Joint Rapid Assessment of HIV Treatment in Myanmar

Final Report

September 2013

Contents

Acronyms

3TC	Lamivudine
ANC	Antenatal Clinic
ART	Antiretroviral Therapy
AZT	Zidovudine
CMV	Cytomegalovirus
CBO	Community-Based Organization
CPT	Cotrimoxazole Preventive Therapy
CTX	Cotrimoxazole
D4T	Stavudine
DBS	Dried Blood Spot
EFV	Efavirenz
EID	Early Infant Diagnosis
EQA	External Quality Assurance
FSW	Female Sex Worker
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HBV	Hepatitis B Virus
HCT	HIV Counselling and Testing
HCV	Hepatitis C Virus
IPT	Isoniazid Preventive Therapy
M&E	Monitoring and Evaluation
MCH	Mother and Child Health
MDR-TB	Multi-Drug Resistant Tuberculosis
MMT	Methadone Maintenance Therapy
MSF	Médecins Sans Frontières
MSM	Men who have sex with men
NAP	National AIDS Programme
NGO	Non-Governmental Organization
NHL	National Health Laboratory
NSP	Myanmar National Strategic Plan on HIV and AIDS: 2011–2015
NTP	National Tuberculosis Programme
NVP	Nevirapine
OI	Opportunistic Infection
OPD	Out-Patient Department
PEPFAR	United States President's Emergency Plan for AIDS Relief
PI	Protease Inhibitor
PITC	Provider-Initiated Testing and Counselling
PLHIV	People Living with HIV
PMTCT	Prevention of Mother to Child Transmission of HIV
PWID	People who inject drugs
SHG	Self-Help Group
STD	Sexually Transmitted Disease
TB	Tuberculosis
TDF	Tenofovir
UNAIDS	Joint United Nations Programme on HIV/AIDS
VCCT	Voluntary Confidential HIV Counselling and Testing
WHO	World Health Organization

1 Acknowledgements

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We also wish to thank the staff of the National AIDS Programme and of the non-governmental and civil society organizations who helped facilitating the field visits and data collection on the ground.

This assessment constitutes a good example of effective interagency collaboration and coordination.

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2 Executive Summary

A joint assessment of HIV treatment in Myanmar was conducted in July 2013 in order to inform plans for scale-up and decentralization of antiretroviral therapy (ART) throughout the country. The specific aims of the independent review were to assess current practices in ART service provision, identify opportunities and constraints for the expansion and decentralization of ART, and formulate concrete recommendations for ART scale-up. This assessment was followed by a national consultation meeting convened by the National AIDS Programme (NAP) where the team presented recommendations based on its findings for moving forward as NAP and key stakeholders develop the road map for ART scale-up and decentralization.

A team of national and international experts on HIV care and treatment visited public health facilities, international non-governmental organizations (NGOs) and local NGOs delivering ART and ART-related services in eight states/regions. Observations and findings from the site visits were compiled by four regional teams as well as team members who visited sites in Yangon. These observations and findings were organized by specific focal areas included in the assessment; following are the major findings related to the recommendations presented at the national consultation meeting.

NAP has made a strong commitment to expand ART throughout the country, by scaling up the number of ART service delivery sites and decentralizing ART-related services to reach more patients in peripheral and remote areas. Health care providers at the sites visited are also committed to the expansion of ART and are receptive to new evidence and interventions to strengthen the provision of high quality HIV services.

HIV counselling and testing (HCT) is conducted as a multi-step, multi-day process that creates significant barriers for individuals seeking to know their HIV status and delays in detecting many who are HIV-positive. Many sites describe the services offered as 'voluntary confidential HIV counselling and testing' (VCCT) and would find challenges in moving towards more streamlined 'provider-initiated testing and counselling' (PITC) services. HCT was not observed to be routinely available at antenatal care (ANC) and tuberculosis (TB) services where many patients who may be infected with HIV seek care. HCT was also not available at key locations accessed by individuals known to be at high risk for HIV infection such as drop-in-centres for key populations, specifically people who inject drugs (PWID), female sex workers (FSW), and men who have sex with men (MSM).

Determining eligibility for ART is a multi-step process, which was unnecessarily prolonged at most visited sites, creating substantial additional out-of-pocket costs for patients. It is also a significant driver of high loss to follow-up after HIV diagnosis and the failure to enrol in ART services. Most patients have very low CD4 counts at the time of diagnosis and thus at ART initiation. Quotas for drugs for both adults and children in some sites limit ART access and delay ART initiation.

Staff delivering HIV care and ART are often over-extended, and the current practice of conducting the ART Clinic once per week at most sites is inadequate to meet the current volume of patients. As ART is scaled-up to more service delivery sites and stable patients are

managed at decentralized sites, both to decongest primary ART clinics and to expand services to peripheral and remote areas, shifting and delegating duties to nurses and lay persons can overcome human resource shortages and contribute to patient retention in care and the management of HIV as a chronic condition.

The country has eight first-line ART regimens; this is unnecessarily complex and creates challenges for supply chain management. Different providers order their own stocks, which limits the chance for significant bulk procurement. It may additionally complicate transfer of patients between ART service providers. Two current regimens include stavudine (d4T), which was used by almost half of patients on treatment at end of 2012; phasing out of d4T-based regimens has begun at some sites. Prescription of tenofovir (TDF)-based regimens accounts for only nine per cent of first-line regimens in the public sector; nevirapine (NVP) is more widely used than efavirenz (EFV). Second-line ART use is very limited.

HCT is routinely offered to pregnant women at ANC, but the uptake is widely variable from site to site. Option A remains the current practice for pregnant women who have a CD4 >350. Couples counselling and HIV testing of partners and children of HIV-positive women are not routinely conducted. Early infant diagnosis (EID) is not currently available outside of a handful of clinics, and there is no systematic follow-up of HIV-exposed infants.

Many sites visited reported both high rates of TB screening among HIV-positive patients and HIV screening among TB-infected patients, indicating close clinical and programmatic coordination between the National TB Programme (NTP) services and ART clinics. Screening for multi-drug resistant TB (MDR-TB) is only carried out at a few sites. TB infection control practices vary among the sites and in general, there is a need to improve implementation of these practices.

High quality laboratory services were observed at most of the sites visited. There is variability, however, in observed practice in both baseline and monitoring of patients on ART, and limited laboratory diagnostics for opportunistic infections. A National Laboratory Strategic Plan to support ART scale-up and decentralization is needed. External quality assurance (EQA) for HIV testing, CD4 testing and other HIV-related tests and standard operating procedures to standardize processes such as specimen transport are not currently available.

Several sites reported delays in procurement of HIV test kits, ARV drugs and other HIV-related drugs and commodities. Insufficient pharmacy staff is a major constraint to the effective management of stocks and dispensing of drugs at many ART service delivery sites. With ART scale-up and decentralization to more sites and less accessible locations, identifying additional bottlenecks and weak links in the supply chain management system at all levels is needed to optimize the availability of drugs and commodities where and when they are needed.

While NAP monitoring and reporting forms are used by both NAP and INGO partners delivering ART, NGO partners use different forms for patient care and treatment and reporting to central offices and donors. The variety of recording and reporting systems is an obstacle to programme monitoring and data use for decision-making and quality

improvement. There is no single unique patient identification numbering system for any patient group in Myanmar, limiting transfer between ART or HIV care sites and service providers; double counting may also be happening. In addition, multiple identification numbers are assigned to the same person accessing different services at a health facility, preventing an interlinked monitoring system and hindering coordination of patient care. The number of data clerks and monitoring and evaluation (M&E) staff is insufficient; the data collected were rarely analysed and used for quality improvement or monitoring performance.

At most sites, self-help groups (SHG) for people living with HIV (PLHIV) were active, engaged in a wide range of facility- and community-based peer support activities. Key populations with high HIV incidence and prevalence identified a preference for accessing health services at NGO sites; self-stigma can be high with individuals identifying as "general population" when seeking services at public sites. There is limited promotion and uptake of HIV counselling and testing in harm reduction and health services for PWID and few community-based services that target their needs. MSM have stronger networks in some regions and access drop-in centres where they exist. FSW tend to be more mobile which contributes to difficulty in tracking and high rates of defaulting among those who are HIV-positive. However, these networks often have limited contact with HIV care and ART service providers.

From the team's observations and findings, a series of recommendations emerged:

1. Rapidly scale up simplified HCT services
2. Streamline patient enrolment into ART
3. Simplify and standardize ART treatment regimens for older children, adolescents, adults and pregnant women
4. Expand ART eligibility criteria
5. Rapidly evaluate decentralization service delivery model, expand and supportively supervise ART decentralization
6. Strengthen key laboratory services to support the scale-up of HCT, ART and decentralization
7. Harmonize programme monitoring ("The Three Ones") and mandate that all HIV programme sites collect and report on simple core process indicators
8. Mobilize communities by engaging PLHIV and their affected families and communities in outreach, demand creation, delivery and evaluation of HIV care and treatment.

The team also identified issues that cut across the focal areas included in the assessment. They are pertinent in planning and implementing strategies to achieve ART targets set for 2016 and beyond:

1. Expand and build the capacity of human resources to scale up and decentralize ART

2. Invest in supply chain management through high functioning systems for forecasting, procurement, storage, distribution and monitoring of drugs and commodities at all levels
3. Assure high quality and long-term sustainability of HIV care and treatment through continuous quality improvement and operations research
4. Strengthen integration and coordination across Ministries and among partners at local, regional/state and national levels to optimize the efficient delivery of services
5. Promote equity through strengthened HIV services to key populations and increased coverage in remote rural areas.

The recommendations and cross-cutting issues are presented by the Joint Assessment team to facilitate achievement of the targets for ART scale-up, promote implementation of the decentralization plan and support efforts by NAP and key stakeholders to improve the quality of HIV service delivery in Myanmar.

3 Background and Context for the Assessment

The National AIDS Programme (NAP) began delivering antiretroviral therapy (ART) in Myanmar in 2005, following the small-scale introduction of HIV treatment by *Médecins Sans Frontières* (MSF)-Holland at the Specialist Hospital Waibagi in Yangon in 2003. A decade later, in 2013, ART is being provided at 36 hospitals throughout the country under the NAP's leadership and supervision. NAP, in partnership with the International Union Against Tuberculosis and Lung Disease (the Union), also supports HIV care and treatment at 12 'Integrated HIV Care Programme' sites. NGO partners of NAP are also providing ART at 55 additional sites. This expansion of ART reflects NAP's commitment to provide life-saving treatment to individuals living with HIV in the country.

The *Myanmar National Strategic Plan on HIV and AIDS: 2011–2015* (NSP)[1] defines objectives and targets for greatly expanding access to ART; the initial target for the end of 2013 was to have 60,618 individuals in need of treatment started on ART, to achieve 49 per cent coverage. A subsequent amendment defined an ambitious new target for 2016: to reach 85 per cent of those in need of ART (a total of 106,058 individuals); currently, the threshold for ART eligibility is CD4 count below 350 cells/mm³. This represents a scale-up of ART of close to 45 per cent in patient numbers over a three-year period, on top of the already fast scale-up being achieved by NAP in 2012 and 2013.

To scale up the provision of ART and achieve this target, NAP is implementing a dual approach. First, uptake will be increased at existing ART sites through availability of more treatment slots beyond current quota limitations; and second, to establish new sites that will provide ART based on geographical location of those in need. The plan is to establish 24 new ART sites, including 17 hospital-based facilities and seven AIDS/STD Team sites, to reach a total of 72 primary ART centres by 2015.

A core principle of the scale-up of ART delivery in Myanmar is to decentralize HIV care and treatment to the township and peripheral levels and thereby bring services closer to patients. This approach is intended to improve access to care while also decongesting the main ART sites by transferring stable patients to township sites for ongoing management while providing supervision to ensure quality of care. The primary ART centres will also retain responsibility for managing complex health conditions including treatment failure. The decentralization process began in 2012 with the creation of seven sites and is projected to reach 101 sites by 2015.

A prerequisite for the scale-up of ART in Myanmar is the need to identify larger numbers of individuals with HIV infection. The expansion of HIV Counselling and Testing (HCT) and evolution from a traditional 'voluntary confidential HIV counselling and testing' (VCCT) approach to a more active 'Provider-Initiated Testing and Counselling' (PITC) model is an essential component of NAP's plan to reach 85 per cent of those in need of ART through scaling-up and decentralization of treatment-related services.

[1] National AIDS Programme, Ministry of Health. Myanmar National Strategic Plan & Operational Plan on HIV and AIDS: 2011–2015. 2010.

Modelling using the Asian Epidemiological Model with estimate refinements using the Estimation and Projection Package and Spectrum provide HIV estimations and projections for Myanmar between 2010–2015, with HIV prevalence in the adult population (aged 15 and over) at 0.47 per cent[2]; 59 per cent are male and 41 per cent female. A major challenge for ART delivery scale-up is to reach key populations with high concentrations of HIV infection: HSS 2012 found HIV prevalence at 18 per cent for People Who Inject Drugs (PWID), 8.9 per cent for Men Who Have Sex with Men (MSM), and 7.1 per cent for Female Sex Workers (FSW).[3] Of prevalent new infections in the same year, 21 per cent were estimated to be from needles sharing among people who inject drugs, 20 per cent through unprotected sex work, 14 per cent through unprotected sex among MSM and 6 per cent from mother to child transmission. The remaining 39 per cent of new infections were due to sexual transmission occurring among low risk women and men.[4]

Results from the Spectrum estimated 120,000 adults eligible for treatment in 2012. At the end of 2012, there were 53,709 individuals on ART (56 per cent female, 34 per cent male and 43 per cent overall coverage including adults and children) at 110 ART centres (48 public and 62 private/NGO) including 7 decentralized sites throughout the country. Coverage by the end of 2013 is expected to be 48.5 per cent, with 60,618 on ART.

