

Meeting Report

EXPERT CONSULTATION ON ADVANCING IMPLEMENTATION RESEARCH ON SYPHILLIS, HIV AND HEPATITIS IN ASIA



23–25 September 2017

Guangzhou, China

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

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ON SYPHILIS, HIV AND HEPATITIS IN ASIA

Convened by:

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

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NOTE

The views expressed in this report are those of the participants of the Expert Consultation on Advancing Implementation Research on Syphilis, HIV and Hepatitis in Asia and do not necessarily reflect the policies of the conveners.

This report has been prepared by the World Health Organization Regional Office for the Western Pacific for Member States in the Region and for those who participated in the Expert Consultation on Advancing Implementation Research on Syphilis, HIV and Hepatitis in Asia in Guangzhou, China from 23 to 25 September 2017.

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Keywords:

Hepatitis B / HIV infections / Syphilis / Research / Asia

ABBREVIATIONS

ART	antiretroviral therapy
ARV	antiretroviral
CBO	community based organization
DAA	direct-acting antiviral
EPIC	Expanded PrEP Implementation in Communities
HBIG	hepatitis B immunoglobulin
HBV	hepatitis B virus
HCC	hepatocellular carcinoma
HCV	hepatitis C virus
IBIS	Immunology of B cells in syphilis
MTCT	mother-to-child transmission
NIH	National Institutes of Health
NGO	nongovernmental organization
PrEP	pre-exposure prophylaxis
PrePPY	PrEP Pilipinas
RNA	ribonucleic acid
SIHI	Social Innovation in Health Initiative
SESH	Social Entrepreneurship for Sexual Health
STD	sexually transmitted disease
STI	sexually transmitted infection
TREAT Asia	Therapeutics Research, Education, and AIDS Training in Asia
UNAIDS	Joint United Nations Programme on HIV/AIDS
VL	viral load
WHO	World Health Organization

EXECUTIVE SUMMARY

In 2016, the World Health Organization (WHO) released three global health sector strategies, respectively to eliminate HIV, sexually transmitted infections (STIs) and viral hepatitis as public health problems by 2030. The current public health response is characterized by an increased emphasis on sustainability, prioritizing the creation of value and impact in complex and resource-constrained environments. To meet these demands, WHO and partners have been advancing an implementation research agenda to understand what works in practice, how programmes work and why programmes work. This includes iterative testing of interventions to improve them.

WHO in the Western Pacific Region and the South-East Asia Region is committed to expanding the implementation research agenda to support the elimination of HIV, STIs and viral hepatitis as stated in the WHO global strategies. The two WHO regional offices, the University of North Carolina at Chapel Hill, and Southern Medical University, Sun Yat-sen University and Guangzhou Number Eight People's Hospital in China organized this Expert Consultation on Advancing Implementation Research on Syphilis, HIV and Hepatitis in Asia, which was held on 23–25 September 2017 in Guangzhou, China. The aims of the meeting included providing advice for a prioritized implementation research agenda on syphilis, HIV and hepatitis, as well as implementation research methods, related capacity-building and resource mobilization opportunities.

During the meeting, updates on ongoing studies in Asia, implementation experiences, challenges and new research questions were discussed. Presentation topics included: enhancing cascades of care, strengthening surveillance systems, developing sustainable service delivery models and integrating disease-specific health-care services under a unified framework. Key research questions that emerged ranged in scope from the basic sciences (e.g. immunology) and clinical care (e.g. treatment protocols), to public health planning (e.g. decentralization of services) and health-care financing (e.g. social entrepreneurship). The meeting expanded on previous discussions focused on HIV implementation research.

WHO, Member States and partners identified several implementation research priority action items. First, it is imperative to develop a research agenda that is aligned with the needs and gaps of country responses towards eliminating HIV, STIs and hepatitis. Second, monitoring and evaluation systems for HIV, STIs and hepatitis require strengthening, particularly for key populations such as men who have sex with men and underrepresented subnational regions. Third, innovative, sustainable and cost-effective service delivery models are needed for scaling up testing, treatment and prevention of HIV, STIs and hepatitis. Integration and decentralization of services merit consideration for proof of concept and demonstration projects.

1. INTRODUCTION

HIV, syphilis and hepatitis cause substantial burdens on lives, communities and health systems in the Asia and Pacific region. In 2015, there were 5.1 million people living with HIV in the Asia and Pacific region, and approximately 290 000 new HIV infections. In 2012, the Asia and Pacific region led in the number of gonorrhoea cases and accounted for 40% of all 357 million cases of curable sexually transmitted infections (STIs) globally. In that same year, the region represented 60% of global liver cancer incidence and 40% of all deaths caused by hepatitis .

In 2016, WHO published three global health sector strategies, respectively to eliminate HIV, STIs and viral hepatitis as public health problems by 2030. Eliminating HIV, STIs and viral hepatitis in Asia and the Pacific is a formidable challenge that will require substantial implementation research. Recognizing that eliminating HIV, STIs and hepatitis in the region by 2030 will require implementation research to understand what, how and why programmes work, the WHO Regional Office for the Western Pacific convened this Expert Consultation on Advancing Implementation Research on Syphilis, HIV and Hepatitis in Asia.

1.1 Meeting organization

The WHO Regional Office for the Western Pacific collaborated with the University of North Carolina at Chapel Hill–South China Research Training Centre, the Guangdong Provincial STD Control Centre, the School of Public Health of Sun Yat-sen University and Guangzhou Number Eight People’s Hospital to organize the meeting. A total of 180 participants from nine countries attended. The list of participants is available in Annex 1 and the meeting programme in Annex 2.

