World Health
Organization

Operations Manual
for Delivery of HIV Prevention,
Care and Treatment at
Primary Health Centres
in High-Prevalence,
Resource-Constrained Settings

Edition 1 for Field-testing

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Foreword

INTRODUCTION AND GUIDING PRINCIPLES

The *Operations Manual* is intended for use in countries with high HIV prevalence and provides operational guidance on delivering HIV services at health centres. Basic primary care and key services, such as maternal and child health, are currently delivered at health centre level. Provision of essential HIV services do not necessarily require specialized HIV clinics or the presence of a doctor. The use of this *Manual* will assist health centres to plan and deliver HIV prevention, care, and treatment in an integrated manner. It provides a framework to ensure that HIV services can be provided in an integrated, efficient and quality-assured manner.

The *Manual* is based on a public health approach to scaling-up HIV services in resource-constrained settings. This approach includes simple, standardized regimens and formularies; algorithmic clinical decision-making; standardized supervision and patient monitoring approaches; as well as integrated delivery of care at primary health centres within a district network. Decentralization of services to health centre and community level is facilitated with the public health approach. This *Manual* supports efforts to deliver and scale up HIV prevention interventions including provider-initiated testing and counselling, prevention of mother-to-child transmission, prevention of HIV and TB transmission and prevention of disease progression in HIV-infected individuals.

The *Operations Manual* deals with environmental health, logistic, managerial and infrastructure requirements for delivery of the essential HIV and primary care services. These are laid out in clinical guidelines such as country-adapted WHO Integrated Management of Adolescent and Adult Illness (IMAI), Integrated Management of Childhood Illness (IMCI) and Integrated Management of Pregnancy and Childbirth (IMPAC) guidelines or other national clinical guidelines for provision of acute and chronic HIV care.

■ **Target audience**

This *Manual* is written for the health centre team, and in particular the health centre manager (often an in-charge nurse). Specific chapters may be particularly useful for those with specific tasks such as managing the supplies, providing laboratory services, or managing patient records, registers and reports. The *Manual* is intended to be both a learning and job aid for the health centre worker. During country adaptation, some content may be presented as wall charts or used to develop standard operating procedures for various services or specific types of patients.

The *Manual* should also be helpful to the district management team, that supervises and supports health centre services, as well as being useful to the national Ministry of Health and other partners planning and supporting decentralization of HIV services. An Adaptation Guide summarizes the evidence for the guidance and supports national country adaptation of the *Manual*.

■ **District health systems**

The district health system or "district network" serves a population within a specific geographic area and consists of all the organizations, institutions, resources and people whose primary purpose is to improve health. At the core of most district health systems is the district hospital which acts as the first referral level for patients, and provides clinical, laboratory, pharmaceutical, and supplies support for health centres within that district. The district health system also functions as the organizing unit for planning and management. Functions such as supply chain management, reporting, and supervision for all the facilities in the district are the responsibility of the district health management team, which is commonly located at the district hospital. District management includes administrative services and multiple programmes (including HIV, TB and MCH) and often addresses other sectors in addition to health. This role is increasingly important, with substantial decentralization of services in many countries.

District support for the health centre includes

- District clinicians (doctors, medical officers, clinical or health officers) who:
  - provide consultative back-up
  - visit clinical teams at the health centre to review cases
  - provide clinical mentoring
  - provide care for referred patients including managing severe or complicated cases.
- District health management team (for HIV, TB, MCH, other programmes) who provides:
  - supportive supervision
  - important support to the health centre in terms of supply, laboratory, hiring health workers, transport, training, etc.

District support for health centres include laboratory and pharmacy staff, as well as clinicians and managers.

■ **Support from the district health management team**
This logo appears when support from the district is discussed or where close working relationships with the district health team are required.

District Team Support

District Health Network

Referral Hospital
(3rd level)

Supportive Supervision
Clinical Mentoring
Referral, Back-referral
Communication

District Hospital
(2nd level)

Deliveries

Health Centre
(1st level)

Health Centre

HIV services in community via
NGO/CBO/FBOs
Schools
PLHIV groups
Other community groups

Referral, Back Referall,
Supplies, Specimens,
Phone Consultations

Phone/radio for advice

Specimen transport

Patient transport

The district health system contains health centres that are fixed facilities with professional staff. These in turn support a variety of health related activities in the community, including health posts or dispenseries that may be staffed by community health workers. Linkages between services at these three levels of the district health system should exist to make sure that HIV services are provided for patients, and that active follow-up and referral from the health centre occur as needed for continuity of care.