As Myanmar moves forward with the implementation plan to reach its targets, the recently awarded Global Fund for AIDS, TB and Malaria (GFATM) grant under the New Funding Model (2013–2016) provides vital momentum by increasing the resources available to support expanded service coverage for ARV treatment, HCT and prevention services for key populations. Along with rising government funding for HIV care and treatment, the grant will support achievement of greater gains towards the national targets.

In the context of expansion plans for wide coverage of ART and the resources available through GFATM, NAP and the Ministry of Health with support from World Health Organization (WHO), the Joint United Nations Programme on AIDS (UNAIDS), Save the Children and United States President's Emergency Plan for AIDS Relief (PEPFAR) and with involvement of the implementing partners, decided to undertake an assessment by an independent team of international experts to inform a road map for the accelerated expansion of ART in Myanmar.

The Joint Assessment was charged with documenting current best practices in delivering ART, reporting on barriers to further expanding ART coverage, and presenting recommendations for moving forward in the context of the strategic use and scale-up of ART in the country. Additional context for the assessment team includes initial plans for restructuring state and regional health services "decentralization plan" for ART scale-up.

A national consultation meeting of stakeholders would be convened by NAP at the end of the review to present the team's recommendations and establish the way forward for

[2] HIV Estimates and Projections, Asian Epidemiological Model, Myanmar 2010–2015. Strategic Information and M&E Working Group, Technical and Strategy Group on AIDS, March 2012.
[3] National AIDS Programme, Ministry of Health. HIV Sentinel Sero-Surveillance Survey Report. 2013.
[4] HIV Estimates and Projections, Asian Epidemiological Model, Myanmar 2010–2015. Strategic Information and M&E Working Group, Technical and Strategy Group on AIDS, March 2012.

finalizing the national road map for expanding ART services. This final report summarizes the key findings and recommendations for moving forward. Findings and recommendations from the assessment are expected to inform the mid-term review of the NSP in 2013.

The objectives of the joint assessment were to:

- Review current practices in ART service provision, including the quality of existing services and support to people living with HIV (PLHIV) throughout the continuum of care.
- Identify opportunities and constraints for the expansion and decentralization of ART service provision, particularly in the context of Treatment 2.0 and the scale-up plan envisioned with GFATM resources.
- Formulate concrete recommendations for ART scale-up.

4 Methodology

The joint assessment was conducted from 7 to 21 July 2013. Fifteen individuals representing WHO, UNAIDS, Save the Children and PEPFAR included national and international experts on HIV care and treatment. Published literature and available HIV-related data were collected and made available for the team members' review prior to the in-country assessment. Preparation for field visits to multiple sites in eight states/regions involved the close collaboration and planning of NAP, state/regional health offices and the organizing partners. Transportation and other logistics were finalized prior to the arrival in country of the team members.

Once the team convened in country, Dr. Myint Shwe, National Programme Manager, and Dr. Htun Nyunt Oo, Assistant Director (Care and Support), NAP, provided an initial briefing by reviewing the historical background of ART provision in Myanmar and key elements of its scale-up and decentralization plans.

The full team divided into four smaller teams to visit different regions of the country (Annex A and Annex B). At each location, the teams visited different types of sites including public health facilities, international and local non-governmental organizations (NGO) delivering ART and ART-related services.

Four tools were developed to correspond to the different types of sites scheduled to be visited:

- Tool A: State/Region/District/Township Health Office
- Tool B: ART Service Delivery
- Tool C: Other HIV Services (non-ART)
- Tool D: PLHIV Network or Self-Help Group

One member of each team served as rapporteur, synthesizing the team members' observations and findings into a consolidated version of the tool appropriate for each site. The composite was intended to report the team's consensus on responses, information, observations and comments into one copy of the relevant tool and include divergence in views as well. A summary of key observations and findings was also prepared by each team.

Following the regional field visits, the team re-assembled and conducted additional visits to ART delivery sites and other related service providers in Yangon.

The regional teams presented key observations and findings to the entire assessment team as the basis for drafting recommendations on the way forward for the scale-up and decentralization of ART in Myanmar. The recommendations were first presented at a meeting with NAP authorities for their review on 17 July 2013, followed by a stakeholders' dissemination meeting on 18 July 2013, that drew over 100 representatives from a wide range of regions and service delivery sites. This report incorporates the findings and recommendations presented during these consultations.

5 Findings

The key observations and findings of the regional teams are organized by specific focal areas included in the assessment.

5.1 HIV Counselling and Testing (HCT)

Many opportunities exist for expanding HCT and increasing the identification of HIV-positive individuals in need of care and treatment throughout the country.

- All regional teams identified the multi-step, multi-day process currently used in many sites conducting HCT as inefficient and a significant cause of delay in detecting many who are HIV-infected.
  - With pre-counselling provided on one day, followed by venepuncture and the sample conveyed to a laboratory for testing, the patient either waits until laboratory processing is completed or returns on another day for the result. Confirmatory testing is conducted at a separate site, usually by the AIDS/STD Team, and requires a return visit for the result. For those testing positive, pre-registration at an ART Centre occurs on yet another day.
  - Consequences of this laborious process include costs to the patient in transport and waiting time for multiple visits to testing sites and sometimes include the need for overnight temporary accommodations; this burden discourages many from seeking services, contributes to lost-to-follow-up and seriously hinders the scale-up of HCT. Same-day finger stick rapid HIV testing technology by trained nurses and/or lay persons offers a viable and reliable alternative.

- In an apparent effort to ensure that the process is voluntary and confidential, HCT sites are using VCCT as the primary approach rather than a more proactive PITC or opt-out approach, as recommended by WHO.[5]
  - Antenatal care (ANC) clinics at all sites visited offer HCT to pregnant women, but the uptake is variable. Data at the ANC at one public hospital indicated that only 49 per cent of pregnant women agreed to test in 2012. Other sites reported that 100 per cent of women are tested. In one region, the uptake for ANC patients at community sites using a VCCT approach that refers to a facility for testing is 40–60 per cent. Standardizing procedures that include counselling on the benefits of testing and early HIV diagnosis for mother and child and rapid results for immediate referral to ART services can achieve more consistently high uptake among pregnant women.
  - HCT was not observed at all National TB Programme (NTP) services, TB distribution sites or Methadone Maintenance Therapy (MMT) sites, which are key locations for the identification of individuals who are known to be at high risk for HIV infection. Where TB providers offered HIV pre-test counselling, patients had to go to a nearby facility for the HIV test. The integration of HCT as a routine service at these sites expands opportunities for HIV diagnosis.
  - Hospital inpatient wards offer another opportunity for identifying HIV infection. Although testing of patients hospitalized with a suspected opportunistic infection

[5] Service delivery approaches to HIV testing and counselling (HTC): A strategic policy framework. World Health Organization, Geneva. June 2012.

(OI) was reported, at no site was PITC observed as a routine procedure conducted on adult or paediatric wards. Opt-out HIV testing at the bedside is an evidence-based approach to identify HIV infection in individuals hospitalized with a suspected opportunistic infection.[6]

- Community-based sites represent another location for ongoing delivery of HCT. Drop-in-centres are gathering sites for high risk populations; the current practice of referring to NAP facilities for HCT creates a major barrier for clients who are reluctant to seek hospital-based services out of fear of disclosure of their status as PWID, MSM or FSW and possible HIV infection diagnosis.
- The provision of mobile services as another approach for expanded HCT, particularly in remote areas, was not identified during the course of the assessment.

- There was generally low and disappointing promotion and uptake of couple counselling. Reasons for the limited use of couple counselling are several: a VCCT approach, lack of understanding the benefits of ART for an individual and to reduce transmission in serodiscordant couples, the high likelihood of an index patient having a positive spouse or infected children, limited training and few incentives.

> ***Effective Practice:***
> The high acceptance of partner and children testing at an INGO facility with a high volume of HIV patients provides a model for other ART sites seeking to expand family-based HCT and earlier identification of HIV-positive individuals. The site actively promotes and pursues couple counselling—with dramatic success: almost all pre-ART patients (with high CD4 counts) were identified by regularly and routinely asking every female and male patient about their regular partner and following up with an offer of HIV testing. Few refused.

- The shortage, and at some NAP sites, stock-out, of HIV test kits was identified as a major barrier to HCT expansion. One government hospital, for example, reported insufficient test kits for prevention of mother to child transmission (PMTCT), usually for the initial test, Determine. The TB Team and the AIDS/STD Team in the region where the hospital is located noted that frequent shortages of test kits are being managed by local procurement, which is not sustainable, and that the shortages seriously hamper programme functioning.

- Different identification numbers are assigned to a client during the course of HCT and referral to ART pre-enrolment, preventing the integrated follow-up of health care services:
  - One code is provided during pre-test counselling where information on demographics, risk assessment and partner status are documented.
  - Another number is assigned for sample testing sent to the laboratory that is logged in a book with the test results, but not linked to the initial client documentation.

[6] Wanyemze RK, Nawavvu C, Namale AE, *et al*. Acceptability of routine HIV counselling and testing, and HIV seroprevalence in Ugandan hospitals. B World Health Organ. 2008 Apr;86(4):302-9.

- For the client referred for ART services, another code is given for pre-ART registration, followed by a separate code when the individual is initiated on ART.
- If the patient is also TB co-infected, s/he is given a different number for TB services.

- In all regions visited, HIV prevention messages have limited visibility at health facilities and community sites. A small NGO serving key populations does conduct anti-drug education in schools that includes HIV transmission risks, but there was little evidence of education targeting the general community on prevention of sexual transmission of HIV, the benefits of early HIV testing and access to care and treatment, and limited availability of HIV-focused materials.

5.2 Antiretroviral Therapy (ART) Service Provision

The potential exists for scaling up HIV services to reach many more in need of care and treatment. Modifying current procedures and adapting new approaches can streamline the enrolment and initiation of patients in ART and enhance their long-term follow-up and the management of HIV as a chronic condition, thereby optimizing health outcomes.

- At the sites visited, health care providers are knowledgeable about ART and follow current national guidelines in the delivery of HIV treatment.

- Comparable to HCT, determining eligibility for ART is a multi-step, multi-day process that can take between two to six weeks, or longer, before an individual is initiated on treatment.
  - At most sites, three adherence counselling sessions are scheduled on different days, after which an ART Selection Committee decides whether an individual can start ART. This prolonged process creates substantial transport and opportunity costs for patients, an established cause of patient defaulting from care prior to ART initiation.[7]
    - Streamlining this process results in more rapid initiation of patients on ART. At a high volume ART site that does not include a Selection Committee review in its initiation process, for example, patients are generally started on ART within two weeks of enrolment at the ART Clinic.

- During the ART eligibility determination process, variable criteria are used at different sites, including staging, baseline laboratory and radiologic investigations, assessment of readiness to adhere, and minimum residency requirement.

- NGOs covering transport costs as well as food and lodging for patients residing at a distance from the ART site help overcome these barriers to accessing ART. Patients not linked with an INGO and local NGO lack such benefits, creating inequity in service provision for clients. There is also the issue of the sustainability of such benefits as the public sector expands HIV care and treatment throughout the country.

[7] Govindasamy D, Ford N, Kranzer K. Risk factors, barriers and facilitators for linkage to antiretroviral therapy care; a systematic review. AIDS. 2012 Oct 23;26(16):2059-67.

- There is wide provision of cotrimoxazole (CTX) for adult and infant/paediatric prophylaxis (and appropriate formulations and doses). This is provided both pre-ART and during ART; it is not clear when best to stop and some sites just continue CTX. There is less widespread use of isoniazid preventive therapy (IPT): while some sites have this available in the ART centre itself (like CTX), in others it is kept by the TB services and thus much less likely to be prescribed.

- Low CD4 at ART initiation is associated with lower rates of treatment success and higher mortality.[8] There is very limited impact of ART on reducing onward HIV transmission at a population level if it is initiated at such a late stage. Very low median CD4 counts at ART initiation were reported at most ART sites despite an ART initiation criterion set at <350 CD4 level in Myanmar. For example, the median CD4 at initiation was reported being between 70 and 100 at one public hospital and below 100 at an INGO-supported hospital.
  - Health care providers noted that individuals present late for HCT and enrolment in ART when they lack knowledge about treatment availability, face barriers in accessing delivery sites and when a limited supply of ARV drugs exists at these sites.
  - The converse is also true: individuals will seek services when they know ARV drugs are available and when they receive support for transport costs.

- Significantly restricted quotas for ARV drugs for both adults and children limit ART access for eligible patients, resulting in long waiting lists and placing patients at risk of further clinical and immunological decline, with some dying while waiting for ART.
  - For patients on a waiting list, initiation can be even longer to access treatment due to the limited availability of ARV drugs; in one state, for example, a few individuals were reported to have been on the waiting list for almost two years.
  - Without systematic follow-up of patients on waiting lists, it is currently not possible to identify those whose health has declined since the initial assessment and who have a priority need to start treatment.
  - At some sites, NGOs provide additional ARV drugs for those on waiting lists; for example, an international NGO recently provided ARV drugs for 40 adults on the waiting list at a public hospital.
  - With the current waiting list of ART eligible patients estimated at 6,500–8,000 nation-wide, the differential between the current number on ART (53,709) and the 2013 target on treatment (60,628) accounts only for the absorption of waiting list patients and very few newly diagnosed and ART-eligible patients.