1.2 Meeting objectives

The objectives of the meeting were:

- 1) to provide advice for a prioritized implementation research agenda on HIV, STIs and hepatitis; and
- 2) to provide advice on implementation research methods, related capacity-building and resource mobilization opportunities.

2. PROCEEDINGS

2.1 Regional situation of HIV, STIs and hepatitis in Asia and the Pacific

In addition to the 2016 global health sector strategies on HIV, STIs and viral hepatitis, motivated by the 90-90-90 HIV elimination targets sponsored by the Joint United Nations Programme on HIV/AIDS (UNAIDS), an array of HIV elimination initiatives are currently being developed and implemented within the WHO Western Pacific Region. The 90-90-90 targets call for 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy, and 90% of all people receiving antiretroviral therapy will have viral suppression, by 2020. However, STI and hepatitis elimination strategies have garnered relatively less attention, despite the dynamic relationships between HIV, syphilis and hepatitis. Evidence suggests that pre-exposure prophylaxis (PrEP) uptake may be leading to more condomless sex and marked increases in STIs. Achieving the goals of eliminating HIV, syphilis and hepatitis by 2030 will require concerted integration and coordination of all three strategies.

2.2 Implementation science research priorities in Asia and the Pacific

Implementation research has been described as “the scientific study of the processes used in the implementation of initiatives as well as the contextual factors that affect these processes”. At its heart, implementation research aims to implement proven interventions into real-world settings. Too often, efficacious interventions “fail to live up to expectations when rolled out in national strategies”. Table 1 lists priority questions that need to be addressed in the Asia and Pacific region.

Table 1: Implementation research questions for the elimination of HIV, STIs and hepatitis in Asia and the Pacific

Area of focus	Subarea of focus	Key research questions/topics
HIV	Prevention and surveillance	Monitor the long-term consequences of PrEP on STIs incidence and evaluate its impact on HIV acquisition, particularly in women
	Prevention, screening, treatment and service delivery	Innovative strategies to reach key populations at higher risk and to raise awareness among those hidden or unreachable
STIs	Prevention, screening, treatment and service delivery	Evaluate the impact of comprehensive community-based interventions addressing curable STIs among key populations
	Treatment and service delivery	Evaluate the use of presumptive treatment and population-based systematic screening and treatment approaches
	Laboratory capacity and treatment	Assess the usefulness of point-of-care resistance testing to adapt treatment regimens
	Prevention	Evaluate the effectiveness of meningococcal vaccination on gonorrhoea
	Prevention, screening, treatment and service delivery	More investment in partner notification and services, which remain challenging
	Treatment, surveillance and service delivery	Further evaluations of population-wide treatment of syphilis, particularly among targeted populations
	Laboratory capacity and surveillance	Expanding drug resistance makes treatment guidelines for gonorrhoea and other STIs such as <i>Mycoplasma genitalium</i> increasingly challenging. Country evaluation of STI drug resistance is paramount for the design of adapted national STI guidelines.
	Diagnostics and prevention	Need to better understand the biology and immunology of syphilis in order to develop new tests, differentiate recent and old infections, and inform vaccine development and new drugs or combination therapy
Hepatitis	Prevention, screening, treatment and service delivery	Evaluate the determinants influencing the outcomes of cascade of care for hepatitis in each country
	Screening, treatment and service delivery	Evaluate the impact of stigma and discrimination on access to hepatitis screening and treatment
	Screening and service delivery	Identify optimal public health approaches to accelerate hepatitis testing in a wide range of settings
	Service delivery	Define and evaluate the role of primary health care in the delivery of decentralized services for hepatitis and support the patient-centred approach and tiered health services (tertiary, secondary, primary)

	Treatment, service delivery and cost-effectiveness	With the framework of triple elimination of mother-to-child transmission (EMTCT) of HIV, syphilis and hepatitis B, need for implementation evaluation to understand how to deliver cost-effective integrated services, especially for hepatitis B. Define global recommendations including criteria for EMTCT of hepatitis B virus.
	Diagnostics and laboratory capacity	New technologies for cheaper quality-assured viral load and liver assessments
	Surveillance and cost-effectiveness	Cost-effective and financially sustainable hepatitis surveillance and monitoring strategies as well as additional epidemiological data and economic modelling
	Surveillance	HCV/HIV co-infections well described among people who inject drugs, but not yet among men who have sex with men and transgender women in the region. Need for data for specific groups such as pregnant women, children, patients with diabetes or under haemodialysis, and migrants within their local context.
Financing	Screening, treatment, cost-effectiveness and service delivery	Determine whether integrating testing and treatment and laboratory testing (CD4, tuberculosis, hepatitis B/C, etc.) at primary health facilities facilitates early treatment uptake and retention
	Treatment, service delivery and cost-effectiveness	As financing of treatment evolves in HIV, need to better understand how ART co-payments will impact coverage and treatment outcomes
	Service delivery and cost-effectiveness	Identify fiscally sustainable strategies to decentralize service delivery. Excessive task shifting may result in health worker burnout at smaller, rural clinics.
	Treatment and cost-effectiveness	Need to understand the costs of introducing or not introducing new antivirals for hepatitis C virus and HIV, including costs of monitoring
	Funding sources	Research on funding mechanisms to support the declining financing of community work (through community-based organizations) in an environment where external funding is shrinking and many governments are not prepared to take on their activities. Evaluate alternative models of sustainability (social enterprise, local revenue generation).
Cross-cutting themes	Service integration	Reinvigorate STI control programmes, which are currently underfunded in many countries. Break down silos between HIV, hepatitis and STI programmes and link STI treatment and prevention strategies to PrEP strategies. Integrate HIV and hepatitis service delivery models within current services.
	Service integration and cost-effectiveness	Innovative and cost-effective service delivery models for scaling up testing, treatment and prevention of syphilis, HIV and hepatitis. Integration and decentralization of services are critical.
	Surveillance	Continuous effort to understand the dynamic evolution of epidemics including among key populations, risks, geographical and regional differences

2.3 HIV & STI surveillance, programmes and research

Policy-makers and researchers from Australia, Cambodia, China, Japan, Mongolia, the Philippines, the United States of America and Viet Nam gave presentations on HIV and STI epidemiology and interventions in their countries.

