

Meeting Report

WHO 2013 consolidated guidelines on the use of antiretrovirals for the treatment and prevention of HIV in Asia and the Pacific



WORLD HEALTH ORGANIZATION
NETWORK FOR HIV AND HEALTH
IN THE WESTERN PACIFIC REGION

Beijing, China
16–18 September 2013

(WP)HIS/2013/DCC

English only

Report Series Number: RS/2013/GE/70(CHN)

**The HIV and Health Network of the Western Pacific Region:
WHO 2013 consolidated guidelines on the use of antiretrovirals for the treatment
and prevention of HIV in Asia and the Pacific**

**Beijing, China
16–18 September 2013**

Convened by

Beijing Ditan Hospital, Capital Medical University
WHO Collaborating Centre for Comprehensive Management of HIV Treatment and Care for
the World Health Organization Regional Offices for the Western Pacific and South-East Asia

Not for sale

Printed and distributed by:

World Health Organization
Regional Office for the Western Pacific
Manila, Philippines

NOTE

The views expressed in this report are those of the participants who attended the HIV and Health Network of the Western Pacific Region: WHO 2013 Consolidated Guidelines on the Use of Antiretrovirals for the Treatment and Prevention of HIV in Asia and the Pacific and do not necessarily reflect the policies of the Organization.

This report has been prepared by the cosponsors of the HIV and Health Network of the Western Pacific Region: WHO 2013 Consolidated Guidelines on the Use of Antiretrovirals for the Treatment and Prevention of HIV in Asia and the Pacific, held 16-18 September 2013 in Beijing, China

CONTENTS

Page

ACRONYMS

SUMMARY

1. INTRODUCTION	1
2. PROCEEDINGS	2
2.1 Regional situation	2
2.2 Overview about the guideline development process and methodology	2
2.3 HIV testing and counseling	3
2.4 When to start.....	5
2.5 What to start with and what to switch to?.....	12
2.6 Decentralization, task shifting, linkages and integration of services.....	16
2.7 Programmatic considerations	18
2.8 Monitoring the implementation of WHO guidelines.....	19
2.9 Implementation research.....	20
2.10 The role of the HIV and Health Network	23
3. CONCLUSIONS AND RECOMMENDATIONS	23
4. REFERENCES	25
ANNEXES:	
ANNEX I - PROGRAMME	30
ANNEX II - LIST OF PARTICIPANTS	35

ACRONYMS

3TC	lamivudine
ABC	abacavir
ANC	antenatal care
ART	antiretroviral therapy
ARV	antiretroviral
ATV	atazanavir
ATV/r	atazanavir/ritonavir
AZT	zidovudine (also known as ZDV)
CD4	T-lymphocyte cell bearing CD4 receptor
CDC	(United States) Centers for Disease Control and Prevention
CHTC	couples HIV testing and counselling
d4T	stavudine
DNDi	Drugs for Neglected Diseases initiative
DRV	darunavir
DRV/r	darunavir/ritonavir
EFV	efavirenz
FDA	Food and Drug Administration
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HBV	hepatitis B virus
HCV	hepatitis C virus
HIV	human immunodeficiency virus
HIV-NAT	HIV Netherlands Australia Thailand Research Collaboration
HPTN	HIV Prevention Trials Network
HTC	HIV testing and counseling
IeDEA	International epidemiologic Databases to Evaluate AIDS
IPT	isoniazid preventive therapy
LPV	lopinavir
LPV/r	lopinavir/ritonavir
MCH	maternal and child health
MMT	methadone maintenance treatment
MSM	men who have sex with men
NGO	nongovernment organization
NNRTI	non-nucleoside reverse transcriptase inhibitor
NRTI	nucleoside reverse transcriptase inhibitor
NVP	nevirapine
OST	opioid substitution therapy
PITC	provider-initiated testing and counselling
PMTCT	prevention of mother-to-child transmission
SRH	sexual and reproductive health
STI	sexually transmitted infection
TasP	treatment as prevention
TB	tuberculosis
TDF	tenofovir
TREAT Asia	Therapeutics Research, Education, and AIDS Training in Asia
u-b2MG	urine beta-2 microglobin
UNAIDS	Joint United Nations Programme on HIV/AIDS

USAID
VCT

United States Agency for International Development
voluntary counselling and testing

SUMMARY

In June 2013, the World Health Organization (WHO) released a consolidated guideline on the use of antiretrovirals for the treatment and prevention of HIV. This guideline provides recommendations on the use of antiretrovirals across all age groups and populations based on the broad continuum of HIV care. For the first time, this guideline includes clinical, programmatic and service delivery recommendations, and identifies research gaps. The key new recommendations are to start antiretroviral treatment in adults, adolescents and children >5 years of age at a CD4 count ≤ 500 cells/ μ L and, irrespective of immunological and clinical staging, in serodiscordant couples, those coinfecting with tuberculosis and hepatitis B (advanced liver disease), and in children <5 years of age. The new recommendations, if implemented at intensity and scale, will have a dual benefit: (i) reduce morbidity and mortality among people living with HIV, and (ii) reduce new HIV infections through vertical and horizontal transmission. However, implementation requires major investments over the next few years in health systems, quality of services, public health laboratories and strategic information systems.

WHO in the South-East Asia and Western Pacific Regions proposes to engage the expertise of clinicians, researchers, public health experts and members of the HIV and Health Network¹ to support the implementation of the 2013 WHO guideline, and monitor and evaluate its impact. WHO hopes that these institutional networks and individual experts will support planning for technical assistance for the initial roll out and early adoption, as well as implementation research in Asia and the Pacific. The network has developed its terms of reference and a business plan. In view of the decreasing resources for HIV, and changing needs and priorities in Member States, the 2009 terms of reference and business plan will need adjustments to reflect the spirit of South–South collaboration. The network will expand its partnership to the WHO South-East Asia Region. Various partners have committed their continued support to WHO to work with Member States and enhance South–South collaboration.

The experts welcomed the new WHO guidelines and reviewed knowledge gaps and operational issues around implementation of the new recommendations in the context of the epidemiological situation of HIV and the status of the current response in Asia and the Pacific. A case is made that “Test and Treat” studies in Asia are much needed to provide insight into the applicability of these interventions to groups where firm evidence about feasibility and real-world effectiveness are still lacking. Similarly, the great interest in prevention of mother-to-child transmission of HIV by providing triple antiretroviral therapy irrespective of immunological and clinical staging (option B and B plus) in Asia will provide opportunities for operational research. The question on when to start antiretroviral treatment in children less than 5 years of age in Asian settings clearly warrants further examination. Ongoing efforts to decentralize HIV testing and linkages to care to the community and self-testing will lend themselves to generating research questions focusing on service delivery and improving the uptake of the HIV treatment cascade, as well as social and behavioural research.

¹ The Network consists of 20 member institutions from nine countries and areas in the Western Pacific Region – Australia, China, Hong Kong (China), Japan, Malaysia, New Zealand, the Philippines, Singapore and Viet Nam.

1. INTRODUCTION

In June 2013, the World Health Organization (WHO) released a consolidated guideline on the use of antiretrovirals (ARVs) for the treatment and prevention of HIV (1). This guideline provides recommendations on the use of ARVs across all age groups and populations based on the broad continuum of HIV care. For the first time, this guideline includes clinical, programmatic and service delivery recommendations, and identifies research gaps. The key new recommendations are to start antiretroviral treatment (ART) in adults, adolescents and children >5 years of age at a CD4 count ≤ 500 cells/ μL and, irrespective of immunological and clinical staging, in serodiscordant couples, those coinfected with tuberculosis (TB) and hepatitis B (advanced liver disease), and in children <5 years of age. The new recommendations, if implemented at intensity and scale, will have a dual benefit: (i) reduce morbidity and mortality among people living with HIV, and (ii) reduce new HIV infections through vertical and horizontal transmission. However, implementation requires major investments over the next few years in health systems, quality of services, public health laboratories and strategic information systems.

WHO proposes to engage the expertise of clinicians, researchers, public health experts and members of the HIV and Health Network¹ to support implementation of the 2013 WHO guidelines and monitor and evaluate its impact. WHO hopes that these institutional networks and individual experts will provide technical assistance for the initial roll out, early adoption as well as implementation research in Asia and the Pacific (Box 1). WHO seeks the strategic advice of this network on how it can provide sustainable support to countries to improve the implementation, and monitoring and evaluation of its guidelines. In view of the decreasing resources for HIV and epidemiological changes in the HIV epidemic in Member States, the 2009 terms of reference and business plan need to be adjusted to reflect the spirit of South–South collaboration.

A meeting was held from 16 to 18 September 2013 in Beijing, China to discuss how to move forward in adapting the 2013 consolidated guidelines. The objectives of the meeting were to discuss operational issues of the WHO 2013 recommendations and implementation research questions in the context of Asia; to plan technical assistance in the early adoption and initial roll out of the guideline, and adjustment of monitoring systems to evaluate its impact; and to discuss how the HIV and Health Network can support countries.

Box 1 The WHO Network for HIV and Health in the Western Pacific Region

The Network consists of 20 member institutions from nine countries and areas in the Western Pacific Region – Australia, China, Hong Kong (China), Japan, Malaysia, New Zealand, the Philippines, Singapore and Viet Nam. A range of disciplines and fields of expertise are represented, including HIV, sexually transmitted infections, laboratory, gender and women's health, child and maternal health, drugs and alcohol, nursing, health promotion and disease prevention, blood safety and products, tuberculosis (TB), training, research, health technology, occupational health, population health, virology and immunology.

¹ The Network consists of 20 member institutions from nine countries and areas in the Western Pacific Region – Australia, China, Hong Kong (China), Japan, Malaysia, New Zealand, the Philippines, Singapore and Viet Nam.

2. PROCEEDINGS

The consultation was attended by 58 individuals in their personal capacity, including technical advisors to WHO, representatives of the HIV and Health Network based in Australia, Belgium, Cambodia, People’s Republic of China, Hong Kong (China), Fiji, India, Indonesia, Japan, Lao People’s Democratic Republic, Malaysia, Mongolia, Papua New Guinea, Thailand and Viet Nam. WHO staff from the regional and country offices of the South-East Asia and Western Pacific Regions participated.

2.1 Regional situation

Asia and the Pacific rank second (after sub-Saharan Africa) in terms of the number of people living with HIV (4.8 million), with 1.4 million in the Western Pacific Region and 3.4 million in the South-East Asia Region (2012) (2). Over the past year, the number of people receiving antiretroviral therapy in Asia increased to 1.25 million in 2012 (Table 1).

Table 1. Adults and children receiving and needing antiretroviral treatment in low- and middle-income countries globally and by region, 2010–2012 (WHO 2013)

Region	Estimated			
	2010	2011	2012	
AFR	5 070 000	6 118 000	7 211 000	10 900 000
AMR	593 000	657 000	716 000	850 000
EMR	15 300	20 300	24 600	190 000
EUR	123 000	137 000	163 000	520 000
SEAR	688 000	840 000	938 000	1 800 000
WPR	203 000	261 000	308 000	540 000
TOTAL	6 690 000	8 030 000	9 360 000	14 800 000

AFR= Africa Region of WHO, AMR: American Region of WHO, EMR= Eastern Mediterranean Region of WHO, EUR= European Region of WHO, South-East Asia Region of WHO, WPR=Western Pacific Region of WHO

Source: Global update on HIV treatment 2013: results, impact and opportunities. Geneva, Switzerland: World Health Organization; 2013.

2.2 Overview about the guideline development process and methodology

Ying-Ru Lo, *WHO Regional Office for the Western Pacific*, Adeeba Kamarulzaman, *Co-chair WHO Guideline Development Core Group, University of Malaysia*

The 2013 consolidated guidelines bring together new recommendations, existing recommendations and other guidance on HIV testing, service delivery models and programmatic considerations. New recommendations were developed in accordance with procedures outlined by the WHO Guidelines Review Committee and are based on the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach (3). GRADE does not introduce new concepts in developing recommendations in the field of public health. Two important aspects of GRADE are determining the strength of the recommendation and the quality of evidence. The strength of the recommendation depends on the balance of benefits and harms; values and preferences; resource use; and feasibility of implementation. The quality of evidence

reflects the extent to which confidence in an estimate of the effect is adequate to support the recommendation. It is an explicit and structured approach that highlights transparency.

Box 2. Grading of Recommendations Assessment, Development and Evaluation (GRADE) (3).

It is crucial to move from generating and analysing the evidence to making a recommendation.

The implications of a strong recommendation include the following:

- Population: most people in this situation would want the recommended course of action and only a small proportion would not.
- Health-care workers: most people should receive the recommended course of action.
- Policy-makers: the recommendation can be adapted as a policy in most situations.

The implications of a conditional recommendation include the following:

- Population: the majority of people in this situation would want the recommended course of action, but many would not.
- Health-care workers: they would be prepared to help people make a decision that is consistent with their own values/decision aids and shared decision-making.
- Policy-makers: there is a need for substantial debate and involvement of stakeholders.

GRADE does not prevent disagreement. The composition of the panel and their conflicts of interest may affect the judgement of the final recommendations. GRADE itself cannot ensure unbiased recommendations if the guideline development process is suboptimal (4-6).

