-1 RNA viral load testing (HIV-VL). In the samples with more than 1,000 copies/mL of HIV-VL was considered as HIV recency. HIV genotype was performed in those samples with recent HIV diagnosis.

### Results:

A total of 322 participants were enrolled in this study. Among these, median ages (IQR) was 29 (25-35) years; 77.6% were male, and 74.2 % were men who have sex with men (MSM). Thirty-two participants (9.8%) were interpreted as recent HIV diagnosis by Asante and 28 participants (8.7%) were identified as recent HIV diagnosis. Among participants with recent HIV diagnosis, 85% were male with median ages (IQR) 28 (24-34) years, 64.2% were MSM and median HIV VL was log (IQR) was 5.33 (4.3-6.4) copies/mL. Nine participants with

recent HIV diagnosis had mutations associated with reduced susceptibility to antiretroviral agent; 8 Reverse Transcriptase (RT) and one integrase-associated mutation.

### Conclusion:

The incidence of recent HIV diagnosis in this study was 8.7% indicating a high proportion of long-term disease in MSM population. The NNRTI-associated drug resistance mutations were common in recent HIV diagnosis. The strategies to improve early entry to HIV care are warranted in this high-risk population.



## LB\_18

## Artistic and Expressive-Centred Approach for Malaysian Adolescent HIV Education and Awareness

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### Background:

Terengganu Family Planning Association implemented the Prevention, Education, and Awareness (PEA) project, which utilizes art and creative expression to empower young people. This non-conventional method allows young people to express their thought on taboos, attitudes, and stigma toward HIV through drawing and acting. The PEA project attempted to bridge the information gap of Adolescents on HIV by disseminating knowledge on treatment, mental health, and HIV preventative methods. Furthermore, the project intends to advocate for youth activism, stronger linkage to youth-friendly services, and leadership.

### Description:

The project focused on 5 states across the Peninsular of Malaysia which are Selangor, Kuala Lumpur, Terengganu, Pahang, and Kelantan. The initiative was funded by the Gilead Asia Pacific Rainbow Grant from 2019 to 2021. The project was completed with a roll-out mechanism that is sustainable with a 4 steps main components as follows: Step 1 Capacity Building of youth-friendly organizations; Step 2 Empowerment Workshop for youth groups; Step 3 Training-of-Trainers for youth trainer and focal person; Step 4 Youth-led roll-out workshop with financial and technical assistance. A training manual was developed through consultation with art therapists, counselors, and youth groups to ensure the activities are designed in accordance with the context of youth. Moreover, the program has the component of other priorities such as leveraging on social media to disseminate information, promote linkage to healthcare, and youth engagement in HIV activism. The project employed the Pre-Post test as the measurement to indicate a change in attitude and knowledge.

### Lessons Learnt:

Throughout the project, a total of 1067 young people completed our workshops, and half of them were trained as youth trainers. Zoom application was used as a tool during the COVID-19 pandemic to mitigate the challenges of the workshop. The Pre-and-Post survey depicted an increase in the attitude and knowledge on HIV with average scoring of 82% and 89% respectively. On a scale of 1-5 regarding the preference of workshop methodology, 78% of the participants (scale of 4) prefer an artistic learning experience to a conventional HIV education programme.

### Conclusion:

The results and data of the project serve as pieces of evidence that non-conventional education-building methods are effective in empowering diverse youth group, financial assistance is crucial in youth programming, and youth-led awareness programme is complementary to the government's strategy.

## LB\_19

## PMTCT in HIV: The Association Between Level of Knowledge, Perception, and Willingness to HIV Testing Among Women of Childbearing Age in Iloilo City, Philippines

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### Introduction:

HIV remains a rapidly-increasing infection in the Philippines, estimated at 47 new cases daily. HIV prevention and management programs among women of childbearing age (WOCBA) remains limited because most new cases are among men who have sex with men. In Iloilo City, data on the level of knowledge and perception towards prevention of mother-to-child transmission of HIV (PMTCT) and willingness to undergo routine HIV testing among pregnant WOCBA remains scarce. Hence, this research aimed to determine the relationship among the level of knowledge and perception on PMTCT and the willingness of WOCBA in Iloilo City.

### Material and Methods:

A cross-sectional, assisted online survey was used to gather data of the respondents that was conducted between February 19–March 1, 2023. Guided by the Health Belief Model, the pilot-tested survey questionnaire (Cronbach's alpha=0.84) was divided into: (1) sociodemographic profile; (2) willingness to undergo HIV testing, scaled at 9-very willing and 0-not willing; (3) knowledge on HIV-PMTCT, measured using a 20-item true-or-false questions; and (4) perception towards HIV susceptibility, severity and threats, benefits, barriers using a 5-point Likert scale (5=strongly agree; 1=strongly disagree). Descriptive statistics were used to summarize the data while Chi-Square and Kendall's Tau-beta (Tb) test was used to determine the associations among the main variables (level of significance at  $p < 0.05$ ).

### Results:

A total of 300 WOCBA responded and the median age was 29 years old (IQR=25-33), gravidity average at 2.5 pregnancies (standard deviation (SD)=1.6), and majority were categorized as low-to-poor income earners (93.7%). Almost three-quarters of the respondents never had an STI testing while almost half have never had an HIV test at pregnancy (71.3% and 46.3%, respectively). The 20-item PMTCT questionnaire revealed an average score of 14.9 (SD=2.1) and a majority of WOCBA had incorrect answer on basic questions such as "HIV can be transmitted through food and water" (71.0%). The 10-point willingness scale averaged at 7.4 (SD=2.9) while the 5-point Likert scale showed that WOCBA had high perceptions towards their susceptibility to HIV at pregnancy (mean=4.75, SD=0.48), severity and threats of HIV during pregnancy (mean=4.75, SD=0.49), benefits of HIV testing (mean=4.84, SD=0.41), and barriers to HIV testing (mean=4.65, SD=0.75). Kendall Tau-beta revealed that willingness to HIV testing among WOCBA was positively associated with PMTCT knowledge (Tb= 0.195,  $p < 0.001$ ), perceived susceptibility to HIV (Tb= 0.098,  $p = 0.042$ ), and perceived severity and threats of HIV during pregnancy (Tb= 0.122,  $p = 0.013$ ) but was negatively associated with the perceived barriers to HIV testing (Tb= -0.216,  $p = < 0.001$ ).

### Conclusion:

In conclusion, WOCBA's willingness to HIV testing is significantly associated to their level of knowledge on PMTCT and their perception of susceptibility, severity and threats, and barriers. With high proportions of WOCBA who have not had HIV and STI testing during pregnancy, Iloilo City's PMTCT programs may need to enhance their HIV education campaign to make HIV programs more accessible to WOCBA, and clarify the perception toward HIV prevention during pregnancy, especially among low-to-poor income earners of the community.

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