- At most delivery sites, ART clinics are held once per week. At a decentralized site, one half-day clinic is provided for ART patients. The specialist ART clinic at a government hospital in another region is held only once per month, while patients can access care at the general medical outpatient department (OPD) that is held

[8] Braitstein P, Brinkhof MW, Dabis F, *et al*. Antiretroviral therapy in lower income countries (ART-LINC) Collaboration; ART Cohort Collaboration (ART-CC) Groups. Mortality of HIV-1-infected patients in the first year of antiretroviral therapy: comparison between low-income and high-income countries. Lancet. 2006 Mar 11;367(9513):817-24.

daily. NAP health workers and community representatives in this region expressed the need for at least twice a month specialist ART clinics.

- While at most sites, ART clinics are held within OPD, HIV services that are provided in a separate clinic on a specific day and not as fully integrated services within OPD.
  - At a decentralized ART Site, ART patient management has not been integrated within its daily clinic activities. Health care providers cited concern about cross-infection from non-HIV patients.
- The limited opportunity for ART initiation and consultation creates long waiting times for scheduled patients. Triaging the most ill patients was not routinely observed at the sites visited.
- Most sites report high adherence and few defaulters on ART. If a patient does not present for a scheduled visit, the medical social worker on the ART Clinic team and/or the PLHIV self-help group (SHG) at the site follows up by telephoning (if telephone contact is available) or visiting the individual's home. The primary reason for loss-to-follow-up is believed to be migration from the region; without a unique patient identification system, tracing is not feasible.

Effective Practice:

At a hospital with a high volume of HIV patients, the follow-up system to retain patients on ART and monitor their adherence to treatment includes several effective procedures, including:

- A red flag for any patient missing a scheduled clinic appointment is noted in the ART register;
- Designated staff follow up on this alert system;
- Patients who miss clinic visits are contacted by mobile phone and/or visit to their home to discover the reason for the missed visit, identify adherence issues, re-schedule the appointment and help the individual adhere to the clinic visit.

The system rapidly identifies and contacts patients who do not keep clinic appointments and re-engages them before they are lost-to-follow-up.

- Human resources delivering HIV care and ART are fully utilized during existing clinic hours. Providers at all sites expressed the need for more physicians, nurses, medical social workers, data entry assistants and pharmacists trained on ART to provide quality services to existing patients.
  - To realize the proposed scale-up of ART, additional human resources are needed in all cadres.
    - Task shifting to nurses and lay persons is an approach strongly supported by published research and recommended by WHO as a way to overcome human resources shortages and was observed to be practised in some sites to good effect (e.g., nurse management of patients stable on ART at an INGO-supported hospital).[9] With requisite training and ongoing mentoring and supportive supervision, task shifting can increase resources needed for

[9] Shumbusho F, van Griensven J, Lowrance D, *et al*. Task shifting for scale-up of HIV care: evaluation of nurse-centered antiretroviral treatment at rural health centers in Rwanda. PloS Med 2009;6(10):e1000163. Doi:10:1371/journal.pmed.1000163.

expansion of finger prick rapid HCT and the management of patients who are stable on ART.

- Planning is necessary to avoid further overload on existing staff, notably midwives at peripheral sites.
  - At some sites, human resources practices were cited as causing discontinuity in service delivery; for example, the three-month rotation of nurses, technicians and other support staff that requires numerous trainings, resulting in frequent absences of staff from ART clinics and disruption in the delivery of chronic HIV care.

- The current guidelines for ARV treatment include eight first-line regimens.
  - Of these, both stavudine (d4T)-based regimens are to be phased out by 2015. According to a NAP communication, no newly initiated patients are to be prescribed d4T.
    - Data from NAP-supported ART centres reveal that 42.6 per cent of patients remain on d4T-based regimens at the end of 2012.[10] Sizeable numbers exist at specific sites; for example, over 400 patients are reported to be on these regimens at one INGO-supported hospital. Integrated HIV care centres reported 39 per cent of patients on d4T-based regimens.
    - Most sites are transitioning patients who are currently on d4T to another regimen as stocks of d4T are depleted. One high volume INGO site is transitioning 40 patients a month to a tenofovir (TDF)-based regimen.
    - In Myanmar, the current protocol for phasing out d4T requires viral load testing before transitioning to a TDF-based regimen. This protocol is not considered necessary by WHO within a public health approach. Studies have shown that where switching from d4T occurs in the absence of viral load, TDF is preferred over zidovudine (AZT).[11]

  - Prescription of TDF-based regimens is low, accounting for only 8.9 per cent of first-line regimen in the public sector and 17.1 per cent in the private sector at the end of 2012. A preference persists for using AZT over TDF-based regimens as well as nevirapine (NVP) over efavirenz (EFV), despite TDF and EFV having superior safety and efficacy profiles.[12]

[10] Nyunt Oo H. Provision of Care and Support. Power Point Presentation at the Annual Review Meeting, National AIDS Programme. 21 March 2013.

[11] Tang MW, Rhee SY, Bertagnolio S, *et al*. Nucleoside reverse transcriptase inhibitor resistance mutations associated with first-line stavudine-containing antiretroviral therapy: programmatic implications for countries phasing out stavudine. J Infect Dis. 2013 Jun 15;207 Suppl 2:S70-7.

[12] Pillay P, Ford N, Shubber Z, Ferrand RA. Outcomes for efavirenz versus nevirapine-containing regimens for treatment of HIV-1 infection: A systematic review and meta-analysis. PloS One. 2013 Jul 22;8(7):e68995. (EFV vs NVP efficacy)

Shubber Z, Calmy A, Andrieux-Meyer I, *et al*. Adverse events associated with nevirapine and efavirenz-based first-line antiretroviral therapy: a systematic review and meta-analysis. AIDS. 2013. 27:1403-12. (EFV vs NVP safety)

Spaulding A, Rutherford GW, Siegfried N. Tenofovir or zidovudine in three-drug combination therapy with one nucleoside reverse transcriptase inhibitor and one non-nucleoside reverse transcriptase inhibitor for initial treatment of HIV infection in antiretroviral-naïve individuals. Cochrane Database Syst Rev. 2010 Oct 6;(10):CD008740.doi:10.1002/14651858.CD008740. (TDF vs AZT efficacy)

- At some sites, provider reluctance to change to a TDF-based regimen is based on concern for possible renal function effects associated with TDF and a preference for AZT.

- Second-line regimen use is limited (approximately three per cent), with TDF plus lopinavir/ritonavir being the most frequently prescribed. Some facilities do not have stock for a second line ARV regimen on-site.
  - ART centres use viral load testing for suspected treatment failure when a viral load testing site is located nearby but not when viral load testing is not accessible or when switching patients to second line ART.
  - ART sites have limited knowledge of how well clinical and immunological monitoring performs against viral load monitoring, and how simple clinical/CD4 protocols can be designed to identify failing patients with a high degree of confidence. Viral load monitoring is not cost effective in low-income settings and the high additional costs of establishing a network of viral load services are better used on ARV purchase in the short to medium term.
  - Providers report high patient adherence to ARV drugs and little evidence of immunological decline among patients on first-line regimens; however, adherence was not routinely documented, and this observation could not be verified.

5.3 Prevention of Mother to Child Transmission (PMTCT)

Identifying HIV infection among women at ANC is a crucial approach for increased HIV case finding, among pregnant women as well as their partners and children.

- As reported previously, HCT is routinely offered to pregnant women attending ANC at many sites visited during the joint assessment, but the uptake differs widely from site to site.
  - Pre-test counselling that emphasizes the benefits of knowing test results, opt-out or PITC would contribute to higher uptake than the VCCT approach currently favoured.

- Tracking pregnant women through mother and child health (MCH) services to the ART clinic is hindered by the multiplicity of patient identification numbers in use. For example, a specific patient identification code is assigned to pregnant women at MCH, another for HCT in ANC, and another for HIV-positive women who are referred for enrolment at the ART clinic. Registers within MCH, including HCT for ANC, HCT

Velen K, Lewis JJ, Charalambous S, *et al*. Comparison of tenofovir, zidovudine, or stavudine as part of first-line antiretroviral therapy in a resource-limited setting: a cohort study. PloS One. 2013 May 14;8(5):e64459. (TDF vs AZT safety)

Njuguna C, Orrell C, Kaplan R, *et al*. Rates of switching antiretroviral drugs in a primary care service in South Africa before and after introduction of tenofovir. PloS One. 2013 May 22;8(5):e63596. (TDF vs AZT safety)

Bygrave H, Ford N, van Cutsem G, *et al*. Implementing a tenofovir-based first-line regimen in rural Lesotho: clinical outcomes and toxicities after two years. J Acquir Immune Defic Syndr. 2011 Mar 1;56(3):e75-8. (TDF vs AZT safety)

for labour and delivery and post-natal care lack standardization, resulting in problematic data extraction and analysis.

Effective Practice:
At one government hospital, the excellent transition of pregnant women from HCT in ANC to HIV care and treatment is achieved through the accompaniment of all referred to the ART Clinic by the nurse who performed the HCT. This practice facilitates introduction to the ART Clinic and transition from MCH after the HIV positive diagnosis to the new locus of care.

- Data on HIV testing of partners and children of HIV-positive pregnant women is lacking.

- Syphilis testing is routinely conducted for pregnant women through MCH but is not recorded in PMTCT registers.

- For pregnant women who are not eligible for ART (CD4 >350), the current protocol and practice implemented at sites visited is AZT during gestation, single dose NVP and AZT/lamivudine (3TC) during labour, and AZT/3TC through seven days postpartum (Option A). The latest WHO guidelines recommend that countries move away from Option A to a triple-drug regimen regardless of CD4 level.

- NGO ART sites do not provide PMTCT services, but refer pregnant HIV-positive women to nearby NAP sites. These sites provide ARV drugs for those eligible for treatment, but do not follow-up with pregnant women who are not eligible for ART.
  - Reproductive health services, including family planning, are not available at most NGO sites; infant feeding counselling is also not provided.

- Early infant diagnosis (EID) is not currently available at most of the sites visited. HIV-exposed infants are tested for HIV at nine months or at 18 months at some sites.
  - There is no systematic follow-up of HIV-exposed infants.

5.4 Paediatric ART

Several opportunities exist for increased case finding of HIV-infected infants and children: the systematic follow-up of HIV-exposed infants after birth; the testing of all children of pregnant women diagnosed as HIV-positive in MCH; the testing of children hospitalized with a suspected opportunistic infection and a family history of HIV.

- At all NAP sites visited, HIV-positive mothers are followed at the ART clinic and HIV diagnosed children by the paediatrician at OPD on separate days. The lack of care coordination necessitates multiple trips to the facility and additional transport costs incurred by the patients.
  - A family-centred approach to care is a viable option since both the ART clinic and paediatric services are based in OPD and coordination of care can be provided through a multidisciplinary team of providers from both, including medical social workers and PLHIV SHG members.

- At all NAP sites a quota exists for ARV drugs for children as well as a waiting list of children eligible for ART. At some locations, INGOs provide additional ARV drugs for those waiting for ART, but at no site was this sufficient for all those on the lists.
  - At one public hospital with an ARV drug quota of 20 children, 18 children are currently receiving ART—ten with drugs from NAP and eight with drugs supplied by an INGO; 20 additional eligible children are currently on the waiting list.

- When stock-outs of paediatric ARV formulations occur, paediatricians report scoring adult doses and for syrups, dissolving the tablets in liquid.

5.5 TB-HIV Services

TB is the most common OI diagnosed in HIV-infected patients in Myanmar. A prevalence of HIV infection exceeding 10 per cent has also been reported for newly diagnosed TB patients.[13] Good health outcomes for TB/HIV co-infection require consistently high quality screening, diagnosis and management of both TB and HIV infections.

- At sites reporting high rates of TB screening among HIV-positive patients and HIV screening among TB-infected patients, regular, close clinical and programmatic coordination between the NTP services and the ART clinic on-site was observed.

- In the public sector, TB screening is available through hospital-based TB services; for clients of AIDS/STD teams, HIV-infected clients suspected of TB are referred to the NTP for TB screening. Some partners reported that TB screening can be a long process, up to 4–5 days, with associated costs to the patient for return visits to the facility.
  - INGO partners in most regions visited refer HIV-positive patients to NTP for TB screening. Some partners, such as Population Services International, work in collaboration with NTP to provide TB services through, for example, the Sun Clinics, which are available throughout the country.

> ***Effective Practice:***
> Good collaboration and coordination were reported by the AIDS/STD and TB Teams in one region. TB-HIV collaboration was systematically developed in 2012. Quarterly joint programme meetings are held and an HIV-TB Committee functions at the township level comprising clinicians, administrators and INGO representatives. Cross-referrals and feedback are some of the key issues discussed during the joint meetings.

- HIV screening of TB-infected patients is variable. At some sites, the uptake is over 80–90 per cent, with more than 50 per cent testing HIV positive; others report that few are screened and even fewer diagnosed TB/HIV co-infected.

- Screening for multidrug resistant (MDR)-TB is not routinely conducted at all sites visited; where feasible, suspected cases are referred to the closest facility with

[13] National Tuberculosis Programme, Ministry of Health. Nationwide Scale-up Plan for TB/HIV Collaborative Activities 2012–2015; Supplement to the Five Year National Strategic Plan for Tuberculosis Control (2011–2015). 2012.

capacity for diagnosis and management, resulting in patient loss and the potential for increasing the forward transmission of MDR-TB.