2.3 HIV testing and counselling

Rachel Baggaley, *WHO headquarters*, Sue Best, *National Reference Laboratory, St Vincent's Institute*, Joseph Lau, *Chinese University of Hong Kong*, Mean Chi Vun, *WHO Guideline Development Group Service Delivery, NCHADS, Cambodia*, Peter Azzopardi, *Centre for Adolescent Health, Royal Children's Hospital*

It is currently estimated that globally, about half of the people with HIV do not know that they are infected. Testing is often done late and poor linkages from HIV testing and counselling (HTC) to care. Hence many people start treatment when they are already significantly immunocompromised, resulting in poor health outcomes and ongoing HIV transmission. Access to and uptake of HTC by people from key populations is significantly lower than in the general population in many settings. The overall goal of HTC for a national HIV programme should be to identify as many people as possible with HIV early during the course of infection, and link them appropriately and in a timely manner to prevention, care and treatment services. Those who are tested and are not infected should be linked to appropriate prevention services, including harm reduction services for people who use drugs.

Diverse models of HTC services are available to increase access to HIV diagnosis, including testing services in health-care facilities, freestanding sites and a wide range of community-based approaches. These are described in detail in the WHO 2012 strategic HTC framework (7). These guidelines include expanded ART eligibility criteria for children, adolescents, adults, and pregnant and breastfeeding women. To maximize the individual and public health benefits of these recommendations, people with HIV must be diagnosed and linked to care early in the course of HIV infection. While facility-based testing is a key approach,

utilization of health-care services by some populations, including men and adolescents, and especially key populations, is often low.

Community-based testing

WHO recommends the routine offer of HTC in clinical settings (known as provider-initiated testing and counselling [PITC]) as an efficient and effective way to identify people with HIV who could benefit from treatment. In addition to providing HTC in clinical settings, it can be offered in a variety of settings in the community. Community-based testing approaches may reach people with HIV earlier in the course of HIV disease than PITC (**Box 3**).

Box 3. New WHO recommendations on HIV testing and counselling (2013)

- In generalized HIV epidemics, community-based HTC with linkage to prevention, care and treatment services is recommended, in addition to PITC. (Strong recommendation, low quality of evidence)
- In all HIV epidemic settings, community-based HTC for key populations, with linkages to prevention, care and treatment services is recommended, in addition to PITC. (Strong recommendation, low quality of evidence)

The use of rapid tests

The use of rapid HIV diagnostic tests that can be used at the point of care has become an important strategy to expand access, increase return of same-day results and enable appropriate referral and follow up. The use of rapid HIV diagnostic tests using blood from a finger-prick sample taken by trained lay counsellors and community health workers has facilitated the expansion of HTC in community settings, including homes, transport stations, religious facilities, schools, universities, workplaces and venues frequented by key populations. Continued expansion of community-based testing to complement facility-based testing is an important consideration for achieving universal knowledge of HIV status and earlier diagnosis linked to care and treatment. Community-based HTC includes using mobile, door-to-door, testing of contacts of HIV-infected index persons, campaign, workplace and school-based HTC approaches. WHO is considering a new approach where trained community health workers and lay workers can conduct a first single rapid test in outreach settings and support accompaniment of people who test positive to a care facility for confirmatory testing and linkage to care, treatment and prevention services.

Couples and partner testing

Studies in a number of countries have shown that couples testing and counselling is acceptable, feasible and effective (8, 9). Couples testing can identify seroconcordant positive couples who can be linked to treatment and receive treatment adherence support, and identify couples with serodiscordant HIV test results who can benefit from HIV prevention interventions. Services should be offered to married and cohabiting couples, premarital couples, polygamous unions and any other partnerships. As with all HTC approaches, couples HTC should be voluntary. Health providers must be aware of the potential for intimate partner-based violence and should support individuals when they do not want to test with their partners. Couples HTC can be offered in all settings where HTC is provided, including antenatal care (ANC). Support to encourage testing of the partners of people living with HIV is also an efficient and effective way of identifying additional people living with HIV, who then can benefit from treatment. Couples HTC can be an important intervention to increase access to earlier ART and reach more men

with treatment (Less men than women are on ART) (2) Offering family testing to couples where one or both are living with HIV can identify children, adolescents and other household members who have not previously been diagnosed.

Special considerations for key populations

HTC has been provided to key populations since HIV tests were first developed. WHO produced guidance for testing in people who inject drugs in 2006, for prisoners and refugees in 2009, for men who have sex with men (MSM) and transgender persons in 2011 and for sex workers in 2012. In the case of key populations, particularly those who are criminalized, HTC services may be used in punitive or coercive ways. Therefore, both existing as well as new recommendations for HTC for these at-risk and vulnerable groups emphasize consent and confidentiality, as well as ensuring that HTC is part of a comprehensive prevention, care and treatment programme.

HIV self-testing

There has been increasing interest in HIV self-testing since the United States Food and Drug Administration (US FDA) approval of the sale and use of OraQuick for HIV self-testing in July 2012. Some countries have recently introduced HIV self-testing programmes and policies; for example, HIV self-testing is included in the Kenyan national HTC guidelines and there are special HIV self-testing programmes for health workers. The United Kingdom has allowed over-the-counter sales of HIV self-testing kits since August 2013 and many countries have unregulated sales through pharmacies and over the internet. Research in a number of countries has shown high levels of acceptability, and reasonable accuracy with oral fluid HIV rapid diagnostic tests. WHO held the first Global consultation on HIV self-testing in Geneva in April 2013 (10, 11) (Box 4).

Box 4. HIV self-testing

The outcomes of the WHO meeting on HIV (10) self-testing included supporting consideration of self-testing, especially for:

- the general population and health-care workers in high-prevalence areas
- individuals in serodiscordant relationships, other priority populations
- individuals and couples who retest due to ongoing exposure, particularly if they have previously received counselling.

Encourage incorporation of self-testing into national testing algorithms:

- to regulate the market, assess accuracy and facilitate confirmatory testing.

Support continued research and monitoring of:

- social harms and adverse events
- linkages to care for those who are HIV-positive
- ethical, human rights and legal issues
- distribution methods.

2.4 When to start

David Cooper, *WHO Guideline Core Group Member, Kirby Institute, University of New South Wales*, Rudi Wisaksana, *Padjadjaran University, Indonesia*, Bui Duc Duong, *WHO Guideline Development Group Service Delivery, Deputy Director General Viet Nam Authority of HIV/AIDS Control (VAAC), Ministry of Health Socialist Republic of Viet Nam*

The 2013 WHO guidelines recommend earlier initiation of ART at a CD4 count ≤ 500 cells/ μL for all adults and children above the age of 5 years.

Table 2. Summary of recommendations on when to start ART in adults, adolescents, infants and children

Target population	Adults and adolescents
Severe or advanced symptomatic HIV infection (WHO clinical stage 3 or 4)	Treat all regardless of CD4 cell count
HIV infection (WHO clinical stage 1 or 2)	CD4 count ≤ 500 cells/ μL (CD4 count ≤ 350 cells/ μL as a priority)
HIV serodiscordant couples	Treat all regardless of CD4 cell count
Active TB disease	Treat all regardless of CD4 cell count
Hepatitis B coinfection	Treat regardless of CD4 count in presence of chronic severe liver disease
Pregnant women	Treat all regardless of CD4 cell count

Infants and children	
Infants (<12 months)	Treat all
12–59 months	Treat all (children ≤ 2 years or with WHO stage 3 or 4 or CD4 count ≤ 750 cells/ μL or $<25\%$ as a priority)
5 years and above	WHO clinical stage 3 or 4 or CD4 ≤ 500 cells/ μL CD4 ≤ 350 cells/ μL as a priority)

Source: WHO. Consolidated guidelines on the use of Antiretroviral Drugs for treating and preventing HIV Infection. Recommendations for a public health approach (2013).

Evidence to support the updated guidelines and how these relate to the Asian context: adults

Among adults, there is moderate evidence for starting treatment in individuals with a CD4 count ≤ 350 cells/ μL (5, 12, 13) with supportive evidence from observational studies. The evidence for treating everyone with a CD4 count between 350 and ≤ 500 cells/ μL is not as strong, although observational studies suggest a benefit for preventing AIDS or death, and no additional harm. Untreated HIV is also associated with the development of several non-AIDS-defining conditions (14-16). The HIV Prevention Trials Network (HPTN) 052 study reported that heterosexual HIV-positive people started on treatment when their CD4 count was between 350 and 500 cells/ μL were more than 20 times less likely to infect their partners than untreated people. The results also suggest a possible benefit of prevention of TB with early treatment (17). Conclusive evidence is awaited from the START (patients randomized to either start ART if the CD4 count >500 cells/ μL or to wait until CD4 count falls below 350 cells/ μL) and TEMPRANO

trials (ANRS) (start ART if the CD4 count is between 350 and 500 cells/ μ L or when the CD4 count falls below 250–350 cells/ μ L).

In the Asian context, the key drivers of the epidemic are MSM and people who inject drugs. In some areas, the prevalence of HIV among people who inject drugs reaches very high levels with higher rates of late presentation and mortality. Among MSM, the HIV epidemic is rising in the Region, and it is plausible that treatment as prevention (TasP) may also prove useful (18). The diagnosis of HIV alone may have some impact on reducing risk behaviours, reinforcing the importance of scaling up HIV testing (19, 20). Limited observational data and mathematical modelling data appear promising with regard to TasP for MSM and people who inject drugs (21, 22).

Box 5. Implications for people who inject drugs: the experience of West Java HIV integrated services

An analysis conducted in the province of West Java, one of the most populated areas with the highest burden of HIV/AIDS in Indonesia, indicated that the median CD4 count at presentation for HIV care in 2006 was only 32 cells/ μ L. Data also showed that 77% of the patients recruited in HIV care reported a history of injecting drug use. The Hasan Sadikin Hospital in West Java initiated a project of integrated HIV services targeting people who inject drugs, including those in prison, with the provision of methadone maintenance treatment (MMT). Analysis of the project demonstrated that people who inject drugs enrolled on MMT had greater access to HIV testing and HIV treatment and, among those in HIV care, clients on MMT had substantially higher baseline CD4 counts at starting ART (23).

In Banceuy Narcotics Prison, PITC uptake was shown to be much higher than traditional voluntary counselling and testing (VCT) (24). Earlier screening led to patients starting ART at least two years before those who had traditional VCT (Hinta Meijerink et al. 2009, unpublished data). Cost analysis showed a benefit to conducting HIV testing in prisons than in primary health-care clinics because of better linkages with HIV care (25). Treatment outcomes were similar between patients with a history of drug use and those without such a history, which was attributed to adequate support to patients offered in collaboration with civil society organizations (26).

Indonesia's Ministry of Health has recently adopted a national policy for acceleration of HIV testing and early treatment, regardless of CD4 count for key affected populations and has set ambitious targets. Experience from Indonesia indicates that early screening is key to starting treatment early. Implementation research should help to answer important questions on how best to implement testing and treatment among key affected populations, including improving retention in HIV care (Rudi Wisaksana personal communication, 16-18 September 2014, to meeting participants)

Box 6. Implementation research: expanded testing and early ART in Viet Nam

The epidemic in Viet Nam is concentrated and also driven by sharing of injecting equipment among people who inject drugs. The response includes harm reduction incorporating MMT and rapid ART scale up with over 60% coverage. Viet Nam faces the challenge of limited HIV testing coverage and late diagnosis at a median CD4 count \leq 100 cells/ μ L and the loss of cases across the HIV care cascade, especially between HIV testing and enrolment in care.

Mathematical modelling using data from Can Tho province, which provides annual HIV testing and immediate ART regardless of CD4 count, showed a potentially substantial reduction in HIV transmission. Prioritizing people who inject drugs for immediate ART would have the biggest impact on reducing the number of new infections and this intervention would be cost saving within 20 years (6).

Several uncertainties remain with regard to feasibility and acceptability, as well as adherence, viral suppression and potential risk compensation for those starting ART with high CD4 counts. Implementation research in Viet Nam is being used to pilot and study the feasibility and acceptability of the proposed interventions. This will help to inform future national policy and scale up, and to monitor the care cascade and address implementation issues. The projects include a pilot study to assess TasP among serodiscordant couples, which is under way, and another to assess the feasibility and acceptability of “Test and Treat” among people who inject drugs through regular HIV testing and immediate ART regardless of CD4 count.

Antiretroviral treatment for pregnant women

Wang Linhong, *WHO Guideline Development Group, Maternal and Child Health, China CDC*,
Ying-Ru Lo, *WHO Regional Office for the Western Pacific*

The guidelines for pregnant women now recommend that all HIV-positive pregnant women should receive triple ARV therapy at least for the duration of transmission risk and then either carry on lifelong irrespective of CD4 count, or for those who are eligible by CD4 count, be given lifelong treatment (options B and B+). The evidence for this is of moderate quality, and was based on data informing when to start ART in adults (1). Advantages of this approach include ease of implementation, harmonization with guidelines for non-pregnant adults, improving maternal ART coverage resulting in maternal health benefits and prevention of infant HIV transmission, acceptability and potential prevention of sexual transmission of HIV.

At the Ninth Meeting of the Asia-Pacific United Nations Task Force for the Prevention of Parent-to-Child Transmission, six out of 16 participating countries – Cambodia, China, Fiji, Malaysia, Sri Lanka and Thailand – committed to the dual goal of eliminating paediatric HIV and congenital syphilis. The Asia-Pacific Conceptual Framework for the Elimination of New Paediatric HIV and Congenital Syphilis 2011–2015 and other tools have provided the targets and thrust for country actions. The vision, goal and targets are reflected, to various degrees, in all of the national strategic plans for HIV and AIDS in the Region (27). The meeting noted significant progress in scaling up testing and counselling of pregnant women for HIV and syphilis and, in some instances, hepatitis B. Although this progress is uneven across the Region, universal screening (and combined testing where possible) is increasingly being recognized as crucial and beneficial to maternal and child health, with geographical prioritization and phased, strategic scale up to detect all HIV-positive and syphilis-infected pregnant women. Most countries have adopted this approach. ANC settings have, almost throughout the Region, served as a vital entry point for screening to prevent transmission of these life-threatening diseases to newborns, demonstrating the increased commitment, ownership and co-leadership of maternal, neonatal and child health programmes, in partnership with national AIDS programmes, in eliminating new infections in children. Countries have begun to adopt and implement the new WHO consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection released in July 2013 (**Table 3**).