The community and community-based organizations are vital within the district health system because they provide an important link to resources in the community that support HIV prevention and long-term care. It is crucial to involve the

community in planning and advocating for the health centre. This is described in more detail in the *Community* chapter.

■ **Integration**

Integration of HIV services into the existing basic health services within the health centre and across the different levels of the health system is essential for successful HIV services from the perspective of both the health centre and the clients accessing care. Every contact with the health centre can be used as an opportunity to deliver HIV services. This *Manual* supports best practises in integration, such as providing integrated care for families, and training health workers so that patients receive all their needed services in a single visit, including integrating HIV services into the antenatal, labour and delivery, and newborn services.

Assumptions of the *Operations Manual*

- High HIV prevalence in generalized epidemics
- Material and human resource constraints
- Limited essential laboratory tests performed on site with few essential tests sent to the district hospital
- Refrigeration limited to that required by immunization services, this may require adaptation as other drug formulations which require refrigeration are added .

■ **The capacity of the target health centres**

This *Manual* addresses both large and small health centres within the district health system.

  ■ Small health centres provide basic primary health care and prevention services, including ambulatory acute care services, immunizations, antenatal and postpartum services, family planning, sexually transmitted infection (STI) management, TB, and child health services.

  ■ Large health centres are those that have an additional limited number of beds primarily used for labour and childbirth and for patients under observation during the day, or while waiting to be transferred to hospital. Facilities with inpatient wards would be considered as small hospitals, rather than health centres. Health centres have clinical teams led by a nurse, midwife or medical assistant (or in some settings by a clinical officer). The team is supported for mentoring, referral and back-referral by a district clinician at hospital level. Additional supportive supervision is provided by district management teams for HIV, TB, and maternal and child health.

The catchment population for a small health centre may be up to 10,000, while a large health centre may serve a population area of 20,000.

- ◾ **National adaptation**
The essential interventions and the systems and resources needed to support the interventions outlined in the various chapters of this *Operations Manual* are likely to be applicable in most high HIV prevalence, resource-constrained settings. However, in eaach country the *Operations Manual* requires a national adaptation process by the ministry of health and its partners to fit national policy, existing guidelines, clinical and patient monitoring tools, the health systems context, and the resources of each country.

- ◾ **How to use this *Manual***
This *Manual* is not exhaustive. It is designed to be used by health workers as a job aid and for practical problem solving on a chapter by chapter basis. (It is not a training manual, but chapters can serve as a learning aid during training courses). Some overlap in content is inevitable to allow the *Manual* to be used in this way but this has been kept to a minimum. Wherever possible the relevant chapter is referred to clearly. There are a number of topics which appear in multiple chapters. Several of these are services that are currently being scaled up. Some are general issues that affect the health centre and others are HIV-specific. All are clearly marked with a logo to make it easy to pick them out.

- ◾ **Human resources**
The intention of this *Manual* is to support health workers with a systematic approach to HIV services and to provide a framework within which HIV patients are seen, counselled and treated. (Many of these patients were already attending the health centre with medical complaints before their HIV status was identified.) It also gives staff in a facility an advocacy tool to request additional human resources when necessary. This logo appears when issues of staffing, human resources and training needs are discussed in a chapter. Planning, training and supporting health worker safety and other efforts to retain staff are discussed in the *Human Resources* chapter.

- ◾ **Quality management**
'Quality of care' has three fundamental aspects: 1) patients receive the care they need; 2) the care delivered is consistent with national guidelines; and 3) the care delivered has the desired positive effect on patient health and well-being. Improvements in quality can occur without additional resources, since everyone has a

responsibility for quality, from national to individual level. Quality is affected by many different factors, including leadership, and whether there is adequate infrastructure, appropriate training, and available resources. This logo appears wherever aspects of quality management are mentioned in a chapter, such as the quality of HIV testing or workplace improvement. The client and community perspective also form an important aspect of quality; issues that might be important to monitor include waiting times, cleanliness and staff attitudes to PLHIV. The last chapter in the *Manual* presents a simplified quality improvement approach. It sets out a systematic and planned approach to assessing, monitoring and improving the quality of health services on a continuous basis.

■ **TB control**

This logo appears throughout the *Manual* in order to highlight the topics related to the prevention and control of TB. TB infection control appears throughout the *Manual,* including how to improve room air ventilation, separating TB suspects, promoting cough hygiene in waiting areas, the health centre's TB infection control plan; assuring rapid identification, diagnosis and treatment of TB; laboratory biosafety; and community TB literacy and action. This *Manual* also supports intensified case finding and isoniazid preventive therapy (with infection control, these are the "Three Is").