Progress in achieving the 90-90-90 targets appears to vary widely in the region, but the challenge of declining external HIV funding is common. In Cambodia, HIV incidence and HIV-related deaths have

declined steadily since 2005, and Cambodia is on track to achieving the 90-90-90 HIV targets by 2020, and elimination by 2025. However, funding is expected to decline rapidly from 2018 to 2020, leaving a US\$4.7 million funding gap. In Viet Nam, HIV incidence rates are declining, but the proportion of people living with HIV diagnosed and on antiretrovirals (ARVs) remains well below the 90-90-90 targets. ARV drug options in Viet Nam are currently limited, and significant external funding supporting ARVs and HIV/AIDS training will cease in 2018. Given such financial challenges, Viet Nam is adopting measures such as domestic production of ARVs, national negotiation of ARV pricing and automatic approval of ARVs that have been approved in other countries for at least five years.

Several PrEP demonstration projects are under way throughout the Asia and Pacific region. In New South Wales, Australia, a project called EPIC (Expanded PrEP Implementation in Communities) appears to have helped reduce HIV incidence among men who have sex with men born in Australia, but not among foreign-born men who have sex with men. The EPIC project was able to use generic imported PrEP medication that was significantly more affordable. In Manila, Philippines, preliminary results of a PrEP demonstration project entitled PrePPY (PrEP Pilipinas), indicate that community-led, peer-driven PrEP delivery seems to work and uptake among men who have sex with men in Metro Manila is high. In Tokyo, Japan, a PrEP demonstration project for men who have sex with men is currently in the planning phase. The demonstration project aims to provide evidence to change the Government's policy on PrEP.

Although syphilis and gonorrhoea infections appear to be increasing in the region, STI prevention and elimination initiatives are generally less developed than HIV elimination initiatives. In Cambodia, STI projects are mainly limited to elimination of congenital syphilis. Smaller research projects include surveys of antimicrobial resistance for gonorrhoea, and evaluation of HIV–syphilis dual testing. Strategies for STI elimination in Cambodia require further data (e.g. key population biobehavioural surveys and surveillance) and intervention research (e.g. syndromic vs laboratory approach, mass treatment for some populations). In China, the national STI control programme strategy is to integrate syphilis control activities with existing HIV control programmes. However, government financial investments for STI control remains limited. Primary health care clinics can play an important role in expanding access to HIV and STI prevention services, though much of the general population in China continues to perceive that primary health care clinics have inferior quality services, compared to tertiary-level hospitals. Results from a large survey among 3580 physicians showed that many primary care physicians indeed lack training in HIV, STIs, and hepatitis B and C. In Guangdong province, a comprehensive syphilis control project has focused on enhancing professional knowledge and technical skills, laboratory capacity and quality control, surveillance, screening, and referrals. Unfortunately, physicians often have high patient volumes and lack time and willingness to deliver quality preventive services. A comprehensive chlamydia intervention pilot project is currently underway in Shenzhen city. STI and HIV partner notification and services throughout the region remain weak and merit additional research.

Stigma continues to complicate efforts to reach many marginalized key populations. Self-testing appears to be a promising means of increasing HIV testing among men who have sex with men. In Hong Kong SAR (China), a randomized control trial demonstrated that HIV self-testing kits with online counselling support can significantly increase HIV test uptake and is highly scalable and acceptable among men who have sex with men. Results also suggest that self-testing and counselling can reduce riskier sexual behaviour and encourage future testing. However, nongovernmental organizations (NGOs) that have traditionally provided facility-based testing service may need to prepare for clientele who will shift to self-testing.

Laboratory capacities and monitoring for HIV and STI management in some parts of the region remain suboptimal and in need of strengthening. In Mongolia, there is no electronic monitoring and reporting of STIs and HIV management, CD4 monitoring and viral load (VL) tests are not well established in the outer provinces. There are also no regulations on importation of HIV and STI test kits or drugs. In China, the China Gonococcal Resistance Surveillance Programme (GASP) covers

16 provincial STI laboratories and monitors gonorrhoea prescriptions, epidemiology and treatment failure. Smaller-scale HIV drug resistance studies are ongoing in Cambodia and Viet Nam.

Chinese and American researchers are currently collaborating on basic research to better understand immunological responses to syphilis. The Immunology of B cells in Syphilis (IBIS) project uses modern B cell immunology techniques to help develop new tests to distinguish serofast states [no or little change in serological response despite adequate treatment], and also potentially aid in syphilis vaccine development .