Table 3. Asia–Pacific PPTCT – brief summary of <u>current PPTCT ARV recommendations</u> of 16 countries, as of July 2013	
Recommendation	Number of countries which implement this recommendation
Adult ART: CD4 count ≤ 350 cells/ μ L	13/16 (one country already starts ART at ≤ 500 cells/ μ L <i>Note: half of the countries had begun implementing their new ART policies based on 2010 WHO guidelines in 2012 or 2013.</i>
PMTCT: move to Option B or B+	14/16 following option B or B+ (including 5 following B+)
Paediatric ART for all < 2 years	9/16 have adopted ART in children < 2 years
Breastfeeding for HIV-positive pregnant women	7 breastfeeding, 4 replacement feeding, 3 individual choice, 2 undecided
HTC for pregnant women	7 universal PITC, 2 risk-based testing, 6 <u>geographically targeted testing</u> , 1 undecided
Linking HIV HTC with syphilis and hepatitis testing	7 yes for both, 5 yes for syphilis but not hepatitis, others undecided
ART for HIV-positive partners in serodiscordant couples	6/16
Task-shifting/nurse-initiated medical ART	3 allow some nurse-initiated ART for pregnant women, 1 additional country only for adults (not pregnant women)
Asia–Pacific PPTCT – brief summary of <u>anticipated ARV policies</u> of 16 countries, as of July 2013	
Anticipated recommendation	Number of countries which plan for this recommendation
Adult ART: CD4 count ≤ 350 cells/ μ L	8/16 probably giving ART at ≤ 500 cells/ μ L; most others not sure and/or waiting for further in-country consultations
PMTCT: move to Option B or B+	B+: 10 planning or already following B: 4 planning to continue B Undecided: 2
Paediatric ART for all children < 5 years	4/16 probably giving ART to those < 5 years; most others not sure and/or waiting for further in-country consultations
Breastfeeding for HIV-positive pregnant women	7 breastfeeding, 3 replacement feeding, 4 individual choice (one country moved from replacement feeding to individual choice)
HTC for pregnant women	11 universal PITC, 4 geographically targeted testing (including 2 also with risk-based testing)
Linking HIV HTC with syphilis and hepatitis testing	8 yes for both, 7 yes for syphilis but not hepatitis, 1 unknown
ART for HIV-positive partners in serodiscordant couples	8/16
Task-shifting/nurse-initiated medical ART	3 allow some nurse-initiated medical ART for pregnant women (no new countries)

	considering, currently only being implemented/ considered in Nepal, Papua New Guinea and Viet Nam)
--	--

Source: Nathan Shaffer, as reported to PPTCT Kathmandu
ART antiretroviral treatment; HTC HIV testing and counselling; PITC provider-initiated testing and counseling; PMTCT prevention of mother-to-child transmission

Box 7. Transitioning from Option A to Option B and B+ – case scenario from Thailand

In Thailand, Option A was started in 2004, and in 2010 there was a transition to Option B. In 2013, the recommendation is to use Option B and B+.

The mother-to-child transmission rate was about 2.7% in Thailand in 2013, but was previously as high as 5.4%, according to the 2008 national evaluation for prevention of mother-to-child transmission (PMTCT).(28) In this evaluation, transmission rates were lower in those receiving highly active antiretroviral treatment than those receiving single-dose nevirapine (NVP) and zidovudine (AZT). In developing new guidelines for Thailand, there is debate about the advantages of Option B+ over Option B. There is little advantage, except for prevention of transmission in serodiscordant couples, as few Thai women disclose to their partners. The advantage of treating at higher levels of CD4 count is that the average rate of loss to follow up among people living with HIV and not on ART is 45% in Thailand (29). About 50% of women (with CD4 counts 350–500 cells/ μ L) who are not on ART had a drop in CD4 count to \leq 350 cells/ μ L at 19 months after delivery. Therefore, there may be an added benefit to women's health if they initiate ART earlier, as more women will probably be retained in care through treatment. A pilot programme to evaluate option B+ is planned in four provinces to assess adherence, safety and cost-effectiveness.

Antiretroviral treatment for children

Tammy Meyers, WHO Temporary Advisor

The updated consolidated WHO guidelines now recommend that all children <5 years of age should receive ART (1). Although the evidence to support this is of low quality, the recommendation is based on the fact that ART coverage of children remains lower than that for adults. This recommendation removes the barrier of needing a CD4 count before starting ART, with the aim of simplifying paediatric treatment and ensuring that more children gain access to ART. It is also estimated that the time saved off ART is likely to be minimal, as immunological deterioration has been shown to be rapid (30, 31). As in adults, children >5 years should start treatment at a CD4 count \leq 500 cells/ μ L.

The results of the Pediatric Randomized Early versus Deferred Initiation in Cambodia and Thailand (PREDICT) study conducted in Thailand showed no increase in mortality among children aged between 1 and 5 years who started ART if the CD4% was \leq 25% compared to those in whom initiation of ART was delayed until the CD4% was \leq 15%, according to WHO recommendations at the time. There were also no differences in neurodevelopmental outcomes and hospitalization rates. However, gain in height and in CD4 counts were better in the early treatment group. The study was underpowered to detect a significant difference because of a low event rate.(32) In the mathematical modelling exercise conducted on the data from the International epidemiologic Databases to Evaluate AIDS (IeDEA) collaboration, despite no major difference in mortality, immunological deterioration occurred rapidly, with 75% of children with CD4% >25%/750 cells/ μ L becoming eligible for ART by three years (31). These

data must be taken into account in the Asian setting when deciding whether to adopt the ART starting criteria for children in regions with low-burden, concentrated epidemics, and low infant and under-5 mortality rates and where access to CD4 testing is good.

2.5 What to start with and what to switch to?

N Kumarasamy, *WHO Guideline Development Group Adults, YRG Care Chennai*; Shinichi Oka, *National Center for Global Health and Medicine Tokyo*

The ART regimen comprising a once daily fixed-dose combination of tenofovir (TDF) plus lamivudine (3TC) (or emtricitabine [FTC]) plus efavirenz (EFV) is recommended as the preferred first-line therapy (Table 4).

Table 4. Summary of first-line antiretroviral regimens for adults, adolescents and children

	Adults (including pregnant women, those with TB and HBV coinfection)	Adolescents (10–19 years) ≥35 kg	Children 3 to <10 years (or <35 kg)	Children <3 years
Preferred first-line regimens	TDF + 3TC (or FTC) + EFV	TDF + 3TC (or FTC)+ EFV	ABC + 3TC + EFV	ABC or AZT+ 3TC+ LPV/r
Alternative first-line regimens ^{a, b}	AZT + 3TC + EFV AZT + 3TC + NVP TDF + 3TC (or FTC) + NVP	AZT + 3TC + EFV or NVP TDF + 3TC (or FTC) + NVP ABC + 3TC+EFV (or NVP)	ABC + 3TC + NVP AZT + 3TC + EFV or NVP TDF + 3TC (or FTC) + EFV or NVP	ABC# or AZT+ 3TC+ NVP

Source: WHO consolidated guidelines 2013 (1)

^a For adolescents, using stavudine (d4T) as an option in first-line treatment should be discontinued and restricted to special cases in which other ARV drugs cannot be used and to the shortest time possible, with close monitoring. For children, d4T use should be restricted to the situations in which there is suspected or confirmed toxicity to zidovudine (AZT) and lack of access to abacavir (ABC) or tenofovir (TDF).

^b ABC or boosted protease inhibitors (atazanavir/ritonavir [ATV/r], darunavir [DRV]/r, lopinavir [LPV]/r), can be used in special circumstances.

3TC lamivudine; EFV efavirenz; FTC emtricitabine; NVP nevirapine

The updated recommendation for the initial regimen for adults and adolescents is a strong one based on a moderate quality of evidence. This regimen is very effective, well tolerated and available as a single, once-daily fixed-dose combination. It is therefore easy to prescribe and simple for patients to take, which facilitates adherence. The resultant harmonizing of regimens across a range of populations (adults, pregnant women [first trimester], adolescents >10 years, and those coinfecting with TB and hepatitis B) simplifies drug procurement and the supply chain. There are a number of other advantages: the regimen is safe in pregnancy; it is effective against hepatitis B virus (HBV); EFV is the preferred non-nucleoside reverse transcriptase inhibitor [NNRTI] for people with HIV and TB coinfection (pharmacological compatibility with TB drugs) and HIV and HBV coinfection (less risk of hepatic toxicity); and last, the cost has declined significantly since 2010.

Concerns with these recommendations are based on the uncertainties regarding treatment toxicity in the Asian population, in particular, with regard to TDF use in people with a low body weight (Box 8).

Box 8. Risk of tenofovir-induced renal toxicity in low body-weight patients and how to monitor it

In a retrospective analysis of Japanese patients, Nishijima et al. showed that patients with a lower body weight were at increased risk of developing TDF-associated nephrotoxicity (33). In a cohort of Vietnamese patients, chronic kidney disease in patients taking TDF was significantly related to older age, lower body weight and TDF exposure (34). A further retrospective analysis demonstrated that urine beta-2 microglobulin (u-b2MG) was the most sensitive marker of tubular dysfunction associated with TDF. Urine b2MG, however, is not a popular biochemical test to date (35). In the Asian environment, there is a need for a protocol to monitor renal toxicity. Investigation into whether lower drug doses may be effective is warranted (36).

Pregnant women

Rangsima Lolekha, *TUC* Thailand

In Thailand, evaluation of the cost-effectiveness of PMTCT regimens shows that EFV or lopinavir (LPV)-based highly active antiretroviral treatment are equally cost sparing, although zidovudine (AZT) plus 3TC is the most cost-saving nucleoside reverse transcriptase inhibitor (NRTI) backbone. This combination also has very high acceptability among health-care providers. The first-line preferred regimen for pregnant women is LPV-based highly active antiretroviral treatment, as data on the safety of EFV in pregnancy was not available previously. In Thailand, there is low fertility and high coverage of infant formula use. Of concern is the poor adherence among women after delivery, from data at the Sirirat Hospital (Dr Kulkanya Choekphaibulkit, personal communication, at the National Consultation on the use of Option B+ in the context of PMTCT on 17 December 2012, Bangkok, Thailand). The current Thai recommendations for what to start in pregnant women are not the same as those proposed in the WHO Consolidated guidelines; there is ongoing debate about the national response to adopting these recommendations.

In children <10 years

Tammy Meyers, WHO Temporary Advisor, Rangsima Lolekha, *TUC* Thailand.

An important change in the updated guidelines is the strong recommendation to use lopinavir/ritonavir (LPV/r) instead of an NNRTI for first-line therapy in children <3 years of age. This recommendation is based on evidence from P1060, a randomized controlled trial that demonstrated superior outcomes of LPV/r-containing regimens in children <3 years of age, with or without prior exposure to NNRTI for PMTCT compared to NNRTI-containing therapy (37). South African studies have demonstrated over 80% virological suppression (31, 38). LPV/r-containing regimens have also been associated with low failure rates, and data from small studies have demonstrated that development of LPV/r resistance mutations is rare. Nevertheless, as larger cohorts begin to be reported, reports of the emergence of LPV/r resistance mutations are beginning to appear in the literature (39). Another advantage of the use of LPV/r in initial regimens for children is the finding that this regimen was associated with a decrease in the incidence of malaria (40).

It is recommended that if viral load monitoring is available and the child has virological suppression, an NNRTI-based regimen can potentially be switched to, although virological monitoring is required (41). Abacavir (ABC) is the preferred NRTI where possible with a 3TC

backbone (42). Stavudine (d4T) should be available as a backup if AZT and ABC are unavailable or cannot be used. There are conflicting data on the toxicity of TDF in children, and the drug is therefore not recommended for this age group. In all children >3 years, EFV is the preferred third drug. In children >10 years, TDF + FTC is the preferred backbone.

Some of the challenges with the use of LPV/r include cold chain requirements, poor palatability, lack of availability of a fixed-dose combination, lack of second-line options in resource limited settings, metabolic toxicities with long-term use, and interaction with TB drugs. Additionally, LPV/r is not recommended in babies below 6 weeks of age. These issues are under consideration in Asian countries where experience with using LPV/r as a first-line agent is limited. Some of the concerns about LPV/r may be ameliorated by the development of a granule formulation by Cipla and the Drugs for Neglected Diseases initiative (DNDi). The plan is to produce this together with ABC and 3TC in an adapted 4-in-1 regimen for children <3 years of age. DNDi was awarded a substantial grant by UNITAID to expedite the development and delivery of the 4-in-1 regimen.²

Other issues to consider in the recommended initial regimen for use in children in Asia include the availability of virological monitoring, particularly if switching back to an NNRTI-containing regimen is a consideration when children achieve virological suppression; the cost and availability of ABC as well as the risk of hypersensitivity, which is greater than in the African context; and availability of toxicity monitoring in general.