■ **Provider-initiated testing and counselling for HIV (PITC)**
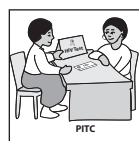
This logo highlights the operational considerations for the scale-up of PITC. PITC is recommended in all health facilities in high prevalence settings for people who do not know their HIV status. Specific emphasis focuses on key entry points for HIV care through PITC, to the flow of patients in the facility, and to planning for scale-up of HIV testing, including supply of test kits, the quality assurance of testing services, and the training and support needs for staff conducting testing and counselling.

■ **Prevention of Mother to Child Transmission (PMTCT)**
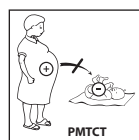
Some interventions to prevent the transmission of HIV from mother to child are already present in some health centres. This *Manual* supports an integrated approach to rapidly expanding the proportion of pregnant HIV-infected women on ART by integrating its delivery into antenatal clinics with the continued follow-up, testing, and care of their HIV exposed infants. These interventions have an impact on PITC and the supplies, training and quality needs for HIV counselling and testing in the facilities, as well as on antenatal care services, labour and delivery services, the

care of the infant, family planning and other child welfare services. Strong linkages with the community and the partners and family members of women are tested and receive services are a key to the successful integration of PMTCT.

■ **Paediatric care and treatment**

This *Manual* supports efforts to assure prompt testing of all HIV-exposed infants, scale-up of paediatric care and treatment to increase coverage, and quality of care and treatment to HIV-positive children. HIV-exposed and infected children need to be on cotrimoxazole, and more infants and children need to be initiated early on ART. This requires appropriate paediatric formulations at the health centre.
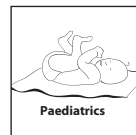
■ **Community**

How do we define community and why is it important for our work? For the purposes of the health centre and this *Operations Manual*, community refers to people living with or affected by HIV in the population served by the health centre. This can include PLHIV and their families, but also includes health workers and CBOs providing services to them. The long-term medical and psychosocial consequences of HIV require sustainable community-based services to provide ongoing services and support. PLHIV rely on regular medical contact and support from the health centre. However, it is not practical for the centre to provide all the support needed by PLHIV and their families. Instead, community structures need to be strengthened to provide synergistic support, in close collaboration with the clinical team in the health centre and the district management team.

This *Manual* does not cover:

- special services for injecting drug users, guidance for this group is available elsewhere;
- surgical or specialized reproductive health services such as female sterilization, vasectomy, or adult male circumcision.

PLANNING INTEGRATED HIV SERVICES AT THE HEALTH CENTRE

2.1   INTRODUCTION

Achieving quality integrated HIV services at your health centre is dependant on good planning and management. This chapter should help you plan delivery of the essential HIV services that your health centre needs. In part, this assistance is based on lists of the basic essential and desirable interventions for HIV prevention, care and treatment at health centres within a district health network.

These lists require country adaptation that takes into account current national guidelines, essential drug lists, existing services provided at the health centre, and the feasibility of adding specific HIV services. Each country should replace this generic list with a one that identifies both essential and desirable interventions. Some better-resourced health centres may be able to deliver enhanced services. Finally, the chapter concludes with a section that outlines how you can estimate your HIV service needs based on the catchment area of your health centre. The material provides formulae for estimating the required new or expanded services.

HIV services continue to evolve, and new guidelines and interventions are expected in the future. The lists, tables and formulae below are based on the 2009 evidence summarized in the accompanying Adaptation Guide, and require country adaptation.

Health centres function within a district network and are the focal point of health care in the community. On the one hand, they seek support and more specialized services from the district network. On the other hand, they provide support to communities, patients, their partners and families. They may do this directly through outreach or home-based programmes, or indirectly through advocacy, support groups and education. A number of services, such as door-to-door testing, counselling and

home-based care may be delivered directly at the home. In some settings, hospitals may also play an important role in community outreach programmes.

The health centre's roles in supporting these community services can be found in the lists that follow. Health centres have the closest connection to existing community-based structures and organizations involved in HIV prevention, care and treatment, and both the centres and communities benefit from this. The introduction of chronic HIV care and ART has further changed the care needs of a patient, making these linkages and integration even more important. To meet all the needs of patients and their families as they try to cope with HIV or AIDS and care-related issues, the health centre needs to function as part of a larger system of support.