- Where GeneXpert testing is available, culture and sensitivity is additionally required after testing and prior to initiation of MDR treatment. Since only one drug regimen for MDR-TB is available, this requirement is unnecessary.

- The need to improve TB infection control practices was observed at several sites, including the handling of lab specimens without any protective equipment by laboratory staff at one INGO clinic serving key populations; the management of patients in the TB ward and the waiting room for HIV patients at a public hospital; and at a site with a high volume of HIV patients, the over-crowded OPD waiting room where HIV-infected patients, TB suspected patients and TB/HIV co-infected patients sat together. Health care providers have access to only disposable face masks, which do not protect against TB.

5.6 Management of Co-infections and Opportunistic Infections

As the availability of ART and the benefits of treatment become more widely known, health care providers and PLHIV SHG members report that more individuals are seeking HCT services and accessing ART earlier than in the past. However, in many sites the median baseline CD4 at initiation is below 100 cells/mm3 and many patients are diagnosed with HIV infection when they present to a hospital with an opportunistic infection.

- Sites offering MMT and other services for PWID report testing and diagnosis of Hepatitis B (HBV), but not Hepatitis C (HCV). At another hospital caring for a large number of PWID patients, services do not include either HBV or HCV testing and management.

- Published data from an INGO-supported programme showed a co-infected rate of nine per cent for HBV and five per cent for HCV.[14]

- Diagnosis of other OIs is primarily symptom-based, with minimal laboratory diagnostics.
  - One high volume HIV site reports a wide range of OIs, led in volume by pulmonary TB and extra-pulmonary TB, cryptococcal meningitis and other Central Nervous System infections, and chronic diarrhoeal infections. Three cases of HBV and HCV have been diagnosed to date in 2013.

- Penicilliosis is another common OI. Diagnosis using skin scrape Giemsa smear is not available in facility laboratories. Bone marrow biopsy and fungal culture are even more rarely done.

- Cotrimoxazole prophylaxis (CPT) is prescribed according to national guidelines at all of the sites visited. A stock-out of CTX during the past 12 months was reported by two public hospitals.

[14] Sai Ko Ko Z, Thet Ko A, Moh Moh Y, *et al*. Prevalence of hepatitis B and C infections in more than 10,000 HIV-infected patients in Myanmar. Abstract TUPE151. 19th International AIDS Conference, Washington, D.C., 2012.

- At some sites, fluconazole is available as a general OI treatment drug. It is not generally provided at ART Centres as prophylaxis for HIV patients who are eligible, although some INGO partners provide fluconazole for secondary prophylaxis of fungal infections at NAP sites.

- Several sites reported cases of cytomegalovirus (CMV) retinitis, a late stage OI indicative of late presentation for ART care.

- The availability of medications for the treatment of OIs is variable. With expansion of ART services, OIs should become less problematic, but diagnostics and treatment are still urgently needed.

5.7 Laboratory Support

Accurate and timely HIV diagnosis, staging and monitoring of treatment outcomes as well as the diagnosis of OIs require quality laboratory services.

- High quality laboratory services were observed at the sites visited, including trained staff, record keeping, equipment maintenance, procurement and storage of reagents, and quality assurance of testing.

- At the site level, specific laboratory issues related to HIV management include:
  - Venepuncture and analysis at the laboratory for HCT are more labour-intensive and time consuming than finger prick rapid testing with same day confirmation.
  - Variability in baseline and follow-up monitoring testing of patients for haematology, biochemistry and hepatitis screening.
  - CD4 testing every three months after the initial 4–6 weeks on ART, which is unnecessary for most patients when every six months would effectively monitor immunological status.
  - At many sites, CD4 sample testing is limited to one day per week. One public hospital reported that its CD4 instrument had been non-functional for two months while another site indicated for one month; the recently installed limited capacity point-of-care instrument at a public hospital runs one sample at a time, 10-20 samples a day.
  - Some ART services do not have on-site CD4 testing available.
  - Testing for diagnosis of penicilliosis, cryptococcal infection, hepatitis B/C, CMV and other co-infections is limited at most facilities.
  - There is lack of standardization in quality assurance of HIV testing across sites.
  - EID through Dried Blood Spot (DBS)-PCR is conducted at one high volume HIV facility supported by an INGO. At two public hospitals, staff have been trained and supplies for DBS are available; however, standard operating procedures for the transfer of DBS samples to a laboratory for analysis are not available, and the procedure has not yet been implemented at these sites.
  - Access to viral load is very limited. As long-term objectives, the expansion of viral load and DBS-PCR are important components for the development of laboratory capacity for quality HIV services in Myanmar.

- Universal precautions were not consistently observed in laboratories at many of the sites visited.

- For expansion and decentralization of HCT at rural health centres and community-based sites such as MMT and drop-in-centres:
  - A plan is needed to train new cadres (e.g., nurses, lay persons) to conduct finger stick rapid HIV tests and manage ART patients.
  - More laboratory staff are needed to produce accurate, timely results, particularly at high volume patient sites.

- At the national level, laboratory capacity can be strengthened to support ART scale-up and decentralization to meet the demands for expanded service delivery and ensure quality services.
  - A National Laboratory Strategic Plan for ART Scale-Up and Decentralization is a priority need.
  - No standardized external quality assessment exists for CD4 testing nationally.
  - Point-of-care diagnostics is an approach for expanding CD4 testing at peripheral and decentralized sites.
  - Transport of specimens, particularly for CD4 testing and DBS-PCR, currently lack standard operating procedures establishing a safe, standardized process from facility to laboratory and reporting of results.

- At the national level, the capacity to participate in WHO HIV drug resistance monitoring and surveillance at a population level needs to be rapidly implemented. Standard protocols for surveillance (including sample collection and gathering early warning indicators) are available. The National Health Laboratory (NHL) needs to be supported to do the surveillance and sample collection and to be facilitated to link with a regional laboratory in HIV ResNet to perform detailed genotype and phenotype resistance testing.

5.8 Pharmacy and Supply Chain Management

Optimal health outcomes from ART and treatment of HIV-related conditions depend upon the consistent availability of ARV and other HIV-related drugs. This requires strong capacity to manage drugs and essential commodities safely and accurately, including forecasting, procurement, storage, distribution and record keeping.

- Having eight first-line regimens is a major constraint to efficient nation-wide pharmacy and supply chain management, especially for ambitious scale-up targets by 2016. Collapsing down to one first-line one-pill once a day regimen would have huge advantage for supply chain management as well as facilitating decentralized ARV delivery.

- Several sites reported delays in procurement of the following commodities:
  - HIV test kits
    - The laboratory at one NAP site indicated that stock-outs have been avoided through pooling of kits from different units in the public system (e.g., blood safety, OPT, PMTCT, AIDS/STD Team)

- ARV drugs insufficient to meet the quotas established by NAP
- OI drugs
- PMTCT delivery kits

- INGOs in partnership with NAP sites contribute HIV test kits, ARVs and other drugs (e.g., fluconazole) when shortages occur or stocks are insufficient to initiate eligible patients. One INGO, for example, recently provided ARV drugs to accelerate treatment initiation of 40 adults and 8 children with CD4 < 350 on waiting lists at a public hospital.

- At sites that lack a pharmacist or logistics focal person on staff, stocks are managed by medical staff. Medical providers at several government hospitals dispense ARV drugs at the ART Clinic in the absence of pharmacy staff.

- In addition to the needs at current sites delivering ART, shortages or stock-outs of HIV-related drugs and commodities underscore the importance of identifying additional bottlenecks and weak links in the supply chain management system at all levels—national/state/regional/district/township/site—to optimize availability of drugs and commodities at more sites and less accessible locations as a result of ART scale-up and decentralization.

5.9 Monitoring and Reporting

The teams reporting on different regions made similar observations on monitoring and reporting systems used at different levels (central, state/regional, district and township).

- The NAP monitoring and reporting forms are used by both NAP and INGO partners delivering ART.
  - ART delivery sites complete a monthly NAP report on ART. Providers at some sites noted that some of the indicators on this form lack clarity.
  - Reports are also prepared for quarterly submission to the local AIDS/STD Teams and then forwarded to NAP.
  - In addition, NGO partners use different forms for patient care and treatment as well as systems to report to their central offices and donors.

- At several sites, the lack of dedicated data entry and M&E staff was identified as a major obstacle by health care providers who spend excessive time completing forms and inadequate time analysing data for patient management and delivery of quality care.

- The follow-up of patients is hindered by the multiplicity of identification numbers assigned to the same person as s/he accesses different services at the facility.
  - At one high HIV volume facility five different numbers were identified as being assigned to the same patient for HCT, TB services, Inpatient services, Pre-ART enrolment and ART registration. The numbers are written on the patient's health booklet and in separate files maintained for the services accessed; cross-referencing these files must be conducted manually.

- The use of multiple service-based patient identification numbers prevents interlinked monitoring systems and seriously impedes coordination of patient care within a facility and between service providers within the continuum of care. It also detracts from reporting for programme monitoring and quality management.
  - The lack of a single unique patient identifier is a challenge and a problem beyond HIV service delivery. Without a unique health number, it is very difficult to link different services with HIV and ART clinics; transferring out to another ART clinic can be challenging (above and beyond the problems of not having one standard first-line regimen across the country); and there is the ever-present threat of double-counting.
- The high mobility of individuals in HIV care and treatment creates further challenges as migrants and others move within and between regions and from one ART Centre to another; a part of this migration is due to limited access to ART services that compel people to travel long distances to seek care. Without a unique patient identifier, tracking and monitoring of these populations to minimize loss-to-follow-up and optimize linkages to needed services cannot be readily achieved.

- The use of data, particularly in clinical services, is limited at most of the sites visited.
  - Providers cited time constraints, the lack of data assistants and the lack of on-site computers and software to facilitate organization and analysis of data as primary reasons.
  - The difficulty in conducting ART cohort analysis was specifically raised at a public hospital where a health care provider has developed a basic spreadsheet on his own computer to track and monitor patients long-term on ART.

5.10 Quality of Care

Current limitations in data collection, monitoring, analysis and use are major obstacles in assessing the quality of ART service delivery. As the scale-up and decentralization of ART proceed, a paramount concern will be to address inefficiencies observed at current sites, identify and document best practices in overcoming these obstacles, and incorporate these practices at new delivery sites. Key considerations for high quality HIV care and treatment include:

- The ongoing leadership of the National AIDS Programme, including revising ART guidelines to reflect best practices in line with scientific evidence and global recommendations.

- Coordination between all stakeholders, including NAP, the ART delivery sites, MCH services, TB services, NGOs, PLHIV SHGs, the GFATM and other partners, to optimize resources and harmonize monitoring and reporting of ART service delivery.

- Building on the foundation of knowledge and experience among health care providers at existing ART centres, increasing human resources with expanded training, mentoring and supportive supervision.

- Priority attention to improving infection control practices; access of key populations and all at risk for HIV to services across the continuum of HIV prevention, care and treatment; and ensuring a reliable supply and effective management of drugs and commodities.

- Integrating a clear 'Continuous Quality Improvement' process and indicators within clinical services to create a "culture of quality" at facility sites.

- Operations research to examine and document how obstacles to quality services are addressed, optimal health outcomes achieved and best practices identified. A "cascade-of-care" analysis is one recognized approach for identifying obstacles in accessing care along the pathway from HIV testing to long-term ART outcomes.[15]

5.11 Key Populations

HIV infection in Myanmar has been largely concentrated in the key populations of PWID, MSM and FSW. While the highest percentage of new infections estimated for 2013 remains concentrated in these populations, high rates of infection are also detected among clients of sex workers and low-risk women and men (15 and 32 per cent respectively).

- In all regions included in the assessment, key population members expressed greater willingness to seek health services at INGOs than at NAP sites.
  - Self-stigma among key population individuals is very high. They anticipate greater acceptance at INGOs as PWID, MSM or FSW and with an HIV-positive diagnosis.
  - When key population individuals enrol in services at a public facility, they present as "general population" and do not self-identify as key population.
  - Health care providers confirmed that they do not seek to identify patients by key population affiliation, noting ethical concerns and the priority for treating all patients equitably.

- Harm reduction and health services for PWID are limited throughout the country.
  - Few MMT centres currently exist.
  - The full recommended harm reduction package for PWID is not currently provided at MMT sites.
    - Referral is made for HCT, STD, TB and HBV services.
    - No vaccination for HBV or testing and management of HCV is available.
    - Condoms are distributed, but there is no referral for reproductive health/family planning services.
  - An estimated 50 per cent of PWID on methadone still use other drugs.
  - Little data is available on detoxification or the success rate of treatment among those enrolled at MMT sites.
  - While HCT is encouraged, MMT sites report that few PWID agree to test for HIV. The Medical Officer at one MMT service indicated that in three years, only approximately 25 PWID had agreed to HCT and none had tested HIV-positive.

[15] Scott V, Zweigenthal V, Jennings K. Between HIV diagnosis and initiation of antiretroviral therapy: assessing the effectiveness of care for people living with HIV in the public primary care service in Cape Town, South Africa. Trop Med Int Health. 2011 Nov;16(11):1384-91.

- The needle and syringe distribution programme implemented by an NGO serving PWID ended when United Nations Office on Drugs and Crime terminated the Effective Approach Project in early 2013.
  - PWID are re-using needles and syringes without disinfection.
- Collaboration is very weak between the NGO providing services for PWID and the MMT site in one region.