Treatment monitoring

Kiat Runxruntham, *WHO Guideline Development Group Adults, Thai Red Cross AIDS Research Center*; Zhang Fujie, *Peer reviewer, WHO guidelines, NCAIDS, China CDC*

The updated 2013 guidelines and the March 2014 supplement recommend using viral load to monitor treatment. The rationale for this is based on the fact that virological failure usually occurs before immunological and clinical failure. Waiting for clinical or immunological failure to occur would facilitate the development of drug resistance. Virological mutations may hamper future therapeutic options (10).

This recommendation applies across the board, from children to adults. Acceptability of this recommendation is likely to be based on improved access to viral load monitoring, which is still not available in many resource-limited settings. Implementation of the WHO 2013 guidelines in Asia must include exploring all means to make viral load testing accessible while increasing the number of patients on ART. In Thailand, virological failure rates ranging from >30% to up to 50% have been found in selected study sites (Runxruntham K, personal communication, 16-18 September 2014, to meeting participants). This may compromise future ART options and, more importantly, increase the risk of transmission of HIV drug resistance. However, the cost of viral load testing needs to come down. Point-of-care tests for viral load would be helpful but are still several years away from becoming widely available for use.

Substantial work has been done on developing CD4 count point-of-care tests, despite the move to recommend viral load monitoring over that of CD4 monitoring. The transition from CD4 count to viral load testing for both treatment initiation and monitoring should be carefully planned and costed over the next few years in Asian countries. In Mozambique, CD4 count

² Drugs for Neglected Diseases initiative (press release). DNDi has been awarded US\$ 17.3 million from UNITAID to bolster development and delivery of a child-adapted antiretroviral (ARV) formulation. Available at: <http://www.dndi.org/media-centre/press-releases/1514-grant-unitaid-arv.html>

monitoring was shown to improve linkage to care (43). CD4 testing is used in China to determine the eligibility of HIV-infected people for treatment entry (if CD4 count ≤ 350 cells/ μL) and for clinical monitoring post treatment. The United States Centers for Disease Control and Prevention (US CDC) Global AIDS Program (GAP) supported a project to evaluate the point-of-care Pima™ CD4 test in the provincial and Dehong prefecture CDC of Yunnan in 2012 (Yan J, National HIV Reference Laboratory, China CDC, personal communication, to meeting participants). In this evaluation, the performance of point-of-care PIMA™ CD4 testing with venous and finger-prick blood samples was compared with testing on the BD FACSCalibur from venous samples (which was considered the gold standard for sensitivity and specificity). PIMA™ CD4 testing correlates well with the BD FACSCalibur testing, although correlation with BD FACSCalibur is better for venous blood compared with finger-prick blood. There is better agreement below the threshold of 350 cells/ μL . PIMA™ CD4 testing has a high sensitivity and high negative predictive value.

Box 9. Using CD4 and viral load monitoring in China

China's free ART programme started in 2002 and, by 2012, more than 211 000 patients had received ART, of whom more than 170 000 (80.6%) were still on treatment and 20 000 on second-line treatment. The baseline CD4 count at the beginning of treatment reached >150 cells/ μL by 2009. China has developed a very comprehensive database of cohorts in the treatment programme (44).

In 2004, CD4 monitoring became available and by 2008, viral load monitoring was introduced. Coverage for adults and children has substantially increased for those with CD4 counts ≤ 350 cells/ μL but still needs improvement, and a few are getting treatment at a CD4 count >350 cells/ μL . At present, ART monitoring in China includes CD4 count twice a year, HIV RNA once a year, HIV drug resistance testing for patients on ART with treatment failure, monitoring for toxicity and for TB/HIV and HIV/HBV/HCV coinfections.

Overall, the virological response from the cohort of patients is good. Treatment failure is defined as ≥ 400 copies/ml; at 6–11 months, 12–23 months and ≥ 24 months of treatment, the observed failure rate was 17.9%, 27.2% and 33.2%, respectively (45). Of 2007 patients with HIV drug resistance, 465 (23.2%) were resistant to one class of ARVs, 1527 (76.1%) resistant to two classes of ARVs, and 15 (0.7%) to three classes of ARVs. HIV drug resistance was estimated to be about 12%, with prolonged treatment failure in drug-resistant cases (44).

2.6 Decentralization, task-shifting, linkages and integration of services

Masami Fujita, *WHO Cambodia*; Bui Duc Duong, *Viet Nam Administration for HIV/AIDS Control, Viet Nam*; Mean Chhi Vun, *NCHADS, Cambodia*; and Bruce Parnell, *Macfarlane Burnet Institute for Medical Research and Public Health, Australia*

Providing ART (initiation and continuation) in maternal and child health (MCH) facilities, and TB/HIV and opioid substitution therapy (OST) services is recommended in different epidemic settings (1). Despite the fact that treatment programmes have expanded considerably, the continuum of care for people living with HIV is not fully ensured in many countries. All though this is improving, many people initiate ART late at a median CD4 count ≤ 200 cells/ μL in Asian countries.(46) About 28% of people who ever start ART are lost from care after 5 years (47). It is estimated that 15–30% drop out of care at each step, from testing, to care, on ART and retained on ART.

The guidance for service integration of HTC and ART with ANC/MCH care, TB care and OST settings is based on strong recommendations and very low quality of evidence. Case studies and reports from Asia show that decentralization of services, continuity of care and linkage to chronic HIV care services will also apply to concentrated epidemics (48-52). Opportunities exist to generate data on the integration of HIV testing, care and treatment with ANC/MCH care, isoniazid preventive therapy (IPT) and TB infection control in all HIV and TB care settings, and in OST settings.

There is moderate evidence that delivery of ART at community level improves retention in care. For example, several studies show that transportation cost and distance from health facilities are barriers to retention in care in Asia (53, 54). In most settings, decentralization of services to primary-care settings results in increased coverage, and may potentially improve retention in care and reduce indirect costs of care for patients (51). Hence, moving to more integrated and linked primary-care models of service delivery could potentially improve programme coverage and quality. Moreover, coverage is not the only concern. Service delivery models should support the expansion of access to HIV testing, care and treatment in an equitable and non-discriminatory manner. This includes access to ART for children, adolescents, pregnant women and key populations.

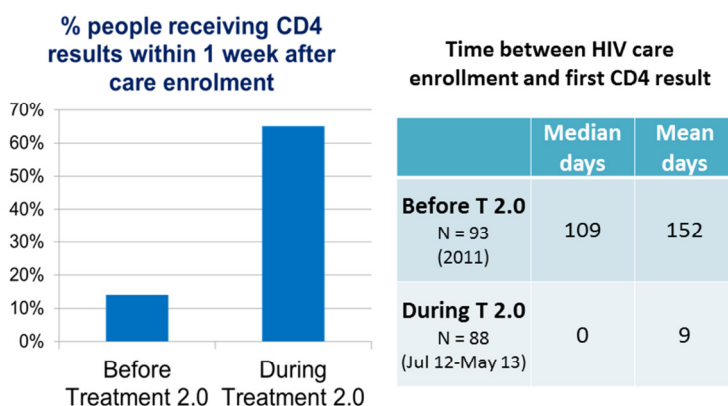
Box 10. Treatment 2.0 in Viet Nam

At the end of 2012, ART coverage in Viet Nam doubled to 72 711 compared to 2009. However, challenges remain, as ART coverage is still limited (about 60%) and the majority starts ART late at a median CD4 count ≤ 100 cells/ μ L. Moreover, with the decline in external funding, the national AIDS programme is exploring low-cost and sustainable approaches. Treatment 2.0 was launched in July 2012 with innovations in service delivery, including point-of-care diagnosis and CD4 monitoring, decentralized HIV testing to district and subdistrict levels, and follow up of ART at primary health-care facilities (commune health stations). The Treatment 2.0 project in two provinces Can Tho and Dien Bien integrates HIV testing, ART and MMT as a “one-stop” service and includes community mobilization efforts.

Preliminary data show that it is feasible to simplify HIV testing and treatment, and integrate these into primary health-care services, and demonstrate an improvement in the HIV care cascade (Figure 1).

After full review of the phase 1 pilot, it is planned to develop an interim policy to scale up HIV services at primary-care settings and expand to two additional provinces from the last quarter of 2013.

Figure 1. Impact of point-of-care CD4 testing, Tuan Giao District, Dien Bien, 2012



Decentralization of services ultimately requires task-shifting. Considerations for task-shifting are sustainability, strengthening the health systems agenda, a country’s overall strategy for health workforce planning and management, and political and financial commitment for human resources for health. Such a planning process for task-shifting should engage multiple stakeholders such as public service, local government, the private sector and donors.

Continuum of prevention and care

Over the past decade, the importance of linking TB and sexual and reproductive health (SRH) with HIV policies, systems and services has been increasingly recognized (55-58). Several studies have shown how such linkages might be beneficial for TB, SRH and HIV programmes, respectively (59). More specifically, efforts have been deployed to integrate HIV testing, care and, more recently, treatment within TB and antenatal and delivery care services as a strategy to prevent mother-to-child transmission of HIV and other communicable diseases such as syphilis and hepatitis B (60). The strategies and approaches as well as outcomes of TB/HIV collaboration have been well documented. For example, in Cambodia, the proportion of HIV-positive TB cases who started or continued on ART increased sixfold within 3 years.(61) A systematic review concluded that limited, non-generalizable evidence supports the effectiveness of integrated PMTCT programmes versus not integrated or partially integrated services (62). In Cambodia, the benefits of the linked response-supported expansion of PMTCT has been documented (55). New approaches are needed for expanding PMTCT in the context of concentrated epidemics.

In Cambodia, the continuum-of-care framework facilitated systematic coordination and service linkages between the community, people living with HIV, nongovernmental organizations (NGOs) providing home-based care, and district health-based health services, which helped to accelerate access to HTC and maximize retention in HIV treatment and care (63). The core of this continuum of care is the so-called “MMM”, a mechanism led by and centred among people living with HIV, which fosters local partnership among them, their families, NGOs, health workers, religious leaders and local authorities. As a result, treatment coverage increased to over 85% and retention in treatment was high through a range of quality assurance activities.

The session concluded that it is now more important than ever to move towards integration and health systems strengthening to improve health services at large. HIV contributes to overall health capacity building and systems strengthening. Vertical responses are important during the

early stages of the epidemic. Over time, vertical programmes may shift to creating linkages and collaboration among programmes and gradually get integrated, while specific expertise and monitoring is retained. In Cambodia, the strategic and systematic expansion of decentralized services from the beginning (since 2003) made a difference to the intensity and scale of HIV services. Commitment of partners to implement common frameworks and standard service packages was critical.

2.7 Programmatic considerations

Plenary discussion

National stakeholders face several important choices on how to optimally translate the WHO 2013 recommendations into national practice. National programme managers will need to facilitate sound, inclusive and transparent decision-making processes, taking into consideration local epidemiology and response, potential impact, cost and cost-effectiveness of the new recommendations, and ethical and human rights perspectives. Provided most countries in Asia and the Pacific have concentrated HIV epidemics, special attention needs to be paid to key populations.

Thailand developed a mathematical model to project the national impact and costs of scaling up HTC and ART (Petchsri Sirinirund, November 2013, personal communication with Ying-Ru Lo). Compared to the projection based on the baseline scenario (scenario 1, HTC coverage of 30% in key populations and ART initiation threshold of CD4 count 350 cells/ μ L), scaling up HTC coverage in key populations to 90% would avert 5921 additional new HIV infections with 13% higher costs (scenario 2). Additionally, if ART is provided irrespective of CD4 count, an additional 10 686 new HIV infections will be averted, with 17% higher costs compared to the baseline. The study concluded that expanding HTC coverage in key populations and treating all irrespective CD4 count would be a highly cost-effective investment. These findings are in line with the other modelling analyses from Viet Nam, which also found that periodic voluntary HTC and immediate ART prioritizing key populations is cost-effective and will achieve relative cost savings beyond 20 years.

2.8 Monitoring the implementation of antiretroviral treatment programmes

Plenary discussion

Monitoring and evaluating the impact of the WHO 2013 consolidated guidelines on the use of ARVs for the treatment and prevention of HIV will be a priority for WHO. WHO is working with partners to develop a consolidated monitoring and evaluation guide for HIV prevention, treatment and care, largely mirroring the consolidated ART guidelines. The key areas include monitoring the HIV testing, care and treatment cascade. The consolidated 2013 ARV guidelines aim at reducing the loss to follow up and improve treatment outcomes. The existing monitoring system for PMTCT, TB and ART could, with a little adjustment and introduction of unique health identifiers, generate data to present the treatment cascade (denominator, number tested, number tested positive, number tested positive linked to care, on treatment and ultimately viral load suppressed).⁽⁶⁴⁾ Such monitoring calls for improved coordination and data-sharing and validation across the three programmes. Surveillance for HIV drug resistance early warning indicators and toxicity should be integrated into routine health information systems. Moreover, engaging civil society in monitoring activities for key populations and people living with HIV would be an asset.

Such a unique identifier system is being piloted in Cambodia. This system, which uses a computer fingerprint scan, was piloted in one province starting in May 2013. After a short

period of training, it was rapidly adopted at 28 sites. It proved to be quickly absorbed by providers and patients, and easy to use. However, at one remote site, there were issues with electricity and connectivity. By August 2013, the number of HIV-positive clients identified in the voluntary and confidential counselling and testing centres was 203 (3.5%). The same individuals are testing positive at multiple times/different locations is currently being evaluated. The National Center for HIV/AIDS, Dermatology and STD (NCHADS) will present a formal evaluation soon. Currently, different unique identifier systems used for key populations are being assessed, including fingerprint, smartcard and code.