2.4 Hepatitis surveillance, programmes and research

Policy-makers and researchers from Cambodia, China, Japan, Mongolia and Viet Nam gave presentations on HIV and STI epidemiology and interventions. Generally, most hepatitis C virus (HCV) infections in the region were associated with unsafe injections and dialysis, while most hepatitis B virus (HBV) infections were due to mother-to-child transmission (MTCT). Descriptive HBV and HCV epidemiological data are needed on underrepresented subnational regions and key populations. Strengthening research on determinants of HBV and HCV outcomes is an area requiring attention. Strategic information and data systems need strengthening so as to describe the epidemiology of hepatitis B and C in different population groups. HCV/HIV co-infections are well described among people who inject drugs but not yet among men who have sex with men and transgender people in the region. Data is needed for specific groups such as pregnant women, children, patients with diabetes or under haemodialysis, and migrants within their local context. Hepatitis surveillance and monitoring strategies need to be cost-effective and financially sustainable. Additional epidemiological data and economic modelling are needed. Cascade data are useful for all three diseases (HIV, STIs, hepatitis) in that gaps in the continuum of services can be identified. Research could help to identify the social determinants and barriers to access as well as identify innovative interventions to improve the uptake of testing, linkage to care and treatment along the cascade.

Initiatives to enhance the hepatitis cascade of care are being implemented throughout the region. TREAT Asia currently has several large observational treatment cohorts in the region. The TREAT Asia HIV observational database is a 12-country observational cohort of over 8000 people living with HIV that monitors behavioural and clinical markers such as behaviour, cancers, AIDS-defining illnesses and hepatitis clinical indicators. The TREAT Asia Pediatric HIV Observational Database is a paediatric HIV observational cohort of 6177 patients in six countries that monitors HBV vaccination and hepatitis serology, in addition to HIV clinical indicators, physical findings and laboratory results. Findings from TREAT Asia's research in Thailand suggests that HIV physicians can effectively treat HCV co-infection in routine care settings, but that universal screening of men who have sex with men and transgender women for HCV does not appear cost-effective .

In 2017, the Mongolian government launched the Healthy Liver programme, with the aim of eliminating HCV by 2020 and reducing mortality linked to liver diseases. The programme focuses on prevention of viral hepatitis, strengthening surveillance, expanding immunization, early screening and treatment, enhancing accessibility, and strengthening public-private partnerships. Goals of the Healthy Liver programme are to diagnose 80% of people living with HCV, begin treatment for 80% of people living with HCV, cure 90% of patients living with HCV who have initiated treatment, and vaccinate 90% of health-care workers for HBV. By March 2017, 11 964 individuals were enrolled into treatment, and 99.8% exhibited sustained virologic response (SVR). However, several challenges remain: viral hepatitis data are often redundant, coordination between public and private facilities is weak, transportation of blood from rural areas is problematic, many citizens are still uninsured, and future funding support is uncertain. In the future, plans are to: continue screening, develop national surveillance guidelines, evaluate the Healthy Liver programme, integrate different data systems, and enhance laboratory capacity and quality control.

In Viet Nam, an HBV and HCV RNA and antibody survey was conducted among 1700 people living with HIV. In the future, there are plans to: assess HIV and HCV incidence in underrepresented regions of the country; screen for HCV antibodies (anti-HCV) in all patients; develop novel diagnostic methods (dried blood spot for HCV RNA testing or liver cirrhosis, use of transient elastography); and conduct cost-effectiveness studies that examine treatment versus no treatment, factors that influence sustained virologic response, drug interactions for HCV/HIV co-infection, long-term monitoring of liver disease progression, methadone interaction with liver diseases in people living with HIV, and drug resistance among HBV/HIV co-infected individuals.

Several large projects to eliminate MTCT of HBV are ongoing in the region. In China, the SHIELD Project is a multi-site intervention field implementation project that aims to eliminate MTCT of HBV. The SHIELD Project covers 107 hospitals throughout China, and has five foci: 1) high-quality clinical research, 2) high level of clinical practice, 3) establishing centres of excellence, 4) establishing management algorithms, and 5) information management platforms. Phase 1 of the SHIELD Project is a multi-centre prospective observational study that will examine current practices on managing HBV prevention in a cohort of chronically infected mothers and their infants including use of antiviral drugs, clinical characteristics of chronic HBV infection among pregnant women and MTCT. Phase 2 involves use of a consensus management algorithm to deliver additional interventions for prevention of MTCT of HBV, and use of a specifically developed mobile app which connects mothers and doctors and serves also as a tool to input data into the project database.

In Cambodia, the ANRS (France REcherche Nord & Sud Sida-hiv Hépatites) is supporting projects investigating tenofovir for the prevention of MTCT of HBV without the use of HBV human immunoglobulin (HBIG). Similar projects are starting in Thailand and the Lao People's Democratic Republic in this area.

The need for additional economic analyses, including disease burden analyses, and cost analyses was discussed. HIV, HCV and HBV service delivery models have considerable overlap, and service integration appears to be a cost-effective approach. Using generic direct-acting antivirals (DAAs) and ensuring market competition for medicines were discussed as means for managing drug costs. TREAT Asia was able to obtain DAAs via buyers clubs in China and South-East Asia, and research by TREAT Asia indicates that the efficacy of generic DAAs is comparable to branded DAAs .

Financing for HIV and HCV treatment and access to antiviral drugs remain challenges for many countries, especially in the context of declining global external funding. To expand hepatitis treatment coverage for HBV and HCV, financing models need to consider involvement of NGOs and health insurance (government and private sector). The costs of hepatitis B and C care include not only drugs, but also clinical evaluation, chronic care monitoring and viral load testing. New technologies for cheaper quality-assured viral load and liver assessments are needed. Furthermore, while current WHO guidelines support prioritization of treatment for individuals with advanced liver disease, many countries have now adopted the so-called test and treat approach, which could have potential benefits to reduce population-level transmission of HCV. This would be an area for further research.