- MSM have strong networks in some regions, but remain hidden in others.
  - Some INGOs provide prevention education and materials, distribute condoms (but not always lubricant, which is expensive) and promote repeated HIV testing every three months for MSM.
  - MSM report multiple benefits from one-stop drop-in-centres that provide a wide range of services—including HIV care and ART, laboratory services, psychosocial counselling, STD services, income-generating activities, nutrition (including a daily lunch), nutrition education and social interaction.

- FSW tend to be mobile. Disclosure of key population status is an issue, and tracking those who test HIV-positive is difficult without a national Unique Identification System.
  - INGOs report distributing condoms to FSW, but have only anecdotal information about use.
  - FSW are integrated in the National PLHIV Network. At the regional level, however, FSW networks are reported to be generally weak; in one region, for example, brothel-based workers are under the control of pimps and have little choice, including access to preventive and protective interventions, whereas indirect sex workers are better placed for negotiating condom use.

Effective Practice:
An INGO-supported community-based site focusing on MSM and FSW has a vibrant drop-in-centre that includes social interaction, income generation, nutrition, health promotion and basic health care for up to 2,000 clients. HIV-related services currently include HCT; TB screening and referral for TB management to NTP; ART to 849 adults; ART to 8 children; referral of HIV-positive pregnant women to a nearby INGO-supported ART site that provides PMTCT and post-natal care for HIV-positive mothers and infants; CD4, biochemistry and haematology testing; adherence counselling and patient follow-up.

5.12 Linkages and Coordination

A functional continuum of HIV prevention, care and treatment requires clear linkages and coordination mechanisms between service providers at all levels.

- At the site level, no standardized system for referring patients from one service to another, or from a facility to another community-based provider was observed. Each facility (NAP or INGO) uses its own form, and referrals are not routinely documented (for example, in a service-based register).

- At the township/divisional level, quarterly meetings bring service providers from the hospital, NGOs and other community based organizations (CBOs) together. In one region, these gatherings focus on discussing gaps in services, possible duplication of services and areas requiring support, but have not established a formal referral network of HIV service providers.

- At the state/regional level:
  - Good coordination was observed between NAP, represented by the AIDS/STD Team, and the INGOs delivering ART in several regions. Communication between the AIDS/STD Team and INGOs is ongoing, and to the extent of their resources, the INGOs are responsive when the Team articulates vital needs (for example, more ARV drugs for eligible patients on the waiting list).
  - Coordination mechanisms must be established between the primary ART centre (the hub) and the decentralized ART sites (the spokes), including procedures for the referral and transfer of patients to decentralized sites for management and back to the ART centre for advanced care and treatment failure. Protocols are also needed for regular mentoring and supportive supervision of the decentralized sites.

- At the national level:
  - Parallel reporting structures hamper coordination between health services, while ART services report to NAP, PMTCT, TB and MMT programmes report to other units within the Department of Health.
  - AIDS/STD Teams require additional human resources, technical and financial capacity to effectively supervise, mentor and coordinate HIV-related services. This capacity-building is particularly needed to ensure that the Teams adequately monitor newly established ART Centres and decentralized sites.
  - New or changes in policy related to ART service delivery require clear communication to providers at ART Centres. At one site, notification of an increase in the quota of patients on ART dated January 2013 was not communicated until May 2013. A similar delay was reported for the notice to phase out the use of d4T-based regimens.
  - As ART services are transitioned from INGO sites to the public sector, communication and coordination between NAP and the INGOs is paramount to ensure continuity and high quality of patient care. New or expanded roles for the INGOs may be identified that complement the services provided at NAP sites and strengthen the continuum of care, such as ongoing support for HIV prevention and PLHIV SHG activities.

5.13 Mobilizing Communities

Fully engaging people living with HIV and their affected families and communities in HIV prevention, care and ART service delivery is an essential component of a functional, high quality HIV programme.

- At all of the sites visited, PLHIV SHGs were active, vocal about their activities supporting peers and advocating for quality services, and seeking to expand their role in linking communities and services.

- Providers at ART centres acknowledged the active role and contributions of PLHIV SHGs that include facilitating peer access to hospital-based services, providing drug adherence support, tracking patients who have missed clinic visits, educating peers on HIV prevention and ART, and providing psychosocial support.

- PLHIV SHGs know local communities and provide a vital link by providing education about HIV and ART and identifying those most in need of health care and other support and helping them access needed services. Many local languages are spoken in such areas as Shan State and Kayin State, and PLHIV who reside in and speak the languages of communities in these regions enhance awareness of available care and treatment and how services can be accessed.

Effective Practice:
At a government district hospital, PLHIV Self-Help Group (SHG) members regularly attend the ART Clinics. They greet patients on arrival, facilitate their on-site registration, accompany those needing to access the laboratory or other services in the facility, help educate about HIV and ART, and provide psychosocial support as peers who understand the emotional, mental and physical burdens of the illness. The members also make regular visits to peers in the community, reinforcing the importance of keeping clinic appointments and adhering to treatment, and help those in need of medical care access hospital services. Health care providers at the site acknowledged the compelling role and many contributions made by the SHG members. The group receives support from an INGO.

- Migration and mobility, often along border areas, are common among key populations with high risk for HIV infection; these groups experience gaps in services, particularly in urban areas.
  - In one state, migrants have difficulty accessing ART at an INGO site as they may not belong to its geographical area of operations and keep changing residence.
  - According to one CBO that supports PLHIV activities, PLHIV SHGs provide outreach and therefore, an important link to migrants and other mobile groups (e.g., FSW).

- INGOs and CBOs provide financial support for SHG activities and meetings; for individual group members, assistance with the costs of transport to ART sites, food and for those living at a distance, lodging; and for orphans and vulnerable children, school fees and supplies, food, shelter and clothing.

6 Recommendations

The observations and findings identified by the regional teams during their site visits informed a series of recommendations that provide key strategies for the road map that will guide the way forward as Myanmar proceeds with scaling-up and decentralizing ART throughout the country. These recommendations are proposed for implementation in the short term, within the next one to two years, as key strategies for rapidly moving forward to achieve the ART targets established for the country.

Recommendation 1: Rapidly scale up simplified HIV Counselling and Testing (HCT)

To support this strategy, guidelines are needed with procedures for simplifying the HCT process that include the following elements:

- Rapid HIV testing: finger-prick for capillary blood, or venous blood sample for confirmatory testing and also in quality control;
- Same day test results including confirmatory testing;
- Community-based workers, including nurses and lay workers, to counsel and conduct finger prick rapid testing;
- HCT integrated within services at more sites:
  - In health facilities, TB services, MMT clinics, ANC services, STD clinics, inpatient wards
  - At community-based sites, key population prevention sites, drop-in-centres, drug treatment centres, mobile outreach, community health events (e.g., World AIDS Day)
- Family-based HCT that focuses on discordant couples, couple counselling and testing of the index patient, partner(s) and children.

While HCT guidelines reinforce the principles of voluntary and confidential HIV testing, the approach should evolve from the more passive VCCT to the pro-active opt-out and provider-initiated HCT that clearly focus on the benefits of testing, knowing one's HIV status and early enrolment in HIV care and treatment, and the responsibility to reduce one's own infectivity onto the wider community by being on ART.

To make use of and benefit from HCT services, community residents must know what HCT is, what the advantages are to knowing their HIV status, and where HCT can be accessed. Outreach into communities and wider use of mass media are well-established approaches for increasing awareness about HCT and creating demand for expanded, accessible services.

Recommendation 2: Streamline patient enrolment into ART

The current protocol of confirmatory HIV testing, multi-step process for pre-registration, baseline testing and staging to determine ART eligibility, ART Selection Committee deliberation meeting and ART initiation on different days, often weeks apart, creates hardships for patients and promotes loss-to-follow-up and delays in ART initiation for sick patients. Collapsing the patient enrolment process to shorten the time from HIV testing to ART initiation supports the patient's rapid commencement on treatment. Streamlining patient eligibility determination with standardized minimum baseline clinical and laboratory evaluation and ART initiation is in line with both Treatment 2.0 and the new 2013 WHO Guidelines.

Many opportunities exist for educating patients on ART and assessing their capacity to adhere to treatment without mandating three different adherence counselling sessions held on different days and different weeks. PLHIV on treatment, for example, already provide treatment literacy and support to peers at ART clinics as well as follow-up into the community to reinforce adherence. PLHIV are an important resource that with training and support, can assume an expanded role, alongside health care providers, in helping peers remain in care, adhere to treatment and effectively manage HIV as a chronic disease.

Standardizing pre-ART procedures for patient follow-up ensures that resources are used strategically while maximizing patient retention in care and determination for future ART eligibility.

With scale-up of ART, clearing the existing lists of patients waiting for ART initiation is an immediate priority, and the sickest patients on the lists should be given precedence. Regular active monitoring of waiting lists is vital to maintain current information on patients waiting for ART, including availability of CD4 test results within the last 3–6 months.

During ART enrolment and in accordance with global guidelines, OI prophylaxis should be provided by the consistent prescription of CTX and IPT; both CTX and isoniazid should be available at ART clinics along with ARV drugs.

For post-ART initiation, phasing out minimum residency requirements is realistic as ART is provided at more sites and in more remote areas of the country. Protocols for follow-up after initiation should be revised so that CD4 testing is established at six-month intervals and no longer mandated at six weeks after initiation and every three months thereafter (unless clinically indicated).

The Selection Committee's original role, to identify patients most in need of ART due to the very limited stock of ARV drugs, is of less importance as ART has become and will continue to be more widely available. Instead, the Committee can continue to perform an important function by focusing on issues that are current and vital to ART. For example, it could support and oversee continuous quality improvement of HIV care and treatment. The ART Committee could also work with the AIDS/STD Teams to provide supportive supervision to the provincial town health centres and ART centres, serve as a resource to address programme challenges, and monitor patient absorption and retention during ART scale-up, guiding strategic programmatic shifts that may be needed over time.

Recommendation 3: Simplify and standardize ART treatment regimens for older children, adolescents, adults and pregnant women

The latest WHO guidelines recommend that countries adopt a single first-line regimen to simplify procurement, drug supply management, prescribing and adherence, with the goal of having most patients on low-toxicity, durable and effective one-pill once-a-day therapy. The combination of TDF+3TC (or FTC)+EFV is recommended, preferably as a fixed-dose combination (one pill a day).[16]

[16] Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Recommendations for a public health approach. World Health Organization, Geneva. June 2013.

This recommendation specifically advocates for the provision of ART for older children, adolescents, adults and pregnant women by having:

- One first-line ARV regimen: TDF+3TC+EFV, preferably as a fixed-dose combination
- One first-line alternate ARV regimen: AZT+3TC+EFV
- One second-line ARV regimen (determined by the specific drugs used in first-line and the addition of a protease inhibitor (PI))

For all new patients initiated on ART, the TDF-based regimen is the recommended first-line regimen. Based on current evidence, a serum creatinine test is not a prerequisite to start patients on TDF.[17] If available, one renal function screen can be performed at enrolment only, but the lack of availability should not delay or preclude initiation on TDF.

Speeding up the phase-out of d4T, which has already begun, is feasible by changing from d4T to TDF whenever possible and no longer performing viral load testing, which is not required for changing d4T.[18]

Transitioning from NVP to an EFV-containing fixed-dose combination drug is another component of this recommendation. Current evidence supports the safety of prescribing EFV to pregnant women and comparable clinical efficacy between NVP and EFV to all adults.[19]

Due to the complexity of drug forecasting, procurement and distribution processes, an assessment of the existing supply chain management is a priority for sustainable scale-up and decentralization of ART.

Recommendation 4: Expand ART eligibility criteria

Current national guidelines state that all children above five years of age, adolescents and adults with a CD4 count below 350 should be started on ART. In line with evidence that supports earlier initiation of treatment and presented in the 2013 WHO Guidelines, this recommendation seeks to expand ART eligibility criteria as a component of ART scale-up by advocating for ART initiation of the following, regardless of CD4 count:

- All pregnant women
- All patients who are TB-HIV co-infected
- All patients who are HBV-HIV co-infected
- The index patient in all discordant couples
- All children under the age of 5 years.

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[17] Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Recommendations for a public health approach. World Health Organization, Geneva. June 2013.

[18] Tang MW, Rhee SY, Bertagnolio S, *et al*. Nucleoside reverse transcriptase inhibitor resistance mutations associated with first-line stavudine-containing antiretroviral therapy: programmatic implications for countries phasing out stavudine. J Infect Dis. 2013 Jun;207 Suppl 2:S70-7.

[19] Pillay P, Ford N, Shubber Z, Ferrand RA. Outcomes for efavirenz versus nevirapine-containing regimens for treatment of HIV-1 infection: a systematic review and meta-analysis. PloS One. 2013 Jul 22;8(7):e68995. (EFV vs NVP efficacy)

Shubber Z, Calmy A, Andrieux-Meyer I, *et al*. Adverse events associated with nevirapine and efavirenz-based first-line antiretroviral therapy: a systematic review and meta-analysis. AIDS. 2013. 27:1403-12. (EFV vs NVP safety)

By broadening eligibility for treatment, more individuals will be reached earlier with care and treatment that will help maintain their health and reduce the incidence of OIs and other HIV-related illnesses. Increased integration of services is one strategy for reaching more individuals in these five groups: for example, through TB screening and treatment; HBV screening and treatment containing dual antiviral drugs active against both HIV and HBV (TDF and 3TC); EID in PMTCT, paediatric care and ART; and ART in ANC. Expanding eligibility to include all TB-HIV co-infected patients will also help to reinforce the importance of linking TB and HIV services across all sites.