Box 11. MCH–PMTCT–HIV care/ART and TB-linked monitoring to improve the quality of the continuum-of-care services in Thailand and Lao People’s Democratic Republic

The key steps in linked monitoring were: to determine and flag areas that need quality improvement; to appropriately design the system according to the magnitude of the HIV epidemic, existing system infrastructure for MCH, TB and ART, human/ information technology resources and security protection system; and to facilitate the use of data for quality improvement.

The WHO Regional Offices for South-East Asia and the Western Pacific, in collaboration with the US CDC, United States Agency for International Development (USAID), Joint United Nations Programme on HIV/AIDS (UNAIDS) and other development partners drafted the “Regional metrics for monitoring HIV testing, care and treatment services”. This regional framework aims to assist countries to identify the bottlenecks and gaps along the HIV treatment cascade. It includes a conceptual framework, a selected list of indicators and guides for presentation, and use of data at the national and subnational levels.

2.9 Implementation research

Plenary discussion

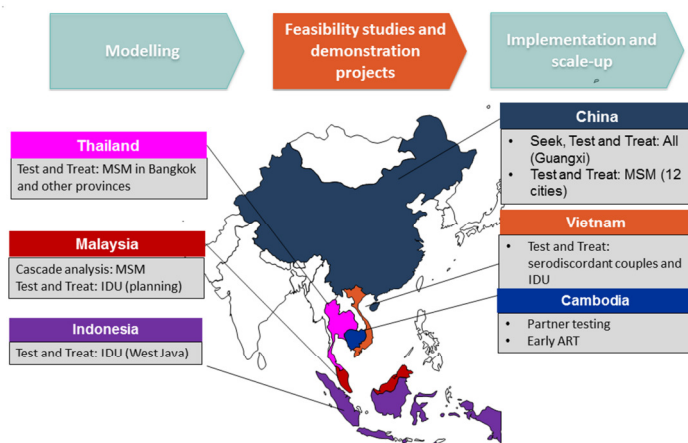
The meeting participants discussed that test and treat studies in Asia are much needed to provide insight into the applicability of these interventions to groups where firm evidence about feasibility and real-world effectiveness are still lacking. Similarly, the great interest in options B and B plus in Asia will provide opportunities for operational research. The question on when to start ART in children less than 5 years of age in Asian settings clearly warrants further examination.

Harnessing the prevention benefit of ART

Epidemiological (21, 65-67) and modelling studies (6, 68, 69), and the HPTN 052 results provide firm evidence that earlier ART reduces sexual transmission (17). Yet, only few of the many planned studies on TasP are conducted in Asia. TasP might be more feasible and effective in concentrated than in generalized epidemics as resources for HTC and ART could focus on confined and much smaller populations than in generalized epidemics in sub-Saharan Africa.(70) In Asia, the results of HPTN 052 study prompted Cambodia, China and Thailand to recommend earlier initiation ART for HIV-infected individuals in serodiscordant couples. A number of studies to investigate test and treat strategies in different populations have started enrolment in different populations and settings (**Figure 2, Table 6**) (71, 72). A preparatory study to assess the barriers to uptake along the treatment cascade among MSM is currently ongoing in Malaysia. Viet Nam will examine the hypothesis that periodic voluntary HTC and early ART for people who inject drugs is feasible and will reduce new HIV infections (Box 6). Similar studies among

people who inject drugs and MSM are being planned in Indonesia. Efforts are under way to plan for pooling of project data across countries. Moreover, HPTN 074, a vanguard study on HIV prevention and immediate treatment among people who inject drugs compared to standard harm reduction and care, is considering sites in Indonesia and Viet Nam. Such efforts should not only address when to start but also the question of what to start with and toxicity monitoring, e.g. u-b2MG. Identifying interventions to improve retention and adherence by selecting comparable study outcomes would be of critical importance.

Figure 2. Demonstration projects/implementation research on test and treat strategies



ART-antiretroviral treatment, IDU-injecting drug users, MSM-men who have sex with men, OST-opiate substitution therapy; TDF – tenofovir, VCT-voluntary counseling and testing

Ongoing efforts to decentralize HIV testing and linkages to care to the community and self-testing will generate research questions focusing on service delivery and improving the uptake of the HIV treatment cascade, as well as social and behavioural research.

There was also a call with regard to implementation research methodology and ensuring that studies are well designed and powered to generate robust evidence. It was proposed that a consultation facilitated by WHO be set up on the design of implementation research. The Kirby Institute offered to host such training. Other institutions, such as the National Center for Global Health and Medicine and the Burnet Institute, have a track record for conducting research in Asia. The HIV Netherlands Australia Thailand Research Collaboration (HIV-NAT) is affiliated with The Thai Red Cross AIDS Research Centre in Bangkok, Thailand, with the Kirby Institute for infection and immunity in society in Sydney, Australia, and with the Amsterdam Institute for Global Health and Development in Amsterdam, the Netherlands. Since 1996, the HIV-NAT has been conducting clinical research in HIV, meeting international standards, and gaining vast experience in the coordination of multicentre trials in Thailand. TREAT Asia (Therapeutics Research, Education, and AIDS Training in Asia) is a network of clinics, hospitals and research institutions working with civil society to ensure the safe and effective delivery of HIV/AIDS treatment throughout Asia and the Pacific. Both, HIVNAT and TREAT Asia have led the way in conducting HIV treatment research and have gradually started to address implementation issues within their clinical sites in Asia. Similarly, the National Center for Global Health and Medicine, Tokyo has embarked on clinical and cohort studies related to HIV and other communicable diseases, and manages a network of Asian investigators.

Other areas of interest are to capture the prevention cascade with a focus on key populations.

Table 5. Implementation research questions

Intervention area and hypothesis	Outcomes	Population
Self-testing, home testing and internet-based testing approaches increase uptake of HIV testing, linkages to care and earlier treatment versus standard testing approaches	Knowledge of HIV test result	Men who have sex with men
Community-based testing approaches for key populations versus standard testing approaches	Knowledge of HIV test result Median CD4 count at treatment initiation	Key populations
Community-based testing approaches for pregnant women in key populations or partners of key populations increases yield of HIV-positive pregnant women versus standard testing approaches	Knowledge of HIV test result Number and proportion of HIV-positive pregnant women Number and proportion of HIV-positive pregnant women who start ART	Pregnant women/ pregnant key populations
Option B plus increases uptake and improves retention in care of pregnant women versus Option B	Knowledge of HIV test result Number and proportion of HIV-positive pregnant women who start ART	Pregnant women HIV-exposed children
Validation of HIV rapid testing algorithms	Accuracy of test results Time to knowledge of HIV status	Adults
Point-of-care CD4, viral load monitoring	Morbidity and mortality	Adults and children
Use of dried blood spot versus plasma samples for genotyping for HIV drug resistance surveillance	Accuracy of test result Time to knowledge of HIV status	Adults and children
Explore if integration/decentralization/task-shifting addresses the cascade gaps. Assess distance and transportation costs to access services; case load in current and decentralized situations; service availability patterns; human resources and workload; reasons for loss to follow up, etc.	Morbidity and mortality	Adults and children

Explore room for improving service linkages (referral, communication, coordination, involvement of people living with HIV, “active case management”, etc.) Compare options in terms of resources needed; programme support (logistics, training, supervision, etc.)		
Immediate treatment in children less than 5 years of age increases earlier uptake of and retention in treatment	Morbidity and mortality Cure	Children less than 5 years of age
Adherence among key populations	Morbidity and mortality	Adults and children

WHO has developed the architecture of both feasibility studies and demonstration projects, focusing on the test and treat strategy. At this stage, WHO is working closely with some countries to finalize their feasibility studies and demonstration project proposals and facilitate pooling of data. In the next phase, WHO will provide close support to countries in implementing and monitoring the projects.

2.10 The role of the HIV and Health Network

Virginia Fumer, Albion Center

In 2008, the WHO Regional Office for the Western Pacific established a network of WHO collaborating centres and other key technical partners (*see Box 1*). The network has developed its terms of reference and a business plan. In view of the decreasing resources for HIV, and changing needs and priorities in Member States, the 2009 terms of reference and business plan will need adjustments.

3. CONCLUSIONS AND ACTION POINTS

3.1 Conclusions

We now have highly sophisticated public health expertise in Asia and the Pacific region. Research capacity is also increasing. The HIV and Health Network also has great clinical, laboratory and academic expertise and could serve as an important forum for south–south and south–north technical collaboration. This network would complement other regional collaborations such as TREAT Asia and the United Nations task forces.

Some examples of ongoing and new collaborations are as follows:

- Potential pooling of data on increasing the uptake of HTC, and earlier treatment among people who inject drugs in Indonesia, Malaysia and Viet Nam is being considered.
- Beijing Ditan Hospital and the Hong Kong Polytechnic University have signed a memorandum of understanding to enhance infection control in Chinese infectious diseases hospitals.

A few areas were identified for continued technical assistance such as (i) HIV and STI laboratory, particularly with regard to validation of HIV testing algorithms, quality management systems for HIV and STI testing for surveillance, blood safety and diagnosis, CD4 point-of-care testing, viral load testing as well as HIV drug resistance testing; (ii) developing service delivery models to enhance the uptake of interventions among key populations; (iii) integrating HIV and STI programmes into broader health systems; and (iv) monitoring and evaluating the impact of the WHO guidelines.

3.2 Action points

The following actions were recommended for the HIV and Health Network:

- Develop a report on past activities of the network.
- Use the report to leverage funding for the Network.
- Map the expertise of Network members.
- Prepare a web link or sharepoint restricted to Network members.
- Expand membership to institutions in the WHO South-East Asia Region.
- Discuss utilizing the Network as an ad-hoc or formal technical advisory group to WHO on HIV, sexually transmitted infection, and viral hepatitis B and C in Asia and the Pacific.

The following activities proposed by Network members are noted and encouraged:

- Treatment as prevention studies are much needed and several network members offered to support such efforts.
- Partners from Hong Kong have offered to develop the social and behavioural research component of such research.
- China and Thailand will initiate South–South collaboration on integrated prevention of mother-to-child transmission of HIV, syphilis and hepatitis B.
- Cambodia and Indonesia will initiate South–South collaboration on decentralization of HIV testing to the community level and primary health care in the context of MCH services and improving the uptake of services.

4. REFERENCES

1. WHO. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Recommendations for a public health approach June 2013.
2. WHO. Global update on HIV treatment 2013: Results, impact and opportunities. . Geneva, Switzerland: World Health Organisation, 2013.
3. Guyatt G, Oxman AD, Akl EA, Kunz R, Vist G, Brozek J, et al. GRADE guidelines: 1. Introduction-GRADE evidence profiles and summary of findings tables. *Journal of clinical epidemiology*. 2011;64(4):383-94.
4. Akl EA, Kennedy C, Konda K, Caceres CF, Horvath T, Ayala G, et al. Using GRADE methodology for the development of public health guidelines for the prevention and treatment of HIV and other STIs among men who have sex with men and transgender people. *BMC public health*. 2012;12:386.
5. Lundgren JD, Babiker AG, Gordin FM, Borges AH, Neaton JD. When to start antiretroviral therapy: the need for an evidence base during early HIV infection. *BMC medicine*. 2013;11:148.
6. Kato M, Granich R, Bui DD, Tran HV, Nadol P, Jacka D, et al. The potential impact of expanding antiretroviral therapy and combination prevention in Vietnam: towards elimination of HIV transmission. *J Acquir Immune Defic Syndr*. 2013;63(5):e142-9.
7. WHO. Service delivery approaches to HIV testing and counselling (HTC): A strategic policy framework. 2012.
8. WHO. WHO Guidance on couples testing and counselling; 2012. Geneva, Switzerland: World Health Organization, 2012.
9. Medley A, Baggaley R, Bachanas P, Cohen M, Shaffer N, Lo YR. Maximizing the impact of HIV prevention efforts: interventions for couples. *AIDS care*. 2013;25(12):1569-80.
10. WHO. March 2014 supplement to the 2013 consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection Recommendations for a public health approach. Geneva, Switzerland: World Health Organization, 2014.
11. WHO. Report on the first International Symposium on Self-testing for HIV: the legal, ethical, gender, human rights and public health implications of HIV self-testing scale-up, 8-9 April 2013. Geneva, Switzerland: World Health Organization, 2013.
12. Emery S, Neuhaus JA, Phillips AN, Babiker A, Cohen CJ, Gatell JM, et al. Major clinical outcomes in antiretroviral therapy (ART)-naive participants and in those not receiving ART at baseline in the SMART study. *The Journal of infectious diseases*. 2008;197(8):1133-44.
13. Severe P, Juste MA, Ambroise A, Eliacin L, Marchand C, Apollon S, et al. Early versus standard antiretroviral therapy for HIV-infected adults in Haiti. *N Engl J Med*. 2010;363(3):257-65.
14. Badri M, Bekker LG, Orrell C, Pitt J, Cilliers F, Wood R. Initiating highly active antiretroviral therapy in sub-Saharan Africa: an assessment of the revised World Health Organization scaling-up guidelines. *AIDS*. 2004;18(8):1159-68.
15. Wong KH, Chan KC, Cheng KL, Chan WK, Kam KM, Lee SS. Establishing CD4 thresholds for highly active antiretroviral therapy initiation in a cohort of HIV-infected adult Chinese in Hong Kong. *AIDS patient care and STDs*. 2007;21(2):106-15.