In Japan, the incidence of liver cancer deaths has stabilized, and a longitudinal cohort monitoring for HBV and liver cancer is under way. To improve the hepatitis cascade, monitoring of hepatocellular carcinoma (HCC) is necessary because it is a major cause of death linked to HBV infection. Short interval monitoring such as every 3–4 months in Japan, in combination with panel assays of tumour makers and imaging examinations, may facilitate earlier detection of HCC. The gold standard for monitoring appears to be every six months using ultrasound with or without alpha-fetoprotein (AFP) for persons with cirrhosis or advanced fibrosis. For those who are cured of HCV infection, continued surveillance for HCC is part of routine monitoring. There is lack of data on the incidence of HCC after hepatitis C cure through use of DAAs.

2.5 Social innovation and sustaining programmes with limited resource

Social innovations in health are new, unconventional solutions developed by various actors that enable health-care delivery to be more inclusive, effective and affordable for all. The mission of the Social Innovation in Health Initiative (SIHI) is to advance community-based social innovation in health within low- and middle-income countries, through collaborative research between emerging countries and between emerging and developed countries, capacity, and influence. SIHI aims to integrate social innovations within country health systems and the Sustainable Development Goals. Currently, social innovation hubs are in the United Kingdom of Great Britain and Northern Ireland, Columbia, Uganda, Malawi, China and the Philippines. Regarding STIs, SIHI has been used to increase awareness of STIs among men who have sex with men and to increase discreet HIV testing and access to HIV medication.

Crowdsourcing may be useful to promote STI, HIV and hepatitis testing. It involves a group solving a problem and then sharing the solution with the public. This approach leverages populations and networks in support of public health goals through ideas, concepts or materials that can facilitate “thinking out of the box” as well as sharpening focus for specific groups. Crowdsourcing is cost-effective, taps into existing social networks and reflects a changing work environment where non-experts have increased value. In China, studies have shown that crowdsourced sexual health promotion materials are more cost-effective than those developed by professional social marketing companies. Social Entrepreneurship for Sexual Health (SESH) is a research team based out of Guangzhou, China, and its mission is to use crowdsourcing to create more engaging and effective health services. SESH is currently analysing results from a multi-city crowdsourcing contest to promote community-level HIV testing among men who have sex with men.

Crowdsourcing and public contests have been shown to be a cost-efficient tool for increasing HIV testing. Furthermore, health promotion materials developed by crowdsourcing appear as effective as evidence-based health marketing materials. For example, a crowdsourcing contest was held in Australia to design the logo of the 2014 International AIDS Conference in Melbourne. The crowdsourced logo was well received and cost less than a design company logo. The contest itself proved to be a powerful way to engage local and global communities. In China, with the support of a partnership of 13 organizations including the Chinese Center for Disease Control and Prevention (China CDC), WHO country office in China and SESH, a nationwide crowdsourcing contest was conducted to spur awareness and community engagement around viral hepatitis, and to promote better communications materials around hepatitis B and C for the use of partners. A total of 168 images and videos promoting awareness of viral hepatitis were submitted by individuals and organizations as part of the contest. These were disseminated during World Hepatitis Day 2017 events in China. The contest materials on hepatitis testing will be evaluated for their impact in promoting hepatitis testing in a pilot randomized clinical trial among men who have sex with men in China.

Community-based organizations (CBOs) often play an important role in social innovation initiatives. In China, CBOs have had a major influence on strengthening social participation in the AIDS response in China. From 2002 to 2010, CBOs expanded rapidly, but declined after international donors began to withdraw funding from 2011. Funding for CBOs working on HIV is now distributed via a central body, the Chinese Association of STD and AIDS Prevention and Control. The goal of funding is to promote and maintain previously established management experience and further develop CBO participation mechanisms. In 2016, new Chinese laws were passed to regulate philanthropy and public-good activities, whereby NGOs now must be registered and supervised by the public security authorities. Nonetheless, fundraising activities, charities and social enterprises are on the rise in China. In Guangzhou, the city health department partners with local CBOs and has deployed numerous gay-friendly online apps designed to encourage local men who have sex with men to test and treat for HIV and STDs. Online prevention services are geared to direct men who have sex with men to offline services at “one-stop shop” sexual health service venues that cater specifically to men who have sex with men. The HIV testing facility also mails out free HIV self-testing kits to

individuals who would prefer to test off-site. Since HIV prevention interventions began in 2009, HIV testing has steadily increased among men who have sex with men, and riskier sexual practices have declined significantly. “Internet+” HIV prevention services appear to complement traditional HIV prevention strategies.

Perspectives on innovation from private industry partners were also shared during the meeting. Scientific, technological and digital breakthroughs are changing the pace, breadth and delivery of innovations. Telemedicine via online pharmacies, virtual visits and teleconsultations will likely rapidly transform health care. Currently, GlaxoSmithKline is partnering with Ali Health to launch an online to offline service platform to improve human papillomavirus (HPV) vaccination in China. The Dean Street Express clinic in London allows free and confidential STI testing without any human interaction. It is an example of how technology can be used to increase uptake of health-care services. In the future, greater focus will be needed on developing social innovations for rural, underserved and discriminated populations.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

In 2016, the WHO released three global health sector strategies to eliminate HIV, STIs and hepatitis as public health problems by 2030. Implementation research can play a crucial role in helping Member States reach these ambitious targets by understanding what works in practice, how programmes work and why programmes work. All Member States and partners are encouraged: to develop a “triple elimination” research agenda; to enhance HIV, STI, and viral hepatitis surveillance systems; and to research innovative, sustainable and cost-effective service delivery models for scaling up testing, treatment and prevention of HIV, STIs and hepatitis.