2.2   ESSENTIAL AND DESIRABLE INTERVENTIONS

This section outlines the interventions needed for integrated HIV prevention, care, treatment and support at the health centre, and is based on the WHO priority interventions for HIV/AIDS prevention, treatment and care in the health sector. The interventions summarized in Annex 2-1 are compatible with the WHO recommendation for priority interventions.

More detailed tables on planning and implementation can be found in Annex 2-1. They have been formatted to help you to assess the services currently being provided at your health centre. A column in each table uses a key to make reference to relevant IMAI, IMCI and other training manuals. It also provides cross-references to material in other chapters of this *Manual*.

The Annex tables list services applicable to all age groups first, and then spell out special considerations for children, adolescents and pregnant women. Most interventions are relevant for both children and adults. However, infants and children also require special interventions and modifications, or special considerations related to HIV service delivery. Separate sections of the lists include both routine childhood services and specific services for HIV-exposed and HIV-infected children.

In resource-constrained settings, common childhood illnesses are significant factors in the illness and deaths of HIV-exposed and HIV-infected children. A guiding principle for paediatric HIV services is to ensure that basic HIV-specific services are fully integrated into existing maternal child health services at health centres. In some cases, reorganizing the health centre's child health services may be needed in order to ensure that comprehensive care for HIV-exposed, -infected or -affected children is provided.

These lists of essential and desirable interventions are limited to the health sector. However, it is important to note that an effective response to the HIV epidemic requires the involvement of multiple sectors as outlined in the section above. The lists include only the services that can be supported by laboratory tests available to patients attending the health centre. This includes laboratory tests that are readily available as "send-outs" to the district or central laboratory (see the *Laboratory* chapter).

The components of the WHO priority interventions for HIV/AIDS prevention, care and treatment for the health sector focus on five strategic directions[1]:

1. increasing knowledge of HIV serostatus
2. accelerating HIV prevention
3. accelerating the scale-up of HIV treatment and care
4. strategic information
5. health systems strengthening.

This chapter and Annex 2 concentrate on the clinical and behavioural interventions that can be scaled up at health centre level through focusing on strategic directions one to three. Direction number four, 'strategic information' is addressed in the *Monitoring* chapter. As for strategic direction number five, it flows through the entire text, since this *Manual* aims to strengthen health systems by addressing management and logistics at health centre level within a district health network. Most health systems strengthening interventions are presented in other chapters of the *Manual*. Detailed guidelines and job aids for these interventions are found in country-adapted WHO Integrated Management of Adolescent and Adult Illness (IMAI), Integrated Management of Childhood Illness (IMCI) and Integrated Management of Pregnancy and Childbirth (IMPAC) guidelines or other national clinical guidelines for provision of acute and chronic HIV care.

2.2.1 INCREASING KNOWLEDGE OF HIV SEROSTATUS

Priority interventions include:

- client-initiated testing and counselling (CITC);
- provider-initiated testing and counselling (PITC);

  - family and partner testing and counselling (based on index case);
  - PITC during early antenatal care, labour, and post-partum period;
  - infant and child HIV testing and Counselling;
  - PITC in reproductive health services including family planning;

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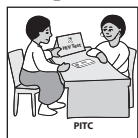
[1] See WHO. 2008. Priority interventions HIV/AIDS Prevention, Treatment, and Care in the Health Sector for more detailed information. http://www.who.int/hiv/pub/guidelines/2008priorityinterventions/en/index.html

- PITC when patients show signs/symptoms of illness that may suggest HIV infection, including TB, STI, other WHO HIV-staging illness, and increasingly other common minor complaints;
- PITC for men seeking circumcision as an HIV prevention intervention;
- laboratory services for HIV diagnosis.

2.2.2 ACCELERATING HIV PREVENTION

Accelerated HIV prevention programmes can help with:
- **Preventing sexual transmission of HIV by**
  - promoting and supporting condom use;
  - detecting and managing STIs;
  - safer sex and risk reduction counselling: This includes active support for partner disclosure and testing, discordant couples risk reduction, counselling on the possibility of HIV transmission while on ART, assessing substance use, providing brief alcohol interventions;
  - male circumcision for HIV prevention;
  - prevention among PLHIV;
  - targeted interventions for sex workers and men who have sex with men (MSM);
  - non-occupational post-exposure prophylaxis (in cases of condom breakage and rape);
  - specific considerations that target young people;
    – adolescent-friendly services;
    – assured access to reproductive health services including family planning and condom provision;
  - specific consideration for vulnerable populations: displaced, mobile and migrant populations, prisoners and people in other closed settings;
  - mental health hospitals/institutions;
  - interventions for injecting drug users;

- **Prevention of HIV infection in infants and young children (PMTCT)**
  - primary prevention of HIV transmission among men and women;
  - family planning, counselling and contraception;
  - antiretroviral medicines for preventing HIV infection in infants;
  - treatment, care and support for pregnant women living with HIV;
  - infant feeding counselling and support.