Couples counselling as a focal area for HIV testing and education on keeping the HIV-negative partner negative is an evidence-based approach to reduce the onward transmission of HIV.[20] In addition, family-centred models of care that link multiple service points, including inpatient wards, OPD, paediatrics and adult OPD, promote HIV testing of partners and children leading to increased case finding as well as coordinated care management that benefits all family members.

Recommendation 5: Rapidly evaluate decentralization service delivery model, expand and supportively supervise ART decentralization

Decentralization is a proven way to increase access to ART and improve retention in care.[21] Decentralization and integration of ART care are both strongly recommended by WHO as proven approaches to improving access and retention in care.[22] In Myanmar, decentralizing ART service delivery to township health centres is in its preliminary stages. The process is essential to improving access to treatment, managing HIV as a chronic condition by providing services near to where patients reside, and achieving ART targets.

Following are strategies to expedite ART expansion through decentralization and optimize the quality of care delivered at the decentralized sites:

- Map the demand for decentralization/de-concentration sites to ensure that new sites are located where the greatest need exists.
- Establish facility-based targets for scale-up and decentralization related to the mapping.

- Rapidly evaluate the current model of decentralized service delivery in 5 to 10 sites, including both urban and rural locations, prior to the broader national scale-up of new sites, with roll-out incorporating results of the rapid evaluation.
- Evaluate the criteria for transfer/referral-out of stable patients to identify those who can be effectively managed at the decentralized sites (e.g., 6 months on ART, no active OIs, and no adherence problems).

[20] Guidance on couples HIV testing and counselling including antiretroviral therapy for treatment and prevention in serodiscordant couples: recommendations for a public health approach. World Health Organization, Geneva, 2012.

[21] Kredo, T, Ford N, Adeniyi FB, Garner P. Decentralizing HIV treatment in lower- and middle-income countries. Cochrane Database Syst Rev. 2013 Jun 27;6:CD009987. doi:10.1002/14651858.CD009987.pub2.

[22] Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Recommendations for a public health approach. World Health Organization, Geneva. June 2013.

- Define clear criteria for the upward referral of patients from the decentralized site to the ART centre hub.
- Pilot task shifting, for example, with a clinician attending a proportion of patient visits in addition to a trained nurse.
- Prioritize the development and implementation of a mentoring and supportive supervision plan for the decentralized sites.

Recommendation 6: Strengthen key laboratory services to support the scale-up of HCT, ART and decentralization

The focus on laboratory services as a critical component of quality HIV service delivery is also promoted by the WHO Guidelines for ART and the Treatment 2.0 Framework.

Accurate and timely HIV diagnosis, staging and monitoring, and the diagnosis of opportunistic infections require quality laboratory services. At the health facility level, simplification and standardization of baseline and routine laboratory protocols, including testing frequency, will accelerate ART initiation and enhance ongoing monitoring to optimize treatment outcomes. Expanding laboratory capacity to diagnose co-infections and OIs will strengthen clinical management of patients (e.g., HBV, serum cryptococcal antigen, India ink and Giemsa stain).

Another priority is to fill vacancies for key laboratory personnel to ensure optimal functioning of facility-based laboratories to support HIV diagnosis, care and treatment. Investing in universal precautions, through ongoing training and consistent availability of commodities for infection control, should also be prioritized for laboratory and health care worker safety.

At the national level, priorities include the following:

- Assessment of existing lab services and the development of a National Laboratory Strategic Plan for ART scale-up and decentralization.
- Development of policies for lab training, quality assurance, lot verification, certification, re-certification, documentation, quality control and proficiency testing programmes.
- CD4 point-of-care evaluation and review of the current and planned CD4 cell count machine procurements, procedures for training, equipment maintenance, calibration, reagents supply and quality assurance, proficiency testing, standard operating procedures development for sample transport (CD4, DBS and other core tests).
- Training, reagents and equipment for key HIV-related diagnostics (CD4, HIV viral load, HBV diagnosis, OIs, and syphilis).
- Review and standardization of laboratory tests for baseline and monitoring of HIV patients on ART.
- Equipping the NHL to provide EQA for proficiency testing of HCT, CD4, viral load, HBV and other HIV-related tests and to collaborate with NAP on HIV drug resistance monitoring.
- Supporting the NHL to participate in HIV ResNet and activities for population-level monitoring and surveillance of transmitted and acquired HIV drug resistance.

- Overseeing ongoing quality assurance and the consistent practice of universal precautions in site-based laboratories.

Recommendation 7: Harmonize programme monitoring ("the Three Ones") and mandate that all HIV programme sites collect and report on simple core process indicators

With NAP's leadership and working together with INGOs that deliver ART and other partners, harmonizing existing recording and reporting systems has the essential goal of standardizing programme monitoring around one national system, which will facilitate and promote assessment of programmatic quality and data use for decision making and quality improvement. One aspect is to rationalize the number and streamline the design of data registers; for example, merging the pre-ART and the ART registers into one register. Given the high mobility of populations in HIV care and treatment, best practices in health management information systems are needed. Creating a nation-wide system of a Unique Identifier will also facilitate patient tracking, monitoring loss-to-follow-up, ensure linkages to needed services, and decentralization of patients to township and other peripheral sites.

Providers at sites visited during the joint assessment identified the need to develop more skills to better organize, analyse and use data for quality improvement of services and local use of data for decision-making. Building capacity through training, ensuring adequate data entry and M&E staff, and providing electronic and software equipment will provide important resources for health care workers who have expressed a commitment to improve service delivery through enhanced data analysis and use.

By incorporating data quality assurance activities into routine HIV programmes, data on service quality can be generated for use in continuous quality improvement. Monitoring patient care and treatment through a small set of core process indicators will give providers and programme managers an indication of how a site is performing in delivering HIV services across the HIV cascade. The following are some illustrative indicators:

- Monthly cumulative numbers tested related to targets
- Monthly cumulative numbers starting ART related to targets
- Monthly cumulative patients decentralized related to targets
- Quarterly analysis of the cascade related to ART initiation: No. tested HIV-positive; No. confirmed HIV-positive; No. registered in pre-ART; No. started on ART
- Median CD4 count at ART initiation
- Percentage decentralized/month after ART started
- Cohort analysis related to retention in care: Percentage on ART at one, two and three years

Collecting this kind of data as ART is scaled-up and decentralization occurs allows for the ability to understand whether initial goals of effective linkage, retention and quality services are being achieved and what corrective actions and capacity building for routine programme monitoring, data management analysis, interpretation and use are needed. Collaboration between MOH/NAP and stakeholders to improve overall data collection and flow, standardization and streamlining of routine monitoring procedures with supportive supervision will increase capacity at all levels—rural health centre, township, state/regional and central—for evidence-based decision-making and proper resource allocation to maximize the HIV/AIDS response.

In addition, tracking data generated for a set of core indicators will also raise questions for operations research (i.e., outcome and impact evaluations) that will inform how a programme is delivering services and the quality of care achieved.

Recommendation 8: Mobilize communities by engaging PLHIV and their affected families and communities in outreach, demand creation, delivery and evaluation of HIV care and treatment

The decentralization of ART will bring services closer to PLHIV and their families, thereby facilitating access to care and treatment. Local, decentralized health services are expected to help reduce the burdens imposed by transport costs, long distances to clinics, and having to attend different facilities for different health services. At these new sites, PLHIV represent a viable and key resource for assuming an expanded role in the continuum of care in addition to such current activities as adherence support and treatment literacy; for example:

- By participating in HCT scale-up as lay providers trained in rapid finger prick HIV testing;
- In ART scale-up, by providing mobile outreach to distribute ARV drugs to patients living in remote areas;
- By serving as advocates to mobilize key decision-makers to provide ongoing quality services; and
- By promoting preventive health behaviours among clients and other PLHIV.

The WHO 2013 Guidelines for ART and the Treatment 2.0 Framework support mobilizing communities including PLHIV to engage those most affected in the delivery of quality care and treatment.

7 Cross-Cutting Issues

In analysing observations and findings from the site visits, the Joint Assessment team identified issues that are cross-cutting across the focal areas included in the assessment. Some of the issues are explicitly noted in presenting recommendations for moving forward in scaling-up and decentralizing ART. All are pertinent in planning and implementing strategies to achieve ART targets set for 2016 and beyond.

- **Expand and build the capacity of human resources to scale up and decentralize ART**
  Additional human resources trained in the management of HIV infection will enable ART centres and decentralized sites to reach more patients in need, promote patient retention in care and achieve positive health outcomes; strengthen the capacity of AIDS/STD Teams to provide continuous mentoring and supportive supervision; and reach key populations and individuals residing in remote areas of the country.

- **Invest in supply chain management through high functioning systems for forecasting, procurement, storage, distribution and monitoring of drugs and commodities at all levels**
  A review of each stage in the supply chain management of drugs and commodities will identify bottlenecks and weak links that lead to delays in delivery and stock-outs, while in the long term, ongoing monitoring of supply chain systems and adequate pharmacy staff to manage stocks will strengthen supply chain processes to optimize the availability of drugs and commodities where and when they are needed.

- **Assure high quality and long-term sustainability of HIV care and treatment through continuous quality improvement and operations research**
  Key considerations for optimizing quality and sustainability of HIV care and treatment include the implementation of a continuous quality improvement process within HIV-related services and conducting operations research to understand the status of programme quality and evaluate outcomes and impact.

- **Strengthen integration and coordination across Ministries and among partners at local, regional/state and national levels to optimize the efficient delivery of services**
  Coordination between Ministries that establish policy and provide oversight, partners supporting service delivery at all levels and providers delivering services is key to creating a continuum of HIV prevention, care and treatment that is functional and sustainable. Coordination of care is further strengthened when national programmes and clinical services are integrated through clear linkages and organizational mechanisms; for example, collaboration between TB and HIV services enhance diagnosis, care and treatment for TB-HIV co-infected individuals to optimize health outcomes relevant to both diseases.

- **Promote equity through strengthened HIV services to key populations and increased coverage in remote rural areas**

  Populations with the highest prevalence of HIV infection and greatest risk of transmitting HIV to others will benefit from targeted efforts to increase HIV-related services at locations that directly address their needs; for example, drop-in centres and drug treatment centres. Decentralizing ART through mapping where individuals needing services are located will also help to make HIV prevention, care and treatment more accessible to these populations and to individuals residing in remote rural areas.

8 Conclusions

There is a clear desire by the Government, NAP and stakeholders to work towards a strategic and maximum impact with this new opportunity to scale up ART. The Joint Assessment team has confidence that the targets for ART scale-up and decentralization can be reached. Current practices in ART service delivery at the sites visited during the joint assessment included examples of effective practices in the provision of quality clinical care, laboratory services and patient support. Areas were also identified as opportunities for improvement, attainment of higher standards of care and the implementation of service efficiencies that would be supportive of further ART scale-up. As expansion and decentralization of ART proceed, the recommendations emerging from the team's findings aim to facilitate the achievement of the targets for scale-up while supporting the maintenance and improvement of the quality of services provided.

The leadership of NAP within the framework of "The Three Ones" is critical to the success of these goals. As NAP and partners at all levels work in ongoing close collaboration, the way forward to ensuring that all HIV-positive individuals have access to quality care and treatment in Myanmar will be realized.

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Annex 1 Schedule of Joint Assessment

Date	Time	Agenda	Mode of transport	Venue
Sunday 7 July 2013		Arrival in Yangon latest in the morning	Car	
	2.00 – 5.30 pm	Meeting of Team Members with local staff of partner organizations	Car	UNAIDS Meeting Room Traders Hotel 12th Floor, Yangon
Monday 8 July	8.30-9.30 am	Meeting with UCC and WR	Car	UNAIDS Meeting Room Traders Hotel 12th Floor, Yangon
	10.00 am -12.00 pm	Briefing Meeting with Representatives of National AIDS Programme		UNAIDS Meeting Room Traders Hotel 12th Floor, Yangon
	2.00-5.30 pm	Meeting of Team Members		UNAIDS Meeting Room Traders Hotel 12th Floor, Yangon
		Review and discussion of data and information from different sources		
9-13 July		Visits to various sites (4 teams to 8 cities/each team covers 2 sites)	Flights/Car	Details at sheet 2 (Detailed field visit)
Sunday 14July		Compilation of results, discussions on findings to feed into debriefing and stakeholder meeting on 18th		
Monday 15 July		Site visits in 3 groups in Yangon	Car	Details at sheet 3 (Detailed visits in Yangon)
Tuesday 16 July		Meeting with PLHA and MDM Clinic (one group); RM clinic (second group) in the morning	Car	Details at sheet 3 (Detailed visits in Yangon)
	2-6 pm	Data analysis, report compilation and preparation of debriefing and stakeholder meeting in the afternoon	2-3.30 pm specific discussion on M&E	UNAIDS Meeting Room Traders Hotel 12th Floor, Yangon
Wednesday 17 July	9-12.30 am	Data compilation and report drafting		UNAIDS Meeting Room Traders Hotel 12th Floor, Yangon
	2-5 pm	Debriefing with NAP in Yangon	draft 15 slide ppt	UNAIDS Meeting Room Traders Hotel 12th Floor, Yangon
Thursday 18 July	9-12.00 am	Presentation of preliminary findings to stakeholders in Yangon	draft 15 slide ppt - Traders Hotel Ball Room 1st Floor	Findings and Recomm - Charles How recomm link with New GL - Meg
	2-5 pm	Meeting with PRs (SC and UNOPS)		WHO Meeting Room A Floor Traders Hotel
Friday 19 July	am	Consultants meet to provide inputs on final report	Location TBD	
	pm	Departure from Myanmar		