3.2 Recommendations

3.2.1 Recommendations for Member States

Member States are encouraged to do the following:

- 1) Develop a prioritized research agenda that is aligned with the needs and gaps of country responses towards eliminating new infections with HIV, hepatitis and STIs.
- 2) Continue discussions on applying implementation research to monitor and evaluate iterative improvements in programme and service delivery.
- 3) Engage with national and external donors to address identified implementation science questions.

3.2.2 Recommendations for WHO

WHO is requested to do the following:

- 1) Provide the platforms to continue sharing of information regarding implementation research prioritization.
- 2) Provide the platforms to discuss the implementation research agenda and evaluation of triple elimination of HIV, syphilis and hepatitis, including EMTCT of hepatitis B.
- 3) Continue to strengthen capacity for generation of cascades for HIV, STI and hepatitis as well as the data systems to report information.

ANNEXES

Annex 1. List of participants

No.	Name	Position	Institution
Chinese leaders and experts			
1	Yanhong YU	President	Southern Medical University
2	Wei PENG	Inspector	Guangdong Provincial Health and Family Planning Commission
3	Tianming GAO	Vice president	Southern Medical University
4	Xiaoping TANG	Secretary, Party Leadership Group	Health and Family Planning Commission of Guangzhou Municipality
5	Zixiao ZHOU	Director of International Exchange and Cooperation Division	Guangdong Provincial Health and Family Planning Commission
6	Shiqi LIU	Vice Director of Disease Control Division	Guangdong Provincial Health and Family Planning Commission
7	Ning ZHANG	Director of International Affairs Office	Southern Medical University
8	Shuwen Liu	Director of Graduate School	Southern Medical University
9	Peng Lin	Vice Secretary, Party Leadership Group	Guangdong Provincial Centre for Disease Control and Prevention
10	Xiangsheng CHEN	Vice Director of STD Control Centre	STD Prevention and Control Centre, Chinese Centre for Disease Control and Prevention
11	Xiaochun WANG	Executive Director of Global Health Centre	Chinese Centre for Disease Control and Prevention
12	Bin YANG	Dean	Dermatology Hospital of Southern Medical University
13	Yuantao HAO	Director of School of Public Health	Sun Yat-sen University
14	Heping ZHENG	Associate Dean	Dermatology Hospital of Southern Medical University
15	Weiping CAI	Director of Department of Infectious Disease	Guangzhou No. 8 Hospital
16	Lin PANG	Vice Director of Hepatitis C and STD Prevention and Control Department	Chinese Centre for Disease Control and Prevention
17	Yueping YIN	Director of Reference Laboratory	STD Prevention and Control Centre, Chinese Centre for Disease Control and Prevention
18	Qianqiu WANG	Director of Clinical Prevention and Treatment	STD Prevention and Control Centre, Chinese Centre for Disease Control and Prevention

19	Peng LIU	Project Manager	Chinese STD and HIV Prevention and Treatment Association
20	Jinlin HOU	Chair and Professor of Hepatology Unit and Department of Infectious Diseases	Nanfang Hospital, Southern Medical University
21	Fusheng WANG	National Expert	Chinese Academy of Sciences
22	Peihua Shen	Secretary-general	Guangdong Provincial Medical and Health International Exchange Association
23	Shixing TANG	Professor	Southern Medical University
24	Yimou WU	Academic Leader of Pathogenic Biology	University of South China
25	Manhong JIA	Director Assistant	Yunnan Centre for Disease Control and Prevention
26	Fujie ZHANG	Professor of Infectious Disease	Peking University Health Science Centre Capital Medical University
27	Wei MA	Professor	Shandong University
28	Xiaorun TAO	Director of HIV Prevention	Shandong Centre for Disease Control and Prevention
29	Dianmin KANG	Deputy Director	Shandong Centre for Disease Control and Prevention
30	Quanzhong LIU	Professor	Tianjin Medical University General Hospital
31	Lili LIU	Vice Director of Infectious Diseases	No. 5 Hospital of Xiamen University
32	Pingyu ZHOU	Director of STD Treatment Centre	Shanghai Dermatology Hospital
33	Zhongping DUAN	Consultant Physician	Beijing YouAn Hospital, Capital Medical University
34	Ligang YANG	Director of STD Department	Dermatology Hospital of Southern Medical University
35	Shujie HUANG	Director of Department of Administration	Dermatology Hospital of Southern Medical University
36	Weiming TANG	Deputy Director of UNC-Project China	UNC-Project China
37	Yutian CHONG	Vice Dean	No. 3 Hospital of SYSU
38	Zhiliang GAO	Vice Dean	No. 3 Hospital of SYSU
39	Huachun ZOU	Professor	SYSU School of Public Health
40	Jinghua LI	Associate Professor	SYSU School of Public Health
41	Jie PENG	Vice Director of Infectious Department	Southern Hospital
42	Jinquan CHENG	Secretary, Party Leadership Group	Shenzhen Centre for Disease Control and Prevention
43	Jin ZHAO	Director	Shenzhen Centre for Disease Control and Prevention