PMTCT
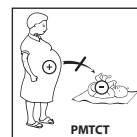
TB control

■ **Preventing HIV and TB transmission in health care settings:**
▪ infection control (TB and HIV) in health-care settings
▪ blood safety
▪ safe injections and routine use of standard precautions
▪ occupational post-exposure prophylaxis (PEP) for HIV
▪ safe waste disposal management.

2.2.3   ACCELERATING THE SCALE-UP OF HIV TREATMENT AND CARE

Primary interventions include:
■ Antiretroviral therapy for adults, adolescents and children
  ▪ treatment preparedness and adherence support
  ▪ patient monitoring.

■ Prevention and management of opportunistic infections and co-morbidities included:
  ▪ managing HIV-related conditions
  ▪ managing pneumonia
  ▪ cotrimoxazole prophylaxis
  ▪ managing diarrhoea
  ▪ managing malnutrition
  ▪ preventing and managing malaria
  ▪ managing viral hepatitis
  ▪ vaccinations for infants and children, per national programme
  ▪ preventing and treating mental health disorders
  ▪ counselling.

■ Palliative care

■ Tuberculosis prevention, diagnosis and treatment:
  ▪ isoniazid preventive therapy (IPT)
  ▪ intensified TB case finding
  ▪ early identification and treating HIV-associated tuberculosis.

■ HIV and TB treatment and care for health workers.

2.3 ESTIMATING HIV SERVICE NEEDS

To estimate the infrastructure and staffing needs that HIV service provision will generate in your health centre's catchment area, you need to include requirements for HIV testing, care and ART for all patient types. This includes TB patients, both pregnant and non-pregnant women, children, and other adults. Estimates need to take into account:

- numbers requiring HIV testing and counselling due to scale-up, including PITC;
- increasing numbers of patients in chronic HIV care and ART;
- other HIV prevention services that are being scaled up.

The following step-by-step approach will assist you in your planning process.

STEP 1: Find out the population of your catchment area and estimate the proportion that is under 15 years of age and the proportion that is over 15 years. This information is often available from district offices, or from the central bureau of statistics, or the office of population.

STEP 2: Find out the HIV prevalence in your catchment area. If this information is not readily available, use national or district HIV prevalence data.

STEP 3: Combine information from Steps 1 and 2 to estimate the total number of PLHIV that your health centre serves, as well as to obtain an estimate of the number of people who will be enrolled in your HIV programme.

STEP 4: If you have client-initiated services at your health centre, then the next step is to calculate your counselling and testing requirements. In practise, new sites rarely see more than 100 clients per month in the first few months, so use this as a guide. Thereafter, once services are established, the best guide to estimating the patient number is to refer to the number tested in the previous quarter, taking into account seasonal variations such as school holidays, rainy seasons, planting and harvest times, all of which might affect client flow through the centre.
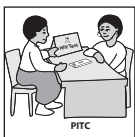
STEP 5: PITC will increase the rate of HIV testing. The following table will help you estimate the number of rapid test kits, human resources and space requirements for the initial scale-up of PITC. (In time, you can use the forecasting methods in the *Supply Management* chapter). The estimates below are larger than in reality in order to account for patients who return for repeat testing.

Adults	Source of information for estimates	Number of patients	Percentage of group that needs testing	Total
Antenatal patients	antenatal care (ANC) register		100%	
New TB patients of unknown status	TB register		100%	
STI patients	Acute care register		100%	
FP patients of unknown status			100%	
Adult outpatient department (OPD) patients (acute care, people suspected of having TB, etc.)			80%	
Total number of adults needing testing monthly				
Estimated number of adults needing testing daily = total number needing testing, divided by the number of days clinic is open per month				
Number of full-time rooms or private spaces and counsellors needed for full scale-up*				

* Estimate based on a counsellor able to carry out rapid HIV testing and post-test counselling for 15 patients each day.

After your health centre introduces or strengthens PITC, your estimates for increased HIV testing will need to take into account:

- the number of pregnancies that are currently managed in antenatal care, and the estimated number you will need to manage when antenatal care coverage is improved;
- the proportion of patients who will consent to be tested in each category;
- the current status of your efforts to provide HIV tests for your TB patients. Do most know their status now, or do you need to recommend testing for all of them? Once you know the HIV status of most of your TB patients, on a monthly basis you will only need to give HIV tests to new TB patients, and to people who are believed to have HIV;
- the level of activity your centre has achieved in carrying out partner testing.