16. Sterne JA, May M, Costagliola D, de Wolf F, Phillips AN, Harris R, et al. Timing of initiation of antiretroviral therapy in AIDS-free HIV-1-infected patients: a collaborative analysis of 18 HIV cohort studies. *Lancet*. 2009;373(9672):1352-63.
17. Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N, et al. Prevention of HIV-1 infection with early antiretroviral therapy. *The New England journal of medicine*. 2011;365(6):493-505.
18. UNAIDS. HIV in Asia and the Pacific UNAIDS report 2013. Geneva, Switzerland: UNAIDS, 2013.
19. Muessig KE, Smith MK, Powers KA, Lo YR, Burns DN, Grulich AE, et al. Does ART prevent HIV transmission among MSM? *AIDS*. 2012;26(18):2267-73.
20. Marks G, Crepaz N, Senterfitt JW, Janssen RS. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: implications for HIV prevention programs. *Journal of acquired immune deficiency syndromes*. 2005;39(4):446-53.
21. Montaner JS, Lima VD, Barrios R, Yip B, Wood E, Kerr T, et al. Association of highly active antiretroviral therapy coverage, population viral load, and yearly new HIV diagnoses in British Columbia, Canada: a population-based study. *Lancet*. 2010;376(9740):532-9.
22. Wirtz AL, Walker DG, Bollinger L, Sifakis F, Baral S, Johns B, et al. Modelling the impact of HIV prevention and treatment for men who have sex with men on HIV epidemic trajectories in low- and middle-income countries. *International journal of STD & AIDS*. 2013.
23. Achmad YM, Istiqomah AN, Iskandar S, Wisaksana R, van Crevel R, Hidayat T. Integration of methadone maintenance treatment and HIV care for injecting drug users: a cohort study in Bandung, Indonesia. *Acta medica Indonesiana*. 2009;41 Suppl 1:23-7.
24. Nelwan EJ, Van Crevel R, Alisjahbana B, Indrati AK, Dwiyanara RF, Nuralam N, et al. Human immunodeficiency virus, hepatitis B and hepatitis C in an Indonesian prison: prevalence, risk factors and implications of HIV screening. *Trop Med Int Health*. 2010;15(12):1491-8.
25. Siregar AY, Komarudin D, Wisaksana R, van Crevel R, Baltussen R. Costs and outcomes of VCT delivery models in the context of scaling up services in Indonesia. *Trop Med Int Health*. 2011;16(2):193-9.
26. Wisaksana R, Indrati AK, Fibriani A, Rogayah E, Sudjana P, Djajakusumah TS, et al. Response to first-line antiretroviral treatment among human immunodeficiency virus-infected patients with and without a history of injecting drug use in Indonesia. *Addiction*. 2010;105(6):1055-61.
27. WHO. The 9th Meeting of the Asia-Pacific United Nations Task Force for the Prevention of Parents-to-Child Transmission "A generation of children free of HIV/AIDS and congenital syphilis is possible and achievable", 27-29 August 2013 WHO, UNICEF, UNAIDS, UNFPA: Kathmandu, Nepal, 2013.
28. MOPH-Thailand/US-CDC. National Ministry of Public Health evaluation 2008, Department of Health, Bureau of Epidemiology, Thailand MOPH, US CDC collaboration. 2008.
29. National AIDS Program (NAP) Report Thailand, 2012. . Thai Ministry of Public Health, 2012.
30. Newell ML, Coovadia H, Cortina-Borja M, Rollins N, Gaillard P, Dabis F. Mortality of infected and uninfected infants born to HIV-infected mothers in Africa: a pooled analysis. *Lancet*. 2004;364(9441):1236-43.

31. Davies M-A. When to start ART in children aged 2-5 years? Causal modeling analysis of IeDEA southern Africa. 7th IAS Conference on HIV Pathogenesis and Treatment; 30 June - 3 July 2013; Kuala Lumpur, Malaysia 2013.
32. Puthanakit T, Saphonn V, Ananworanich J, Kosalaraksa P, Hansudewechakul R, Vibol U, et al. Early versus deferred antiretroviral therapy for children older than 1 year infected with HIV (PREDICT): a multicentre, randomised, open-label trial. *Lancet Infect Dis*. 2012;12(12):933-41.
33. Nishijima T, Komatsu H, Gatanaga H, Aoki T, Watanabe K, Kinai E, et al. Impact of small body weight on tenofovir-associated renal dysfunction in HIV-infected patients: a retrospective cohort study of Japanese patients. *PloS one*. 2011;6(7):e22661.
34. Mizushima D, Tanuma J, Kanaya F, Nishijima T, Gatanaga H, Lam NT, et al. WHO antiretroviral therapy guidelines 2010 and impact of tenofovir on chronic kidney disease in Vietnamese HIV-infected patients. *PloS one*. 2013;8(11):e79885.
35. Nishijima T, Shimbo T, Komatsu H, Takano M, Tanuma J, Tsukada K, et al. Urinary beta-2 microglobulin and alpha-1 microglobulin are useful screening markers for tenofovir-induced kidney tubulopathy in patients with HIV-1 infection: a diagnostic accuracy study. *Journal of infection and chemotherapy : official journal of the Japan Society of Chemotherapy*. 2013;19(5):850-7.
36. Gatanaga H, Nishijima T, Tsukada K, Kikuchi Y, Oka S. Clinical importance of hyper-beta-2-microglobulinuria in patients with HIV-1 infection on tenofovir-containing antiretroviral therapy. *J Acquir Immune Defic Syndr*. 2014;65(4):e155-7.
37. Palumbo PV, A; Lindsey, J; Hughes, M; Jean-Philippe, P; Mofenson, L; Purdue, L; Eshleman, S; IMPAACT P1060 Team. Nevirapine (NVP) vs lopinavir-ritonavir (LPV/r)-based antiretroviral therapy (ART) in single dose nevirapine (sdNVP)-exposed HIV-infected infants: preliminary results from the IMPAACT P1060 trial. 5th IAS Conference on HIV Pathogenesis, Treatment and Prevention; 19-21 July 2009; Cape Town 2009.
38. Meyers TM, Yotebieng M, Kuhn L, Moultrie H. Antiretroviral therapy responses among children attending a large public clinic in Soweto, South Africa. *Pediatr Infect Dis J Global burden of disease* 2011;30(11):974-9.
39. Van Zyl GU, Liu TF, Claassen M, Engelbrecht S, de Oliveira T, Preiser W, et al. Trends in Genotypic HIV-1 Antiretroviral Resistance between 2006 and 2012 in South African Patients Receiving First- and Second-Line Antiretroviral Treatment Regimens. *PLoS One Global burden of disease* 2013;8(6):e67188.
40. Achan J, Kakuru A, Ikilezi G, Ruel T, Clark TD, Nsanjabana C, et al. Antiretroviral agents and prevention of malaria in HIV-infected Ugandan children. *The New England journal of medicine*. 2012;367(22):2110-8.
41. Kuhn L, Coovadia A, Strehlau R, Martens L, Hu CC, Meyers T, et al. Switching children previously exposed to nevirapine to nevirapine-based treatment after initial suppression with a protease-inhibitor-based regimen: long-term follow-up of a randomised, open-label trial. *Lancet Infect Dis Global burden of disease* 2012;12(7):521-30.
42. Comparison of dual nucleoside-analogue reverse-transcriptase inhibitor regimens with and without nelfinavir in children with HIV-1 who have not previously been treated: the PENTA 5 randomised trial. *Lancet*. 2002;359(9308):733-40.
43. Jani IV, Siteo NE, Alfai ER, Chongo PL, Quevedo JI, Rocha BM, et al. Effect of point-of-care CD4 cell count tests on retention of patients and rates of antiretroviral therapy initiation in primary health clinics: an observational cohort study. *Lancet*. 2011;378(9802):1572-9.

44. Zhang F, Dou Z, Ma Y, Zhao Y, Liu Z, Bulterys M, et al. Five-year outcomes of the China National Free Antiretroviral Treatment Program. *Annals of internal medicine*. 2009;151(4):241-51, W-52.
45. Ma Y, Zhao D, Yu L, Bulterys M, Robinson ML, Zhao Y, et al. Predictors of virologic failure in HIV-1-infected adults receiving first-line antiretroviral therapy in 8 provinces in China. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2010;50(2):264-71.
46. Kiertiburanakul S, Boettiger D, Lee MP, Omar SF, Tanuma J, Ng OT, et al. Trends of CD4 cell count levels at the initiation of antiretroviral therapy over time and factors associated with late initiation of antiretroviral therapy among Asian HIV-positive patients. *J Int AIDS Soc*. 2014;17:18804.
47. WHO. Global update on HIV treatment 2013: results, impact and opportunities. World Health Organisation: Geneva, Switzerland, 2013.
48. Tran DA, Shakeshaft A, Ngo AD, Rule J, Wilson DP, Zhang L, et al. Structural barriers to timely initiation of antiretroviral treatment in Vietnam: findings from six outpatient clinics. *PloS one*. 2012;7(12):e51289.
49. Hansudewechakul R, Naiwatanakul T, Katana A, Faikratok W, Lolekha R, Thainuea V, et al. Successful clinical outcomes following decentralization of tertiary paediatric HIV care to a community-based paediatric antiretroviral treatment network, Chiangrai, Thailand, 2002 to 2008. *J Int AIDS Soc*. 2012;15(2):17358.
50. Tran BX, Nguyen NP. Patient satisfaction with HIV/AIDS care and treatment in the decentralization of services delivery in Vietnam. *PloS one*. 2012;7(10):e46680.
51. Srikantiah P, Ghidinelli M, Bachani D, Chasombat S, Daoni E, Mustikawati DE, et al. Scale-up of national antiretroviral therapy programs: progress and challenges in the Asia Pacific region. *AIDS*. 2010;24 Suppl 3:S62-71.
52. Fujita M, Poudel KC, Do TN, Bui DD, Nguyen VK, Green K, et al. A new analytical framework of 'continuum of prevention and care' to maximize HIV case detection and retention in care in Vietnam. *BMC health services research*. 2012;12:483.
53. Nguyen LT, Tran BX, Tran CT, Le HT, Tran SV. The cost of antiretroviral treatment service for patients with HIV/AIDS in a central outpatient clinic in Vietnam. *ClinicoEconomics and outcomes research : CEOR*. 2014;6:101-8.
54. Tran BX, Duong AT, Nguyen LT, Hwang J, Nguyen BT, Nguyen QT, et al. Financial burden of health care for HIV/AIDS patients in Vietnam. *Trop Med Int Health*. 2013;18(2):212-8.
55. White J, Delvaux T, Chhea C, Saramony S, Ouk V, Saphonn V. The Linked Response: Lessons Emerging from Integration of HIV and Reproductive Health Services in Cambodia. *AIDS research and treatment*. 2013;2013:504792.
56. World Health Organisation, United Nations Population Fund, International Planned Parenthood Federation, and Joint United Nations Programme on HIV/AIDS, Sexual and Reproductive Health and HIV/AIDS: A Framework for Priority Linkages. 2005. World Health Organisation, United Nations Population Fund: Geneva, Switzerland, 2005.
57. Ministry of Health Cambodia. Standard Operating Procedures (SOP) to Initiate a Linked Response for Prevention, Care and Treatment of HIV/AIDS and Sexual Reproductive Health Issues 2007.

58. World Health Organisation, Joint United Nations Programme on HIV/AIDS, United Nations Population Fund, International Planned Parenthood Federation, and University of California San Francisco, Sexual & Reproductive Health and HIV. Linkages: Evidence Review and Recommendations. 2009. World Health Organisation: Geneva, Switzerland, 2009.
59. Dudley L, Garner P. Strategies for integrating primary health services in low- and middle-income countries at the point of delivery. *Cochrane Database Syst Rev*. 2011(7):Cd003318.
60. WHO. PMTCT Strategic Vision 2010–2015: Preventing Mother-to-Child Transmission of HIV to Reach the UNGASS and Millennium Development Goals, . 2010. World Health Organisation: Geneva, Switzerland, 2010.
61. WHO. Joint review of the Cambodian national health sector response to HIV 2013 (2014). World Health Organization, Regional Office for the Western Pacific, Manila, Philippines. 2014.
62. Tudor Car L, van-Velthoven MH, Brusamento S, Elmoniry H, Car J, Majeed A, et al. Integrating prevention of mother-to-child HIV transmission (PMTCT) programmes with other health services for preventing HIV infection and improving HIV outcomes in developing countries. *Cochrane Database Syst Rev*. 2011(6):CD008741.
63. Ministry of Health Cambodia. Continuum of care for people living with HIV/AIDS in Cambodia; . Phnomh Penh, Cambodia. : 2003.
64. Gardner EM, McLees MP, Steiner JF, Del Rio C, Burman WJ. The spectrum of engagement in HIV care and its relevance to test-and-treat strategies for prevention of HIV infection. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2011;52(6):793-800.
65. Das M, Chu PL, Santos GM, Scheer S, Vittinghoff E, McFarland W, et al. Decreases in community viral load are accompanied by reductions in new HIV infections in San Francisco. *PloS one*. 2010;5(6):e11068.
66. Anglemyer A, Rutherford GW, Baggaley RC, Egger M, Siegfried N. Antiretroviral therapy for prevention of HIV transmission in HIV-discordant couples. *Cochrane Database Syst Rev*. 2011(8):CD009153.
67. Tanser F, Barnighausen T, Grapsa E, Zaidi J, Newell ML. High coverage of ART associated with decline in risk of HIV acquisition in rural KwaZulu-Natal, South Africa. *Science*. 2013;339(6122):966-71.
68. Granich RM, Gilks CF, Dye C, De Cock KM, Williams BG. Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model. *Lancet*. 2009;373(9657):48-57.
69. Charlebois ED, Das M, Porco TC, Havlir DV. The effect of expanded antiretroviral treatment strategies on the HIV epidemic among men who have sex with men in San Francisco. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2011;52(8):1046-9.
70. WHO-NIH. Informal consultation on antiretroviral treatment as HIV prevention: Implementation science in Asia, Meeting report (26-28 March 2012, Siem Reap, Cambodia) 1 June 2012, . 2012.