44	Qiuying LV	Consultant Physician	Shenzhen Centre for Disease Control and Prevention
45	Yi HUANG	Vice Chairman and Secretary-general	Guangzhou Medical Association
46	Hongbin LUO	Secretary-general	Guangzhou Medical Association
47	Huifang XU	Director, AIDS Prevention and Treatment Centre	Guangzhou Centre for Disease Control and Prevention
48	Yanshan Cai	Vice Director, AIDS Prevention and Treatment Centre	Guangzhou Centre for Disease Control and Prevention
49	Weibin CHENG	Consultant Physician	Guangzhou Centre for Disease Control and Prevention
50	Linghua LI	Physician	Guangzhou No. 8 Hospital
51	Yuqiang NIE	Vice Dean	Guangzhou No. 1 Hospital
52	Yuyuan LI	Professor	Guangzhou No. 1 Hospital
53	Yongjian ZHOU	Director of Gastroenterology	Guangzhou No. 1 Hospital
54	Zhibiao YIN	Dean	Guangzhou No. 8 Hospital
55	Fuchun ZHANG	Vice Dean	Guangzhou No. 8 Hospital
56	Chunliang LEI	Professor	Guangzhou No. 8 Hospital
57	Xiaoguang YE	Director of Infectious Department	No. 2 Hospital of Guangzhou Medical University
58	Manpeng LIN	Director of Gastroenterology	No. 2 Hospital of Guangzhou Medical University
59	Jianchang SHU	Vice president	Guangzhou Red Cross Hospital
60	Bo SHU	Director, AIDS Prevention and Treatment Centre	Zhongshan Centre for Disease Control and Prevention
61	Lihua ZHAN	Director	Guangzhou Yuexiu District Centre for Disease Control and Prevention
62	Long LU	Director	Guangzhou Liwan District Centre for Disease Control and Prevention
63	Lijuan HUANG	Director of AIDS and STI Control Department	Yuexiu Centre for Disease Control and Prevention
64	Ling CHEN	Professor	Guangzhou Institutes of Biomedicine and Health
65	Hong ZHI	Senior Vice President	GSK
Foreign leaders and experts			
1	Carolyn DEAL	Chief of STD Branch	NIAID/NIH
2	Carl W. DIEFFENBACH	Director of AIDS	NIAID/NIH
3	Myron COHEN	Associate Vice Chancellor for Medical Affairs and Global Health Microbiology and Immunology and Epidemiology	University of North Carolina at Chapel Hill

4	David COOPER	Director, The Kirby Institute	University of New South Wales (UNSW)
5	Saphon VONTHANAK	Dean	University of Health Sciences
6	Joseph TUCKER	Director of UNC-Project China	STD Prevention and Control Centre, Chinese Centre for Disease Control and Prevention
7	M. Anthony MOODY	Associate Professor of Immunology College	Duke University
8	William MILLER	Professor of Department of Epidemiology	Ohio State University
9	Joseph DUNCAN	Assistant Professor Medicine, Division of Infectious Diseases	University of North Carolina at Chapel Hill
10	Arlene SENA	Associate Professor of Department of Medicine	University of North Carolina at Chapel Hill
11	Michael EMCH	Professor of Epidemiology, Professor and Chair of the Department of Geography	University of North Carolina at Chapel Hill
12	Rosanna PEELING	Director of Diagnosis College	London School of Hygiene & Tropical Medicine
13	Chongyi WEI	Assistant Professor	University of California, San Francisco
14	Ron SWANSTROM	Professor of Biochemistry and Biophysics	University of North Carolina at Chapel Hill
15	Victor GARCIA-MARTINEZ	Professor, Centre for AIDS Research	University of North Carolina at Chapel Hill
16	Angela WAHL	Professor, Centre for AIDS Research	University of North Carolina at Chapel Hill
17	Irving HOFFMAN	Professor, Director of UNC Project of Malawi	University of North Carolina at Chapel Hill
18	Lishan SU	Professor, Microbiology and Immunology	University of North Carolina at Chapel Hill
19	Tran Viet HA	Director of UNC-Project Vietnam	University of North Carolina at Chapel Hill
20	Leela CHOCKALINGAM	Vietnam Doris Duke Fellow	University of North Carolina at Chapel Hill
21	Allison MATHEWS	Postdoctoral Research Fellow	University of North Carolina at Chapel Hill
22	Kathy TRANG	Vietnam Fogarty Fellow	University of North Carolina at Chapel Hill
23	Joseph LAU	Professor	University of Hong Kong
24	Jason ONG	Postdoctoral Research Fellow	London School of Hygiene & Tropical Medicine
25	William WONG	Clinical Associate Professor of Family Medicine	University of Hong Kong
26	Shinichi OKA	Director General of AIDS Clinical Center	National Centre for Global Health and Medicine (NCGM), Japan

27	Raja Iskandar AZWA	Medicine Department	University of Malaya
28	Davaalkham JAGDAGSUREN	Head of Department	Mongolia National Centre for Communicable Diseases AIDS/STI Surveillance and Research Department
29	Bira TSATSRALT-OD	First Deputy Director of Surveillance and Prevention, Infectious Diseases	Mongolia National Centre for Communicable Diseases
30	Rossana DITANGCO	Head, AIDS Study Group	Research Institute for Tropical Medicine, Philippines
31	Minh-Giang LE	Researcher	Hanoi Medical University
32	Nguyen Van KINH	Director	National Hospital of Tropical Medicine
33	Ying-Ru LO	Coordinator HIV, Hepatitis and STI Division of Communicable Diseases	World Health Organization
34	Po-Lin CHAN	Medical Officer HIV, Hepatitis and Sexually Transmitted Infections	WHO Regional Office for the Western Pacific
35	Laurent FERRADINI	HIV/Hepatitis/STI Team Leader	WHO Office in Cambodia
36	Jeremy ROSS	Director of Research	Treat Asia
37	Tatsuya YAMASHITA	Lecturer, Department of Gastroenterology	Kanazawa University Hospital
38	Stephen KO	Associate Professor of Public Health	Boston University
39	Kumi SMITH	Postdoctoral Research Fellow	University of North Carolina at Chapel Hill
40	Kate MUESSIG	Assistant Professor of Behavioral Health	University of North Carolina at Chapel Hill