The estimates that you arrive at will likely exceed the actual number of patients who accept HIV testing, especially in the early stages of your scale-up. You should then consider the resources and likely scale-up rate you can achieve, and use it to come up with estimates about HIV testing after your services have been established for some months.

The exact figures may be difficult to forecast. Therefore, it is important that centre management ensures it has an adequate buffer stock of rapid HIV test kits and a method for rapid re-supply if stocks become depleted.
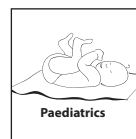
STEP 6: Estimate the number of children that need testing.

Paediatrics

Children	Source of information for estimates	Number of children	Percentage of group that needs testing	Total
HIV-positive women in ANC clinic	ANC register		100%	
'Under 5' clinic	Acute care register		100%	
Sick children with HIV-positive mothers			100%	
Sick children with mothers with unknown serostatus			100%	
Sick children with HIV-negative mothers				
Sick children aged between five and 15 years			Estimate of the prevalence x 2	
Total number of children who need testing monthly				

* Estimate based on a counsellor able to carry out rapid HIV testing and post-test counselling for 15 patients each day.

STEP 7: Estimate the number of patients coming to your centre who will be HIV-positive—this is the number of PLHIV requiring chronic HIV care.

A rudimentary way to calculate the total number of HIV-positive adults in any population is HIV prevalence multiplied by one-half of the total population (an estimate of the adult population).

More complex calculations can be carried out by using the prevalence in different populations, since the prevalence will vary by patient population, e.g. it will be higher in TB patients. These calculations can be used in the next step to estimate the number of PLHIV who will be on ART in different populations.

STEP 8: Estimate the number of PLHIV who will be on ART.

This table helps you estimate the need for ART services based on your estimated HIV-positive patient population once PITC is scaled up. This may then may need to be modified to reflect your ART allocation.

PLHIV	Estimated number PLHIV identified within next year	Estimated percentage that requires ART when found to be HIV-positive	Number of PLHIV who will need ART within next year
Pregnant women		20-30% will require ART Remainder (70-80%): PMTCT ARV prophylaxis	
Adults seeking care for illness		Often 30 to 60% of PLHIV will be eligible for ART (as HIV testing expands and patients enter chronic HIV care earlier, this percentage should drop)	
HIV-infected children			
TB patients		100% (either during or after TB treatment)	

STEP 9: Estimate the frequency of clinical visits (Note that percentages of patients on ART need to be adapted to reflect site/country realities).

	Number of visits/month*	Number of visits/week	Number of visits/day
100 PLHIV in chronic HIV care			
If 30% are on ART	53	13	3
If 50% are on ART	66	17	3
If 100% are on ART	100	25	5
250 PLHIV in chronic HIV care			
If 30% are on ART	133	33	7
If 50% are on ART	167	42	8
If 100% are on ART	250	63	13
500 PLHIV in chronic HIV care			
If 30% are on ART	267	68	14
If 50% are on ART	333	83	17
If 100% are on ART	500	125	25
750 PLHIV in chronic HIV care			
If 30% are on ART	400	100	20
If 50% are on ART	500	125	25
If 100% are on ART	750	188	38

* The assumption behind these calculations is that patients on ART are seen by a clinician every month (on average) and pre-ART patients are seen every three months (on average). There will always be patients who are lost to follow-up (LTFU) and others who miss appointments. However, there will also be additional unscheduled ("walk-in") patient appointments of people suffering from drug toxicity, acute illness, etc.. This calculation assumes that missed and extra appointments balance each other out. These estimates do not describe visits for counselling, laboratory, pharmacy or other non-clinical services.

STEP 10: Estimate of clinical consultation room capacity.

	Number of visits/month	Number of visits/week	Number of visits/day
If the majority of patients are follow-up cases	600	150	30
If > five patients/day are new	500	125	25

Throughout, this *Manual* focuses on both large and small health centres, using estimates for the management of 100, 250, 500 or 750 PLHIV in chronic HIV care, with 30% to 50% on ART (these percentages needs country adaptation). Estimates of infrastructure, staffing and laboratory testing needs are shown for these numbers of patients, as well as the requirements for testing, other PMTCT interventions, and the scale-up of other prevention interventions.