71. Gupta S, Granich R, Suthar AB, Smyth C, Baggaley R, Sculier D, et al. Global policy review of antiretroviral therapy eligibility criteria for treatment and prevention of HIV and tuberculosis in adults, pregnant women, and serodiscordant couples. *Journal of acquired immune deficiency syndromes*. 2013;62(3):e87-97.

72. National Center for AIDS and STD, Ministry of Health Cambodia. Concept Note on Treatment as Prevention (TasP) as a Strategy for Elimination of New HIV Infections in Cambodia. National Center for AIDS and STD, Ministry of Health Cambodia: Phomh Penh, Cambodia 2012.

PROGRAMME

Day 1 – Monday, 16 September 2013

Time	Topic	Presenter
08:00–08:30	<i>Opening and welcome</i>	Zhang YongLi, President Beijing Ditan Hospital Bernhard Schwartlander, WHO Representative
08:30–09:00	<i>Introduction to the meeting</i> Objectives, expected outcomes, introduction of participants Administrative announcements Group photo	Xu Keyi, <i>Beijing Ditan Hospital, WHO CC for Comprehensive Management of HIV Treatment and Care</i> Ying-Ru Lo, <i>WHO Regional Office for the Western Pacific</i>
09:00–09:30	<i>Session 1 Plenary sessions</i> Overview about the guidelines development process and methodology	Ying-Ru Lo, <i>WHO Regional Office of the Western Pacific (10 min presentation)</i> Adeeba Kamarulzaman, <i>Co-chair WHO Guideline Development Core Group, University of Malaysia (10 min presentation)</i>
10:30–11:30	<i>Session 2 HIV testing and counselling</i> <ul style="list-style-type: none"> • Expanding HIV testing, retesting and linkages to care in the context of low and concentrated epidemics • Validation of point of care HIV testing algorithms and use of rapid tests to support decentralization of HIV testing and community-based testing and quality management systems 	Rachel Baggaley, <i>WHO Headquarters (15 min presentation)</i> Sue Best, <i>National Reference Laboratory, St Vincent’s Institute (15 min presentation)</i>
11:30-12:30	<i>Session 2 Panel discussion HIV testing and counselling</i> <ul style="list-style-type: none"> • Enhanced outreach and uptake of HIV testing among key populations • Community-based testing approaches as part of the continuum of prevention, care and treatment 	Joseph Lau, <i>Chinese University of Hong Kong (10 min presentation)</i> Mean Chi Vunh, <i>WHO Guideline Development Group Service Delivery, NCHADS, Cambodia (10</i>

Time	Topic	Presenter
	<ul style="list-style-type: none"> HIV testing for adolescents <p><i>Discussion</i></p>	<p><i>min presentation</i>) Peter Azzopardi, <i>Centre for Adolescent Health, Royal Children's Hospital</i></p>
<p>13:30–15:00</p>	<p><i>Session 3 When to start antiretroviral treatment for adults</i></p> <ul style="list-style-type: none"> Specific considerations for serodiscordant couples Specific considerations for key populations Opportunities for implementation research What is needed to support early adoption <p><i>Session 3 Panel discussion</i></p> <p>Specific considerations for IDUs in Indonesia</p> <p>Implementation research on test and treat in Vietnam</p> <p><i>Discussion</i></p>	<p>David Cooper, <i>WHO Guideline Core Group Member, Kirby Institute, University of New South Wales (15 min presentation)</i></p> <p>Rudi Wisaksana, special considerations for IDU, <i>Padjadjaran University, Indonesia (10 min presentation)</i></p> <p>Bui Duc Duong, <i>WHO Guideline Development Group Service Delivery, VAAC, Vietnam (10 min presentation)</i></p>
<p>15:30–16:15</p>	<p><i>Session 4 What to start with and what to switch to</i></p> <ul style="list-style-type: none"> New recommendations and evidence Key issues for implementation: toxicity monitoring of TDF <p><i>Q&A</i></p>	<p>N Kumarasamy, <i>WHO Guideline Development Group Adults, YRG Care Chennai 15 min presentation</i>)</p> <p>Shinichi Oka, <i>NCGM Tokyo, (15 min presentation)</i></p> <p>Razia Pendse, <i>WHO Regional Office for South-East Asia, (10 min presentation)</i></p>
<p>16:15–17:00</p>	<p><i>Session 4 The changing role of CD4 and viral load monitoring</i></p> <p><i>Thailand</i></p> <p><i>China</i></p> <p><i>Validation of Point of Care CD4, Yunnan</i></p>	<p>Kiat Runrungham, <i>WHO Guideline Development Group Adults, Thai Red Cross AIDS Research Center, 15 min presentation</i>)</p> <p>Jiang Yan, <i>National HIV/HCV Reference Laboratory, NCAIDS, China CDC, (10 min presentation)</i></p> <p>Zhang Fujie, <i>Peer reviewer, WHO guidelines, NCAIDS, China CDC, (10 min presentation)</i></p>

Day 2 – Tuesday, 17 September 2013

Time	Topic	Presenter
08:00–09:00	<p><i>Session 5 Antiretroviral treatment in children and adolescents</i></p> <ul style="list-style-type: none"> • <i>When to start and what to start with in children - New recommendations and evidence</i> • <i>Key issues for implementation in the Asian context</i> • <i>Opportunities for implementation research</i> <p><i>Discussion</i></p>	<p>Tammy Meyers, <i>Temporary Advisor (15 min presentation)</i></p> <p>Rangsima Lolekha, <i>Thai US CDC Collaboration (15 min presentation)</i></p> <p>Joseph Harwell, <i>Chinese University of Hong Kong (10 min presentation)</i></p>
09:00–10:00	<p><i>Session 6 Antiretroviral treatment for pregnant women</i></p> <ul style="list-style-type: none"> • <i>When to start and what to start with for pregnant and breastfeeding women</i> • <i>Report back from PPTCT Task Force meeting</i> • <i>Transitioning from option A to option B/B plus, what to use, and how do these recommendations apply to specific context in Asian countries (Knowledge gaps, opportunities for implementation research)</i> 	<p>Wang Linhong, <i>WHO Guideline Development Group, Maternal Child Health, China CDC (15 min presentation)</i></p> <p>Ying-Ru Lo, <i>WHO Regional Office for the Western Pacific (5 min presentation)</i></p> <p>Rangsima Lolekha, <i>Thai US CDC Collaboration (15 min presentation)</i></p>
10:15–11:00	<p><i>Session 7 Programmatic guidance</i></p> <ul style="list-style-type: none"> • <i>Key issues for Asia and the Pacific</i> • <i>Role of modelling and costing</i> 	<p>Adeeba Kamarulzaman, <i>Chair, WHO Guideline Development Group Programmatic (15 min presentation)</i></p> <p>Petchsri Sirinirund, <i>WHO Guideline Development Group, Programmatic, Thailand Ministry of Public Health (15 min presentation)</i></p>

<p>11:00-12:30</p>	<p><i>Session 7 Monitoring the implementation of WHO guidelines</i></p> <ul style="list-style-type: none"> • Emerging needs for monitoring the updated WHO guidelines • Metrics to monitor the cascade of HIV services • The interlinked patient monitoring system of ART/PMTCT/TB/HIV: Thai experiences • Unique identifier code: preliminary experiences 	<p>Nicole Seguy, <i>WHO China</i> (10 min presentation)</p> <p>Yu Dongbao, <i>WHO Regional Office for the Western Pacific</i> (10 min presentation)</p> <p>Achara Teeratikul, <i>Thai-US Collaboration (TUC)</i> (15 min presentation)</p> <p>Perry Killam, <i>CDC GAP Cambodia</i> (15 min presentation)</p>
<p>13:30-14:30</p>	<p><i>Session 8 Decentralization, Linkages and Integration of Services and Task Shifting</i></p> <p>Summary of evidence and recommendations in low and concentrated epidemics</p> <p>Country case study: Viet Nam</p> <p>Country case study: Cambodia</p>	<p>Masami Fujita, <i>WHO Cambodia</i>, (10 min presentation)</p> <p>Bui Duc Duong, <i>VAAC, Vietnam</i>, (10 min presentation)</p> <p>Mean Chhi Vun, <i>Cambodia</i>, (10 min presentation)</p>
<p>14:30-15:00</p>	<p><i>Session 8 Service delivery</i></p> <p>Linkages to care, retention and adherence</p>	<p>Bruce Parnell, <i>Macfarlane Burnet Institute for Medical Research and Public Health</i></p>
<p>15:30-16:30</p>	<p><i>Session 9 Technical assistance</i></p> <p>HIV and health network progress report</p> <p><i>Plenary discussion</i></p> <ul style="list-style-type: none"> • Expectations of members of the network from WHO and expectations of WHO from the network, its role in the context of decreasing resources in the Region • How can the network support implementation of WHO guidelines • Additional members needed? • Expanding the HIV and health network to South-East Asia • Strategic technical advisory group for Asia • Communication through web link 	<p>Virginia Furner, <i>Albion Street Center, WHO CC, Facilitator, HIV and Health Network in WPRO</i> (15 min presentation)</p> <p>Facilitators</p> <p>Ying-Ru Lo, Razia Pendse, <i>WHO Regional Offices for the Western Pacific and South-East Asia</i></p>

Day 3 – Wednesday, 18 September 2013

Time	Topic	Facilitator
08:00–12:00	Visit to Beijing Ditan Hospital	Xu Keyi and <i>Beijing Ditan Hospital Team</i>
	Site visits and individual meetings with technical assistance providers	
	Closing	Xu Keyi, <i>Beijing Ditan Team</i>

LIST OF PARTICIPANTS

1. TEMPORARY ADVISERS

David Cooper

Professor and Director
The Kirby Institute
Faculty of Medicine, The University of New South Wales
St Vincent's Medical Centre, Level 2, 376 Victoria Street
Australia
Tel: (612) 9385 0900
Fax: (612) 9385 0920
E-mail: dcooper@kirby.unsw.edu.au

Mean Chhi Vun

Director
National Centre for HIV AIDS, Dermatology and STD
Ministry of Health
No 151-153 Blvd Kampuchea Krom
Phnom Penh, Cambodia
Tel: (855) 16 830241
Fax: (855) 23 216515
E-mail: mchhivun@nchads.org

Zhang Fujie

Professor and Director
Division of Treatment and Care
National Center for AIDS/STD Control and Prevention
Chinese Center for Disease Control and Prevention
#27 Nanwei Road
Beijing 100050, China
Tel: (8610) 6303 9086
Fax: (8610) 6303 9072
E-mail: zhang.fujie.t@gmail.com
treatment@chinaaids.cn

Wang Linhong

Professor and Executive Director
National Center for Chronic and
Non-communicable Disease Control and Prevention
Chinese Center for Disease Control and Prevention
27 Nanwei Lu, Xicheng District
Beijing 100050, China
Tel: (8610) 6429 8136
Fax: (8610)-6304 2350
E-mail: linhong@chinawch.org.cn

WANG Ailing

Deputy Director
Department of Women's Health
National Center for Woman and Child's Health
Chinese Center for Disease Control and Prevention
Beijing, China
E-mail: ailing@chinawch.org.cn

Jiang Yan

National HIV/HCV Reference Laboratory
Beijing, China
E-mail: jiangyan03@263.net

Tammy Meyers

Paediatrician/Consultant
1702 Block 82 Bamboo Grove
74-86 Kennedy Road
Wan Chai, Hong Kong
E-mail: tammy@meyers.net

N. Kumarasamy

Chief Medical Officer
YRGCARE Medical Centre
Principal Investigator-Chennai ACTG Clinical Research Site
Site Leader-YRGCARE Medical Centre-VHS Clinical Research Site/NIH
Chief-Chennai International Clinical Trials Unit, Voluntary Health Services
Chennai-600113, India
Tel: (9144) 3910 6789; (9191) 7691 2007
E-mail: kumarasamy@yrgcare.org
kumarasamyn@gmail.com

Rudi Wisaksana

HIV working group
Health Research Unit, Faculty of Medicine
Padjadjaran University
Jl Eijkman 38
Bandung, Indonesia 40161
E-mail: rudiw98@gmail.com

Adeeba Kamarulzaman

Dean of Medicine
Professor and Head of Infectious Diseases
Faculty of Medicine, University of Malaya
Lembah Pantai
50603 Kuala Lumpur, Malaysia
Tel: (603) 7949 2129
Fax: (603) 7949 4625
E-mail: adeeba@ummc.edu.my; adeeba@um.edu.my

Petchsri Sirinirund

Senior Expert in Preventive Medicine
Director of the National AIDS Management Center
Department of Disease Control
Ministry of Public Health
Tiwanon Road, Tambon Talaad Kwan, Muang District
Nonthaburi Province, Thailand 11000
Tel: (662) 590 3221, (662) 965 9095
Fax: (662) 965 9569
E-mail: spetchsri@gmail.com

Bui Duc Duong

Deputy Director General
Vietnam Authority of HIV/AIDS Control
Ministry of Health
135/3 Nui truc
Hanoi, Viet Nam
Tel: (844) 3754 6574/ 09 8355 4097
E-mail: bduong06@gmail.com