Annex 2. Meeting programme

Date/time	Topic	Presenter
FRIDAY – 22 September 2017		
14:30-17:30	Registration	
SATURDAY – 23 September 2017		
08:00-08:30	Opening Session Objectives and introduction (5 min for each)	Bin YANG, Chair
08:30-10:00	Plenary 1: Syphilis, HIV, and hepatitis implementation research <i>Bai Yun Conference Room</i>	Xiang-Sheng CHEN, Myron COHEN, Co-Chair
	Translating evidence to policy in Asia and the Pacific - Lessons from HIV for Hepatitis and STI	Ying-Ru LO
	Control of sexually transmitted infections in the most populous country: Opportunities and challenges	Xiang-Sheng CHEN
	Disease Burden and Control Strategies of Hepatitis C in China	Xiao-Chun WANG
	STIs and HIV: Terrible partners	Myron COHEN
10:00-10:20	Small group photo, Tea break	
10:20-12:20	Plenary 1 continued: Syphilis, HIV, and hepatitis implementation research <i>Bai Yun Conference Room</i>	Xiao-Ping TANG, Ying-Ru LO, Co-Chair
	HIV PrEP and STI implementation research in Australia	David COOPER
	Prevention and control of syphilis and other STIs in South China	Bin YANG
	A new approach to HIV treatment in Vietnam in the context of declining external funding	Nguyen Van KINH
	Stepping out of the box - primary care physicians and HIV, hepatitis and syphilis elimination	William WONG
12:20-14:00	Lunch	
14:00-17:30	Session 1: HIV TASP, Prep and HIV self-testing <i>Yi Ran Conference Room</i>	Myron COHEN, Chair
	STIs among vulnerable populations in Vietnam: Examples of epidemiological and implementation science research	Minh-Giang LE
	HIV and STIs in Mongolia	Davaalkham JAGDAGSUREN
	Preparing for PrEP in Japan: HIV self-testing and STI screening	Shinichi OKA
	PrEP and STI control in Manila, Philippines	Rosanna DITANGCO
	PrEP Research Initiatives in Malaysia	Raja Iskandar AZWA
	<i>Tea Break (10 min)</i>	
	HIV/HBV/HCV co-infection in China	Fujie ZHANG
	HIV self-testing: RCT results	Joseph LAU
	<i>Facilitated discussion</i>	

14:00-17:30	Session 2: Interventions to improve the hepatitis cascade <i>Dan Xia Conference Room</i>	William WONG, Chair
	TREAT Asia cohorts and hepatitis research	Jeremy ROSS
	Hepatitis elimination in Mongolia	Bira TSATSRALT-OD
	Clinical research on hepatitis and HIV/hepatitis co-infections	Nguyen Van KINH
	<i>Tea Break (10 min)</i>	
	Hepatitis research in Cambodia	Saphon VONTHANAK
	Longitudinal cohort monitoring for hepatitis B and liver cancer	Tatsuya YAMASHITA
	<i>Facilitated discussion</i>	
14:00-17:30	Session 3: Social innovation and sustaining programs with limited resources <i>Yi Chang Conference Room</i>	Joseph TUCKER, Chair
	Innovation contest to promote hepatitis testing	Po-Lin CHAN
	Crowdsourcing to promote HIV testing	Wei-Ming TANG
	Collective wisdom to design a logo	Jason ONG
	Model of Collaboration between Community-Based Organizations and the Public Sector in Providing HIV Services in Guangzhou, China	Wei-Bin CHENG
	<i>Tea Break (10 min)</i>	
	The experience on strengthening social participation in AIDS response in China	Peng LIU
	Social innovation to deliver quality healthcare to all	Zhi HONG
	Interactive pilot panel discussion on locally sustaining programs (45 min)	Panellists above, plus Minh-Giang LE, Carolyn DEAL, Xiao-Mi LI, Kathryn MUESSIG
Interactive panel on regional policy, collaboration research (60 min)		
SUNDAY – 24 September 2017		
08:00-10:00	Plenary 2: Triple elimination of HIV, hepatitis B and syphilis <i>Bai Yun Conference Room</i>	Yuan-Tao HAO, David COOPER, Co-Chair
	Research on triple elimination to improve public health practice – a bottom up approach	Laurent FERRADINI
	Elimination of HIV in Yunnan: What we can learn for syphilis and hepatitis elimination	Man-Hong JIA
	Social innovation approaches to syphilis, HIV and hepatitis	Rosanna PEELING
	Towards zero transmission of HBV from mother to child: new data and the SHIELD project	Jin-Lin HOU
	HIV and syphilis incidence data in MSM cohort under ART in Mongolia	Shinichi OKA
10:20-10:30	Tea break	

10:30-12:30	Plenary 2 continued: Triple elimination of HIV, hepatitis B and syphilis <i>Bai Yun Conference Room</i>	Wei-Ping CAI, Ron SWANSTROM, Co-Chair
	B cell immunology in <i>Treponema pallidum</i>	Anthony MOODY
	NIAID/NIH Strategic Priorities for HIV Research	Carl W. DIEFFENBACH
MONDAY – 25 September 2017		
9:00-12:00	Interactive workshop on HIV, STI and hepatitis implementation research	

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