Detailed field visit

Team A - Pyay and Dawai						
Site	Date	Time	Activity	Time	Remark	Team Members
Pyay	9.7.13	Morning	Yangon to Pyay	Depature 7:00am Arrival - 12:00 noon	by car	
		Afternoon	Courtesy call District Health Director / meeting with MS,DMO, Specialists and Team leaders	2:00pm - 2:30 pm		Vladanka, Phavady, Dr Myo
			Visit to ART site - General Hospital	2:30 pm onwards	Pyay night stop (Mingalar Garden)	
	10.7.13	Morning	TB team and AIDS/STD Team	9:00 am - 11:00 am		Car from UNAIDS for the whole trip
			PLHIV	11:00 am - 12:00 noon		
		Afternoon	Pyay to Yangon	after lunch	by car	
Dawai	11.7.13	Morning	Yangon to Dawai	Yangon Airport - 5am	By flight* (7:00 am - 8:10am)YH 633 RGN-TVY 0700-0810	
			Courtesy call Regional Health Director Office	10:30 am - 11:00 am		
			TB team and AIDS/STD Team	11:00 am - 12:00 noon	Dawai night stop (Golden Guest)	
		Afternoon	General Hospital (meeting with MS, Specialists and Team leaders)	2:00 pm - 2:30 pm		
			Dawei General Hospital / ART site	2:30 pm onwards		
	12.7.13	Morning	PLHIV	9:00 am - 10:00 am		
			MSF-CH clinic	10:00 am - 12:00 am	Dawai night stop (Golden Guest)	
		Afternoon	Meet with private sector/GP	2:00pm onwards		
	13.713		Dawai to Yangon		By flight*(4:30 pm to 5:40pm) 6T 708 TVY-RGN 1630-1740	

Team B - Mawlamyaing and Pha An

Site	Date	Time	Activity		Remark	Team Members
Mawlamyaing	9.7.13	Morning	Yangon to Mawlamyaing	Departure 7:00am Arrival 12:00 noon	by car	
		Afternoon	Courtesy call State Health Director	2:00pm - 2:30 pm		Dr Razia, Dr Moe Nandar Aung, Dr Htin Aung
			TB team and AIDS/STD Team	2:30 pm onwards	Mawlamyaing night stop (Cinderalla)	
	10.7.13	Morning	General Hospital (meeting with MS, Specialists and Team leaders)	9:00 am - 9:30 am		Car from Save the Children for the whole trip
			Mawlamyaing General Hospital	9:30 am - 11:00 am		
			PLHIV	11:00am- 12:00 noon		
		Afternoon	IOM	2:00 pm onwards	Mawlamyaing night stop (Cinderalla)	
	11.7.13	Morning	Consortium	9:00 am - 10:30 am	by car	
			Alliance	10:30 am - 12:00 noon		
		Afternoon	AFXB	2:00 pm onwards	Mawlamyaing night stop (Cinderalla)	
Pha An	12.7.13	Morning	Mawlamyaing to Pha-An	7:00 am Arrival 9:00 am		
			Courtesy call State Health Director	10:00 am - 10:30 am		
			General Hospital (meeting with MS, Spec	10:30 am - 11:00 am		
			Pha-An General Hospital	11:00 am - 12:30 pm		
		Afternoon	AIDS/STD team and TB Team	2:00 pm - 3:00 pm		
			PLHIV	3:00 pm - 4:00 pm		
			Meet with private sector/ GP	4:00 pm onwards	Pha An night stop (Parami Hotel)	
	13.7.13		Pha An to Yangon		by car	

Team C - Mandalay, Pyin Oo Lwin and Lashio

Site	Date	Time	Activity		Remark	Team Members
Mandalay	9.7.13	Morning	Yangon to Mandalay		Flight (6:10 am - 8:15 am)YH917 RGN-MDL 0610-0815	WHO car for Ygn Airport
			Courtesy call Regional Health Director	11:00 am -11:30 am		
			General Hospital (meeting with MS, Specialists and Team leaders)	11:30 am - 12:00 noon		
		Afternoon	AIDS/STD team and TB Team	2:00pm onwards	Mandalay night stop (Golden country Hotel)	Dr Charles, Dr Vimlesh, Phyumar, Dr Nathan, Helen
	10.7.13	Morning	Mandalay General Hospital	9:00 am - 11:00 am		Rental Car(WHO) for Mandalay and Lashio
			PLHIV	11:00 am - 12:00 am		
		Afternoon	Meet with private sector/ GP	1:00 pm -2:00 pm		
			MANA Drop In Centre	2:00 pm- 4:00 pm		
			Mandalay to Pyin-Oo- Lwin	4:00 pm onwards	Pyin-Oo-Lwin night stop (3R Hotel)	
Pyin Oo Lwin	11.7.13	Morning	Pyin-Oo-Lwin General Hospital (meeting	9:00 am - 9:30 am		
			Pyin-Oo-Lwin General Hospital	9:30 am - 11:00 am		
			AIDS/STD team and TB Team	11:00 am - 12:00 noon		
		Afternoon	Pyin-Oo-Lwin to Lashio	1:00 pm onwards	Lashio night stop (Golden Hill Hotel)	
Lashio	12.7.13	Morning	Courtesy call to additional State Health D	8:30 am - 9:00 am		
			Lashio General Hospital (meeting with M	9:00 am - 9:30 am		
			AIDS/STD team and TB Team	9:30 am - 10:30 am		
			Lashio General Hospital	10:30 am - 12:00 noon		
		Afternoon	MSF-Holland Clinic	2:00 pm onwards	Lashio night stop (Golden Hill Hotel)	
	13.7.13	Morning	Naung Moon DIC (MANA)	9:00 am - 10:30 am		
			Meet with private sector/ GP			
			Lashio to Yangon		by Flight* (5:00 pm to 7:25 pm)YH730 LSH-RGN 1700-1925	WHO car for Ygn Airport

Team D - Kyaingtong and Tachileik

Site	Date	Time	Activity		Remark	Team Members
Tachileik	9.7.13	Morning	Yangon to Tachileik		by Flight* (11:15am - 3:25pm)YH729 RGN-THL 1115-1525	UNAIDS car for Ygn Airport
		Afternoon	District Medical Officer	4:00 pm onwards	Tachileik night stop(Golden Lake Hotel)	Leine, Savina, DKMMA
	10.7.13	Morning	MMT site	8:00 am - 9:00 am		
			AIDS/STD team and TB Team	9:00 am - 10:00 am		
			District Hospital (Tachileik)	10:00 am - 12:00 noon		
		Afternoon	Malteser	1:30 pm - 2:30 pm		Rental Car (WHO) for Tachileik and Kyaingtone
			Drop In Centre (MANA)	2:30 pm - 3:30 pm		
			PLHIV	3:30 onwards	Tachileik night stop (Golden Lake Hotel)	
Kyaingtone	11.7.13	Morning	Tachileik to Kyaingtone	7:00 am - 12:00 noon		
		Afternoon	Courtesy call and meeting with Additiona	1:00 pm - 1:30 pm		
			Kyaingtone General Hospital	1:30 pm - 3:30 pm		
			PLHIV	3:30 pm onwards	Kyaingtone night stop(Princess Hotel)	
	12.7.13	Morning	Malteser	9:00 am - 11:00 am		
		Afternoon	Kyaingtone to Tachileik	12:00 onwards	Tachileik night stop(Golden Lake Hotel)	
	13.7.13		Tacheileik to Yangon		by Flight* (3:40 pm - 7:25pm)YH730 THL-RGN 1540-1925	UNAIDS car from Ygn Airport

Detailed visits in Yangon

Date	Group	Time	Places	Members	Communication person arrangement for visit
15-Jul		09:00am - 12:00noon	Minglardone Hospital	Meg, Charles, Helen, Dr Htin Aung	
	Group 1	2:00pm- 4:00pm	National Health laboratory		Dr Htin Aung, Car from UNAIDS
	Group 2	8:00am - 12:00noon	Tharketa Hospital, MSF-Holland Clinic	Leine, Razia, Vimlesh, Khin Ma Ma Aye	MMA, Car from WHO
		7:30am - 12:00noon	AMI Dala	Vladanka, Phavady, Parsa, Phyumar	
	Group 3	2:00pm- 4:00pm	PSI clinic		Dr Phyu Mar, Car from SC
16-Jul	Group 1	9:00am-11:00noon	Meeting with PLHA network	Meg, Razia, Leine, Vimlesh, Savina, Moe Nandar Aung, Dr Htin Aung	
		11:00am - 12:30noon	MDM clinic/ART Clinic		Dr Phyu Mar – Car from UNAIDS
	Group 2	9:00--10.30 am	Ratana Metta/ART Clinic	Helen, Charles, Vladanka, Phyumar	Dr Tin Aung-Car from WHO

Annex 2 List of Sites

	ART sites		HIV /AIDS Related Service provision centres	
	Public	INGO	Public	Private
Team A Pyay	Pyay General Hospital		AIDS/STD Team TB Team	PLHIV
Dawei	Dawei General Hospital	MSF-CH	AIDS/STD Team TB Team	PLHIV Private Sector/GP
Team A	**2**	**1**	**4**	**3**
Team B Mawlamyaing	Mawlamyaing General Hospital	IOM Consortium AFXB	AIDS/STD Team TB Team	PLHIV CBO (Alliance)
Pha-An	Pha-an General Hospital		AIDS/STD Team TB Team	PLHIV Private Sector/GP
Team B	**2**	**3**	**4**	**4**
Team C Mandalay	Mandalay General Hospital (NAP – UNION)		AIDS/STD Team TB Team	PLHIV Private Sector/GP MANA Drop In Centre
Pyin-Oo-Lwin	Pyin-Oo-Lwin General Hospital		AIDS/STD Team TB Team	
Lashio	Lashio General Hospital (NAP – UNION)	MSF-Holland	AIDS/STD Team TB Team	Naung Moon Drop In Centre (MANA)
Team C	**3**	**1**	**6**	**4**
Team D Tachileik	Tachileik District Hospital	Malteser	AIDS/STD Team TB Team MMT site	MANA Drop In Centre PLHIV
Kyaingtone	Kyaingtone General Hospital	Malteser		PLHIV
Team D	**2**	**2**	**3**	**3**
Yangon visits	Mingalardone Hospital Tharketa Hospital (NAP-UNION)	MSF-Holland AMI PSI RM MDM	National Health Laboratory	PLHA network
Yangon	**2**	**5**	**1**	**1**
Total	**11**	**12**	**18**	**15**

Annex 3 List of Persons Interviewed

Team A- Pyay and Dawei

District	Facilities	Interviewee Name	Position/ Title
Pyay	District health office	Dr Khin Htar Hnit	Acting District Medical Officer
		Dr Yin Min	STD/ AIDS team leader, Pyay
	Pyay General Hospital	Dr Tint Shun	Medical Superintendent
		Dr Khin Hnin Oo	Specialist Physician
		Dr Hnin Wutyee Aye	Paediatrician
		Dr Tin Mar Wai	Obstetrician & Gynaecologist
		Dr Aye Thet Myint	Pathologist
	TB & STD team	Dr Nyein Nyein Aye	TB team leader, Pyay
		Dr Yin Min	STD/AIDS team leader, Pyay
	PLHIV network	Ko Win Swe	Peer/ Network leader
		U Khin Zaw	MSM leader
		Ko Htin Lin Oo	Peer Counsellor (New light forward)
		Ma Naing Naing Maw	Peer Counsellor
		Ma Tin Tin War	Peer Counsellor
		Ma Wai Wai Phyo	Peer Counsellor
		Ma April May	Peer Counsellor
		Ma Myat Noe	Peer Counsellor
		Ko Nay Lin Aung	Peer Counsellor
		Ko Thet Zaw Moe	Peer Counsellor
		Ko Zaw Min Htwe	Peer Counsellor
	Karuna Myanmar Social Services Pyay	Sis. Thin Thin Aye	Project Manager, KMSS Pyay
	New light forward	Ko Htin Lin Oo	Project Manager, New light forward
		Ko Nay Lin Aung	Member, New light forward
	PSI	Ma Thin Sabai Hlaing	Centre Supervisor
Dawei	Regional Health Office	Dr Kyaw Zwar Myo	Deputy Director
		Dr Kyaw Tint Tun	STD/AIDS team leader, Dawei
	Dawei General Hospital	Dr Khin Mar Sann	Specialist Physician
		Dr Yin Moe Khine	Specialist Physician
		Dr Tin Aung	Obstetrician & Gynaecologist
		Dr Hnin Hnin Lwin	Paediatrician
		Dr San San Win	Pathologist
	TB team	Dr Htay Lwin	Regional TB Officer
	STD team	Dr Kyaw Tint Tun	STD/AIDS team leader
	MSF CH	Ms Hope Wall	Field Coordinator
		Dr Sai Lone Tip	Field Medical Advisor
	PLHIV CBO (Future Light)	Ko Zaw Tun	Project Manager, Future Light
	CHBC group	Ko Pan Myat	Accountant
	MSM group (Ray of Light)	Ko Hla Nwe	Project Manager, Ray of Light
		Ko Aung Thu Htwe	Assistant Project Manager
		Ko Aung Kyaw Moe	Peer Educator
		Ko Thit Lwin Maung	Peer Educator
		Win Win	Peer Educator
		Ko Myo Thura Oo	Peer Educator
		Ko Thiha Aung	Peer Educator
	PSI Sun Clinic (Ka nat Thiri Clinic)	Dr Aye Mi San	General Practitioner