CHAPTER 3

SERVICE INTEGRATION, LINKAGES AND TRIAGE

3.1   ORGANIZING HIV SERVICES: INTEGRATION, LINKAGES AND TRIAGE

> **Definitions as used in this** *Operations Manual*
>
> **Integration:** Deliver of services or multiple interventions together on the same patient visit by the same health worker or clinical team.
>
> **Linkages:** Relationship between the health centre and services at the hospital or in the community, or between separate clinics organized within the same health centre, or between clinicians and the lab or pharmacy.
>
> **Triage:** Sorting of patients into priority groups according to their needs and the resources available.

Service integration and linkages can improve care and reduce missed opportunities for key interventions such as HIV testing, provision of ART, PMTCT, and adherence support. Integration of care is an important strategy to improve patient retention in long-term HIV care and treatment. This chapter describes best practises in integration, linkages and triage, and highlights specific priority areas including integration of provider-initiated testing and counselling into clinical services; integration of HIV services into antenatal, labour and delivery, postpartum and newborn care; TB-HIV co-management; integration of family planning into maternal and HIV care; and integration of STI screening and management into chronic and acute care.

3.2 INTEGRATING SERVICES AT THE HEALTH CENTRE

Definition of services integration

Service integration means blending either some of the elements of, or all aspects of one service into the regular functioning of another service. A key prerequisite to successful integration is the strength of the primary service into which elements of another service are to be integrated.

■ **Examples of integration:**
  ■ screening for tuberculosis in the chronic HIV care clinic;
  ■ co-management of TB and ART treatment on the same visit by the same provider;
  ■ offering PITC, clinical staging, CD4 counts and antiretroviral therapy at the antenatal clinic.

■ **Service integration is important because it can improve care since it:**
  ■ provides more comprehensive care to the patients;
  ■ improves patient adherence to treatment when multiple interventions are required;
  ■ avoids missed opportunities for key interventions and minimizes patients being 'lost' in the system;
  ■ makes visits more efficient for the patient (avoids costly, time consuming, multiple visits by the patient and his/her family);
  ■ makes visits more efficient for the clinical team, particularly at health centre level;
  ■ reduces waiting times during a visit.

In a recent technical brief, WHO defined integrated service delivery as "the organization and management of health services so that people get the care they need, when they need it, in ways that are user friendly, achieve the desired results and provide value for money". The district health team has a central role in fostering and overseeing integration at health centre level.

Another aspect of integration is the psychological integration of care into the patient's life. Encouraging patient self-management and actively engaging the patient and their family in long-term HIV care is essential. Therefore, it is crucial to understand and relate how services are delivered and integrated in order to support patient self-management. The time spent receiving care in the health centre is small compared to self-care at home (see chapter 4, *Community*).

3.2a APPLYING BEST PRACTISES IN INTEGRATION

Health centre staff can do a great deal to integrate HIV services. Strive for these basic principles when reorganizing health centre services:

- **Each health worker should be trained to provide multiple HIV services**
  - deliver multiple interventions/services by a single provider
  - health workers should be able to provide key interventions during the same visit for different types of patients (see Table 1).

  This may require additional training:
  - training courses that integrate multiple interventions are available (IMAI, IMCI, IMPAC);
  - training, mentorship, and supportive supervision are also essential, in addition to clinical training.

- **Support comprehensive care within the health centre team**
  - make efficient use of all health staff to provide all the HIV services the patient needs (as it is not efficient for every health worker to provide all services);
  - focus on providing integrated services to the most common types of patients;
  - refer patients with uncommon conditions that require a higher level of care to the district hospital, or to another health centre with more patients with the same condition, even though travelling there may be more inconvenient;
  - if staff are overloaded with too many tasks, increase the number of staff, or shift tasks (see chapter 9, *Human resources*);
  - shift some tasks to other members of the team.

Example: *Nurses, who are often the main clinical providers at health centres, can shift provision of HIV testing and counselling to PLHIV lay counsellors.*

- **Be flexible**
  - Discuss roles and linkages between two health workers in different clinics (programmes) in the same health centre, for example, under 5 care, HIV care, ANC, FP. This will help to prevent loss of patients. This applies primarily to larger, urban clinics. In small PHCs, there is limited staff.
  - Identify best sequence and approach for each patient type.

- **Minimize queuing**
  - improve triage to identify services the patient requires (see section 3.13);
  - screening for TB or HIV can be done for all patients while they queue for a general medical consult, so they do not have to queue again for these services after the consult.

- **Minimize clinic visits**
  - Bundle the delivery of several interventions into a single visit.
  - Provide multiple services in a single visit, for example for a pregnant women, provide HIV care and treatment during the same visit as ANC care.
  - Try to schedule appointments for different services on the same day for a patient e.g. TB and HIV clinic visits if the services are not provided at one point.