Kiat Ruxrungham

Professor of Medicine
Chulalongkorn University
Chula Vaccine Research Center (ChulaVRC)
The King Chulalongkorn Memorial Hospital
Bangkok, Thailand
E-mail: kiat.r@chula.ac.th

Polin Chan

Consultant
5 Villers de Chavan
Vaux-Chavanne, 6960 Belgium
Tel: (32) 4786 14147
E-mail: polchan@yahoo.com

Nick Walsh

Public Health Physician
Consultant in Substance Abuse
Melbourne, Australia and Phnom Penh, Cambodia
Tel: (614) 1167 0992
E-mail: nicktropical@gmail.com

2. ORGANIZATIONS FROM CHINA

Li Xingwang

Director
Center of Infectious Diseases
Beijing Ditan Hospital
No. 8 Jingshun Dongjie, Chaoyang District
Beijing 100015, China
Tel: (86135) 1103 3608
E-mail: lixingw@126.com

Wu Yan

Director

WHO Collaborating Centre for Comprehensive Management
of HIV Treatment and Care

Beijing Ditan Hospital

No. 8 Jingshun Dongjie, Chaoyang District

Beijing 100015, China

Tel: (86138) 1166 1956

E-mail: ditanwuyan@sohu.com

Zhao Hong-xin

Director

Center of Infectious Diseases

Beijing Ditan Hospital

No. 8 Jingshun Dongjie, Chaoyang District

Beijing 100015, China

Tel: (86139) 1102 2130

E-mail: 13911022130@163.com

Qu Wen-yan

Counsellor

WHO Collaborating Centre for Comprehensive Management
of HIV Treatment and Care

Beijing Ditan Hospital

No. 8 Jingshun Dongjie, Chaoyang District

Beijing 100015, China

Tel: (86137) 1879 1170

E-mail: quwenyanchina@vip.sohu

Chen Zhi-hai

Director

Center of Infectious Diseases

Beijing Ditan Hospital

No. 8 Jingshun Dongjie, Chaoyang District

Beijing 100015, China

Tel: (86139) 1102 2130; (86135) 0134 0403

E-mail: chenzhihai0001@126.com

Xing Hui-chun

Director

Center of Infectious Diseases

Beijing Ditan Hospital

No. 8 Jingshun Dongjie, Chaoyang District

Beijing 100015, China

Tel: (86136) 9114 3164

E-mail: hchxing@sohu.com

Lu Lian-he

Director
Center of Infectious Diseases
Beijing Ditan Hospital
No. 8 Jingshun Dongjie, Chaoyang District
Beijing 100015, China
Tel: (86139) 1099 3102
E-mail: looklu@126.com

Jang Rong-meng

Director
Center of Infectious Diseases
Beijing Ditan Hospital
No. 8 Jingshun Dongjie, Chaoyang District
Beijing 100015, China
Tel: (86139) 119 0079
E-mail: ww6424j@126.com

Han Ning

Director
Center of Infectious Diseases
Beijing Ditan Hospital
No. 8 Jingshun Dongjie, Chaoyang District
Beijing 100015, China
Tel: (8613) 810814690
E-mail: hanning@126.com

Wang Jun-li

Director
Administration Office
Beijing Ditan Hospital
No. 8 Jingshun Dongjie, Chaoyang District
Beijing 100015, China
Tel: (8610) 84322134
E-mail: bjdtkj@163.com

Liu Shuang

Administer
Administration Office
Beijing Ditan Hospital
No. 8 Jingshun Dongjie, Chaoyang District
Beijing 100015, China
Tel: (8613) 810777682
E-mail: 13911022130@163.com

3. HIV AND HEALTH NETWORK

Virginia Fumer

Albion Street Center
150 Albion Street, Surry Hills
Sydney, NSW 2010, Australia
E-mail: fumer@sesiahs.health.nsw.gov.au

Peter Azzopardi

Adolescent Physician, Research Fellow
Centre for International Child Health
Royal Children's Hospital
50 Flemington Rd, Parkville
Victoria 3052, Australia
E-mail: peter.azzopardi@rch.org.au

Susan Best

Director, National Reference Laboratory
WHO Collaborating Centre for Diagnostics and Laboratory Support
for HIV/AIDS and Other Blood-Borne Infections
4th Floor, Healy Building, 41 Victoria Parade, Fitzroy
Victoria 3065, Australia
Tel: (613) 9418 1123
Fax: (613) 9418 1155
E-mail: sue@nrl.gov.au

Bruce Parnell

Principal Fellow
Centre for International Health
Burnet Institute
85 Commercial Road,
Melbourne, Australia 3004
Tel: (613) 9282 2289
Fax: (613) 9282 2144
E-mail: parnell@burnet.edu.au

Wang Qianqiu

Director, Department of Clinical Management
Institute of Dermatology, CAMS
National Center for STD Control, China CDC
12 Jiangwangmiao Road
Nanjing210042, China
Tel: (8625) 8547 8940
E-mail: wangqq@ncstdlc.org

Alex Molasiotis

Professor of Nursing and Head of School
School of Nursing
Director, WHO Collaborating Centre for Community Health Services
The Hong Kong Polytechnic University
11 Yuk Choi Road, Hung Hom, Kowloon
Hong Kong SAR, China
E-mail: alex.molasiotis@polyu.edu.hk

Joseph LAU Tak Fai

School of Public Health and Primary Care
The Chinese University of Hong Kong
Shatin, NT, Hong Kong SAR
The People's Republic of China
Tel: (852) 2637 6606
Fax: (852) 2645 3098
E-mail: jlau@cuhk.edu.hk

Edmond Tak Fai TONG

Senior Clinical Associate
School of Nursing
WHO Collaborating Centre for Community Health Services
The Hong Kong Polytechnic University
Hong Kong SAR, China
Tel: (852) 2766 5401

Joseph Harwell

Associate Professor
School of Public Health and Primary Care
The Chinese University of Hong Kong
Asia Regional Clinical Officer Clinton Health Access Initiative Associate
Shatin, NT, Hong Kong SAR, China
Tel: (852) 2637 6606
Fax: (852) 2645 3098
E-mail: harwell@cuhk.edu.hk

Kuniko Murakami

Chief
Division of International Training
Research Institute of Tuberculosis
Japan Anti-Tuberculosis Association
WHO Collaborating Centre for Reference, Research
and Training on Tuberculosis
3-1-24 Matsuyama, Kiyose-shi
Tokyo 204-8533, Japan
E-mail: kmurakami@jata.or.jp

Shinichi Oka

Director, AIDS Clinical Center
National Center for Global Health and Medicine
1-21-1, Toyama, Shinjuku-ku
Tokyo 162-8655, Japan
Tel: (813) 5273 5193 (dial-in)
Fax: (813) 5273 5193 (dial-in)
E-mail: oka@acc.ncgm.go.jp

Shinsuke Miyano

Medical Officer
Bureau of International Cooperation
National Center for Global Health and Medicine
1-21-1 Toyama, Shinjuku-ku
Tokyo, 162-8655, Japan
Tel: (813) 3202 7181 ext. 5152 or 2729
Fax: (813) 3205-7860
E-mail: s-miyano@it.ncgm.go.jp

Nguyen Dinh Trung

Occupational Disease Department
National Institute of Occupational and Environmental Health
WHO Collaborating Centre for Occupational Health
1B Yersin Street, 10000
Hanoi, Viet Nam
Tel: (844) 3 971 5947
Fax: (844) 3 821 2894
E-mail: trungbnn@gmail.com

4. CENTERS FOR DISEASE CONTROL AND PREVENTION

William Perry Killam

Centers for Disease Control and Prevention/
Global AIDS Programme
Embassy of the United States of America
#1 Street 96, Sangkat Wat Phnom, Khan Daun Penh
Phnom Penh, Cambodia
Tel: (855) 12 444 718
E-mail: WKillam@cdc.gov or imi5@cdc.gov.

Rangsima Lolekha

Centers for Disease Control and Prevention/
Global AIDS Programme/Thailand and Asia Regional Office
Ministry of Public Health
Muang, Nonthaburi 11000, Thailand
Tel: (6681) 842 1581
E-mail: RangsimaL@th.cdc.gov

Chin-Yih Ou

Centers for Disease Control and Prevention/
Global AIDS Programme
403 Dongwai Diplomatic Office Building
23, Dongzhimenwai Dajie, Chaoyang District
Beijing 100600, China
E-mail: chiyihou@gmail.com

Achara Teeraratkul

Chief, Strategic Information
Centers for Disease Control and Prevention/
Global AIDS Programme/Thailand and Asia Regional Office
Ministry of Public Health
Muang, Nonthaburi 11000, Thailand
Tel: (662) 263 2300
E-mail: hpr7@cdc.gov

Wendy Wei

Centers for Disease Control and Prevention/
Global AIDS Programme
403 Dongwai Diplomatic Office Building
23, Dongzhimenwai Dajie, Chaoyang District
Beijing 100600, China

5. SECRETARIAT

Xu Keyi

Director
WHO Collaborating Centre for Comprehensive Management
of HIV Treatment and Care
Beijing Ditan Hospital
No. 8 Jingshun Dongjie, Chaoyang District
Beijing 100015, China
Tel: (8613) 601070307
E-mail: xukeyi8567@sina.com

Ying-Ru Lo

Team Leader
HIV/AIDS and STI
WHO Regional Office for the Western Pacific
P.O. Box 2932
1000 Manila, Philippines
Tel: (632) 528 9714
Fax: (632) 521 1036
E-mail: loy@wpro.who.int

Rachel Baggaley

Coordinator
HIV Key Populations and Innovative Prevention
HIV Department
World Health Organization
1211 Geneva 27
Switzerland
Tel: (4122) 7913652
Fax: (4122) 791 1580
E-mail: baggaley@who.int

Oscar Barreneche

Medical Officer HIV/AIDS
WHO Indonesia
Gedung Dr. Adhyatma
Ministry of Health
Block A, 6th Floor, Room 602, Jl. HR Rasuna Said,
Blok X.5 Kav 4-9, Jakarta 12950, Indonesia
Tel: (62 21) 5204349 ext 848
E-mail: barrenecheo@who.int

Masami Fujita

Medical Officer, HIV/AIDS
WHO Cambodia
No. 177-179 corner Streets Pasteur (51) and 254
Sangkat Chak Tomouk, Khan Daun Penh,
Phnom Penh, Cambodia
Tel: (855) 23 216 610
Fax: (855) 23 216 211
E-mail: fujitam@wpro.who.int

Masaya Kato

Medical Officer
HIV Care and Treatment
WHO Viet Nam
63 Tran Hung Dao Street, Hoan Kiem District,
Hanoi, Viet Nam
T: (844) 3943 3846
F: (844) 3943 3740
E-mail: katom@wpro.who.int

Jadambaa Narantuya

National Professional Officer
WHO Mongolia
Ministry of Health
Government Building No. 8
Ulaanbaatar, Mongolia
Tel: (976) 11-327870
Fax: (976) 11-324683
E-mail: jadambaan@wpro.who.int

Fabian Ndenzako

Team Leader, HTM
WHO Papua New Guinea
4th Floor, AOPI CENTRE
Waigani Drive,
Port Moresby, Papua New Guinea
Tel: (675) 325-7827
Fax: (675) 325-0568
E-mail: ndenzakof@wpro.who.int

Dr Razia Narayan PENDSE

Scientist, HIV/AIDS
WHO Regional Office for South-East Asia
World Health House, Indraprastha Estate
Mahatma Gandhi Road
New Delhi 110002, India
Tel: (91) 112330 9632
Fax: (91) 11 2337 8412
E-mail: pendsera@who.int

Dominique Ricard

Medical Officer, HIV/AIDS and STI
WHO Lao People's Democratic Republic
Ban Phonxay, 23 Singha Road
Vientiane, Lao People's Democratic Republic
Tel: (856) 21 353 902
Fax: (856) 21 353 905
E-mail: ricardd@wpro.who.int

Madeline Salva

Medical Officer
HIV and STI
WHO South Pacific
Division of Pacific Technical Support (DPS)
4th Floor, Provident Plaza One Building
#33 Ellery St. Suva, Fiji
Tel: (679) 3234100
Fax: (679) 3234177
E-mail: salvam@wpro.who.int

Nicole Seguy

Technical Officer
HIV/AIDS and STI
WHO China
401, Dongwai Diplomatic Office Building
23, Dongzhimenwai Dajie, Chaoyang District
Beijing 100600, China
Tel: (8610) 6532 7190
Fax: (8610) 6532 2359
E-mail: seguyn@wpro.who.int

Mukta Sharma

Technical Officer HIV/AIDS, STIs and TB
WHO Thailand
4th Floor, Permanent Secretary Bld 3
Ministry of Public Health
Nonthaburi, Thailand
Tel: (662) 590 1524 – Ext – 24817
Fax: (662)591 8199
E-mail: sharmamu@who.int

Yu Dongbao

Epidemiologist
HIV/AIDS and STI
WHO Regional Office for the Western Pacific
P.O. Box 2932
1000 Manila, Philippines
Tel: (632) 528 9711
Fax: (632) 521 1036
E-mail: yud@wpro.who.int

Zhang Lan

National Technical Officer
HIV/AIDS Treatment and Care
WHO China
401 Dongwai Diplomatic Office Building
23, Dongzhimenwai Dajie, Chaoyang District
Beijing 100600, China
Tel: (8610) 6532 7189
Fax: (8610) 6532 2359
E-mail: zhangl@wpro.who.int



**World Health
Organization**

Western Pacific Region

www.wpro.who.int