Team B –Mawlamyaing and Pha-an

District	Facilities	Interviewee Name	Position/ Title
Mawlamyaing	State Health Office	Dr Than Tun Aung	State Health Director
	TB Team	Dr Win Naing	State TB Officer
		Dr San Hla Phyu	TB Team Leader
		Dr Thin Thin Yi	TB Medical Officer
	AIDS/STD Team	Dr Thant Zin Min	AIDS/STD Team Leader
	Mawlamyaing General Hospital	Dr Kyaw Zay Ya	Medical Superintendent
		Dr Myo Win	Senior Consultant Physician
		Dr Win Thein	Consultant Physician
		Dr Kyi Kyi Win	Consultant Obstetric and Gynaecologist
		Dr Khin San Kyi	Senior Consultant Paediatrician
		Dr Thein Htike	Junior Pathologist
		Daw Ni Ni Win	Medical Social Worker
	IOM	U Aye Htut	Head of Sub-office
		Dr San Lei Phyu	TB Medical Officer
		Dr Aye Thet Oo	M & E Officer
		Dr Win Lei Aye	HIV Medical Officer
		Dr Ohn Ohn Kyi	Assistant Project Manager
		U Aung Moe	Senior Logistician
		Daw Chan Nyein Hlaing	Assistant Social Officer
		Ma Myo Myo Min	Senior Medical Logistician
		Ma Hnin Wai Aung	CD4 Lab Technician
		U Min Thein Zaw	Nurse /Counsellor
	Consortium	Dr Maung Maung Lay	ART Medical Doctor
		Dr Hnin Thawdar Kyaw	Medical Doctor
	MaHay Thi (SHG)	Daw Aye Aye Lwin	Alliance- Prevention Manager
		Daw Aye Cho	Care and Support Assistant manager
		Ma Hnin	Volunteer
		Ma Ohnmar Than	Prevention Supervisor
		Thida Myint	SHG Leader
		Ma Ohnmar Tun	Accountant
	AFXB	Dr Aye Aye Thein	Project Coordinator
		Dr Win Win Khine	Sub-Office In charge
	PLHIV Network	Ma Thi Thi Nwe	Leader of Myitta Sonesi
		Ko San Min Kyi	Leader of Myitta Sataman
		Ma Thin Thin Oo	Member
		Ko Myo Ko Ko	Member
		Ma Hnin	SW Leader
		Ko Aung Naung Oo	MSM Leader
Pha-an	State Health Office	Dr Win Naing	State Health Director
	Pha-an General Hospital	Dr Aye Aye Mu	Medical Superintendent
		Dr Soe Maw	Senior Consultant Physician
		Dr Htay Htay Win	Senior Consultant Paediatrician
		Dr Zin Zin Nyein	Pathologist
	PLHIV Network	U Brany Bo Lay	Member
		Daw Thein Thein Shwe	Social officer
		Daw Thet Mar Lwin	Member of SHG
		Ma Sandar	Peer Counsellor
		Ko Aye TUn	Peer Counsellor
	TB Team	Dr Nay Win Linn	Team Leader
	AIDS/STD Team	Dr Naing Naing Tun	Team Leader
		U Saw Waso Tun	Nurse
		Ma Si Si Aye	Field Associate
		Ma Thasin Tun	Clerk

Team C- Mandalay, Pyin-Oo-Lwin and Lashio

District	Facilities	Interviewee Name	Position/ Title
Mandalay	District health office	Dr Su Su Min Htike	Medical Officer
		Dr Kyaw Soe	Regional Officer (STD/ AIDS team Mandalay)
	Mandalay General Hospital (NAP-Union)	Dr Khin San Myint	Medical Superintendent
		Dr Mar Mar Aye	Specialist Physician
		Dr May Win War	Microbiologist
		Dr Khin Mya Mon	Pathologist
		Dr Nam Sam Si Phong	HIV Unit Manager (UNION)
		Dr Phone Thit	WHO Field Coordinator
	Mandalay AIDS/STD team	Dr Kyaw Soe	Regional Officer (STD/AIDS team Mandalay)
		Dr Htay Thet Mar	STD/AIDS team leader, Mandalay
		Daw Kyi Moe	Senior Nurse
	Mandalay TB Team	Dr Saw Thein	Regional Officer (TB Team)
	Mahar Aung Myay ART Decentralized Site	Dr Yadanar Aung	Township Medical Officer
		Dr Saint Saint Thu	Medical Officer
	PLHIV network	U Aung Mu Kunt	Peer/ Network leader
	MANA Drop In Centre	Dr Tin Aye Kyi	Area Manager
		Ma Moe Thu	Nurse
	Private Sector	Dr Moe Moe Khine	General Practitioner
Pyin-Oo-Lwin Town	Pyin-Oo-Lwin General Hospital	Dr Martin Ba Thaung	Acting Medical Superintendent
		Dr Pa Pa Win	Medical Superintendent
		Dr Aung San Oo	Senior Physician
		Dr Cho Cho San Htoo	Junior Consultant Physician
		Dr Soe Soe Win	Junior Consultant Paediatrician
		Dr Mya San Thein	Laboratory Microbiologist
	Pyin-Oo-Lwin AIDS/STD Team	Dr Pyi Thar Soe	STD/AIDS team leader
	Pyin-Oo-Lwin TB Team	-	Senior Nurse (TB Focal)
Lashio	District Health Office	Dr Zaw Min Tun	Additional State Health Director
	AIDS/STD Team	Dr Myint Kyaw	Regional STD/AIDS officer, Lashio
		U Sein Ni Lay	Counsellor/Investigator
	Lashio General Hospital (NAP-Union)	Dr Di Pet	Medical Superintendent
		Dr Zin Zin Than Wai	Assistant Medical Superintendent
		Dr Aye Aye Mu	Consultant Physician
		Dr Myint Myint Thein	Paediatrician
		Dr Khin Ohnmar Kyaw	Obstetrician & Gynaecologist
		Dr Myint Myint Sein	Senior Consultant Psychologist
		Dr New Ni Soe	Medical Social Officer
		Daw Khin Myint Kyi	Medical Social worker
		Daw Lwin Thida Pyae	Medical Technologist/ Laboratory
		Daw A Thi Win Shwe	Pharmacist
	TB Team	Dr Sai Tun Oo	Team Leader /TB
		Dr Sai Thiha Tun	HIV Clinical Program Coordinator (UNION)
		Dr May Zin Ya	HIV Clinical Program Coordinator (UNION)
	PLHIV network	Daw Myo Myo	PLHIV
		Daw Kyi Kyi Win	
		Daw Kyi Kyi Myint	
		Daw Naw Lar Sae	
	Antenatal Clinic (Lashio)	Dr Tun Than Oo	Township Heath Officer
		Sister Naw Wa Sati	Sister
		Naw May Htoo	Lady Heath Visitor
		Daw Aye Than	Lady Heath Visitor
		Daw Su Su Maw	Midwife
		Daw Ka Law Lar	Midwife
		Daw Nan Shwe Myint	Midwife
	MSF-Holland	Dr Aung Kyaw Lin	Clinic Manager
		Dr Elsa Ragasa	Expert Medical Officer

Team D- Tachileik and Kyaing Tone

District	Facilities	Interviewee Name	Position/ Title
Tachileik	Tachileik General Hospital	Dr Zaw Moe	Physician
		Dr Moe Kyaw	Paediatrician
		Dr Lai Lai Win	OG
	PLHIV Self-Help Group	Daw Thidar Aye	Member
		Daw Kyi Kyi Win	Member
		Daw Khin May Tun	Member
		Kyaw Thi San	Member
		Khin Khin Soe	Member
		San Maw	Member
		Kyaw Min	Member
		San Hla Min	Member
	AIDS Support Group	Dr Myint Aung	AIDS Support Group
	MANA - UNFPA	U Tin Zaw Tun	Supervisor, HIV Prevention Project
		U Thein Thu	Secretary
		Daw Tin Tin Oo	Outreach Worker, HIV Prevention Project
	Malteser International	Dr Saw Heh Mu Htoo	HSO Coordinator
		U Minn Naing Oo	
		Dr Nang Lar Kyauk	Medical Officer
		Ma Aye Aye Aung	Social Worker
		Yi Mon	HE
		Moe Theint Theint Tun	Counsellor
		Aye Aye New	Laboratory Technician
		Ei Swe Zin Aung	Database Administrator
	World Vision International	Peter Moe	Temporary Coordinator
		Nang Dolly Soe	HIV Focal Person
	Mine Koe	Daw Khin San Hlaing	SHG Leader, Maing Koe
Kyaing Tong	Regional Health Office	Dr Min Aung	HIV/AIDS Team Leader, Kyaing Tong
		Dr Nang Saung Kham	Acting Team Leader, Kyaing Tong
	Kyaing Tong General Hospital	Dr Kyi Lwin	Medical Superintendent
		Dr Ye Kyaw	Senior Consultant Physician
		Dr Htun Htun Win	Consultant Physician
		Dr Moe Moe Aung	Paediatrician
		Dr Moe Thu Zar San	OG
		Dr New Khine	CS OG
	Malteser International	Dr Sai Phyo Wai Aye	Medical Officer
		May Kyae Mon	Health Educator
		Tin New Soe	Laboratory Technician
		Chi Raw	Counsellor
		Lai Nu	Counsellor
		Wai Wai Aung	Nurse
	Survival Project PLHA Group	U Archalar	Member
		Ko Kyaw Swar Lin	Member
		Ko San Nyunt	Member
		Ma Saw Nan New	Member
		Ma Di Nar	Member
		Ma Har Na	Member
		Ma Hla Hla Win	Member
		Ma Amina	Member
		Daw Htay Si	Member
		Daw Ah Zi	Member

Yangon Visits

Facilities	Interviewee Name	Position/ Title
PU-AMI	Dr Soe Moe Aung	Head of Base
	Dr Zin Ko Ko Lynn	Program Medical Officer
	Dr Zarni Tun	Medical Coordinator
PSI	Dr Myat Min Zaw	HIV Program Manager (PSI)
	Dr July Win	Medical Officer
Rattana Metta (RM)	Dr Myint Swe	Chair Person (RM)
	Dr Nyi Nyi Aung	
Myanmar Positive Group (MPG)	U Min San Tun	Executive Chief MPG
PLHIV network	U Tun Aung Kyaw	Secretariat
	U Myo Kyaw Lynn	IDU Network
	U San Tun	MSM Network
	Ma Htwe Htwe Myint	SW Network
	Ma Swe	SW Network
	Ma Cho Cho	Finance Officer
MDM	Dr Aung Si Thu	Site Coordinator(MDM)
	Dr Kay Thi	Clinic Manager
	Dr Pyone Sandar	Medical Doctor
	Dr Khin Phone Mo Mo	Medical Doctor
Tharketa General Hospital (NAP-UNION)	Dr Thaung Aye	Medical Superintendent
	Dr Sabai Phyu	Senior Consultant Physician
MSF–Holland (Tharketa)	Ms. Claire Chenot	Project Coordinator
	Dr Thin Thin Thwe	Project Medical Coordinator
	Dr Theingyi Aye	Clinic Manager
Mingalardone Specialist Hospital	Dr Soe Htun Aung	Medical Superintendent
	Dr Htin Aung Saw	Professor
	Dr Aung San	Senior Consultant Physician
	Dr Kyaw Zwa Min	Consultant Physician
	Dr Aye Aye Khin	Consultant Paediatrician
National Health Laboratory (NHL)	Dr Win Thein	Acting Director (NHL)
	Dr Khin Yee Oo	Deputy Director (NHL)
	Dr Swe Set	Pathologist
	Dr Latt Latt Kyaw	Virologist
	Dr L Htoo Pe	Head of Serology Department
	Dr Khin Khin Htoo	Head of Mycology Department
	Dr San Mya	Head of Bacteriology Department

Annex 4 Specialists and consultants involved with the Rapid ART Assessment

Ms. Savina Ammassari, Strategic Information Adviser, UNAIDS

Ms. Vladanka Andreeva, Strategy Intervention Adviser, UNAIDS RST

Dr. Htin Aung, National Technical Officer, WHO Myanmar

Dr. Myo Set Aung, Programme Manager, Save the Children Myanmar

Ms. Ma Ma Aye, National Technical Officer, WHO Myanmar

Ms. Phavady Bollen, HIV/AIDS Technical Officer, WHO Myanmar

Dr. Helen Chun, Medical Officer, Center for Disease Control, Atlanta

Dr. Htun Nyunt Oo, Deputy Director, Treatment and Care, National AIDS Programme, Myanmar

Dr. Meg Doherty, Coordinator – HIV Care and treatment, WHO Geneva

Dr. Nathan Ford, Treatment 2.0 Coordinator, WHO Geneva

Dr. Charles Gilks, Technical expert and consultant

Mr. Eamonn Murphy, Country Director, UNAIDS Myanmar

Dr. Razia Narayan Pendse, Scientist, WHO SEARO

Dr. Vimlesh Purohit, HIV/AIDS Medical Adviser, WHO Myanmar

Ms. Parsa Sanjana, Deputy Director, Save the Children Myanmar

Dr. Phyumar Soe, Consultant, UNAIDS Myanmar

Ms. Madeleine Stuart, Consultant, Save the Children Myanmar

Dr. Myo Thant, Regional Officer, National AIDS Programme, Myanmar