- **Consider the family unit**
  - HIV and TB are often family illnesses. When a person with TB or HIV is identified, it provides an opportunity for family members to access services.
  - Minimize separate clinic visits for different family members – children are often brought to the health centre by their parents. Therefore, schedule mothers for chronic HIV care on the same day as their child's visit.
  - Consider scheduling family days on Saturdays so families with working parents or children attending school can attend a single visit – in this way, children, caregivers and couples from one family can attend together.
  - Think about alternate opening times for the centre in order to accommodate working hours of clients.

Example: *One health centre scheduled clinic sessions on Saturday and Sunday for couples and families, and staff then took off extra time during the week.*

- **Integrate care across the family**
  Track the care of mother–child pairs:
  - Record the mother's HIV status (HIV exposure) on the child's Road to Health (RTH) card.
  - Consider longitudinal tracking of the family.
  - Ensure that everyone in the family is tested for HIV and record the test result of all on patient charts – this is particularly important for fathers who may be working away from the family or older children who have not yet been tested.
  - Identify discordant couples and offer counselling and other preventive services
  - Help the family adhere to care and treatment by combined visits.

Example: *Some teams draw a 'genogram' On the patient's chart to help with integrated care across the family. Others have implemented a family identification number that is a suffix or prefix to the unique identifier number.*

Table 1: An integrated approach to providing services at various clinics organized at health centre level. Most patient types can receive 'one-stop-shop' care with this approach. This requires expanding health worker capacity to provide key HIV and TB interventions.

	Triage/waiting area	Acute care/medical clinics – adult	Under 5 clinics (acute care, immunization)	TB clinic or corner	Chronic HIV care/ART	ANC, PP clinic	FP: IUD, injectables, refills	Adolescent-friendly clinic or room
Screen for TB • cough • other symptoms, signs	✖	✖ ✖	✖ ✖	✖ ✖	✖ ✖	✖ ✖	✖	✖
Clinical staging, CD4, ART initiation and monitoring				✖	✖	✖		
PITC HIV	✖	✖	✖	✖	✖	✖	✖	✖
Prevention for negatives	✖	✖		✖		✖	✖	✖
Prevention with positives		✖		✖	✖	✖	✖	✖
Sexual and reproductive health, FP, reproductive choice counselling		✖		✖	✖	✖	✖	✖
Acute care – adults: pneumonia, diarrhoea, skin, mental health, etc., OI		✖		✖	✖	✖		✖
Acute care – children: IMCI for high HIV prevalence settings			✖		✖	✖		
HIV-exposed infant interventions: test, CTX, feeding counsel/support			✖		✖	✖		
Palliative care: symptom management		✖	✖	✖	✖	✖		✖
STI screening and treatment		✖			✖	✖	✖	✖
Malaria • case management • promote ITN use • Intermittent Preventive Therapy (IPT)		✖ ✖	✖ ✖		✖ ✖	✖ ✖ ✖		✖ ✖

3.2b INTEGRATE PITC INTO ALL CLINICAL SERVICES

■ **HIV testing and counselling should be recommended to:**
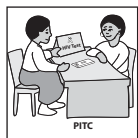
- ■ all pregnant women of unknown status, including L&D;
- ■ all HIV-exposed infants or infants of mothers with unknown status;
- ■ all partners and immediate family members of PLHIV including all their children;
- ■ all sick adolescents and adults, or all with suggestive signs/symptoms (in general medical clinic, etc.) or all adolescents and adults attending clinic;
- ■ all people suspected of having TB and TB patients;
- ■ all patients with STIs;
- ■ all children seen in paediatric health services;
- ■ all health workers.

To accomplish this efficiently and effectively requires integrated provider-initiated HIV counselling and testing services delivered at settings in the public and private sectors, as well as making client-initiated HIV counselling and testing available to all.

In order to test all these patients, testing and counselling to be consistent with PITC, rapid HIV testing or DBS collection on the infant, and post-test counselling and testing need to be recommended by a range of health care providers working in all service delivery settings of your health centre including:

- ■ out-patient acute and chronic clinics and primary care settings organized for adults, adolescents, children and infants (and STI clinics if organized separately at health centre level);
- ■ routine immunization and nutrition services for children – 'Under 5' clinics;
- ■ tuberculosis clinics (TB patients are more likely to be co-infected with HIV);
- ■ antenatal/postpartum clinics and labour and delivery services;
- ■ family planning clinics;
- ■ community clinics, outreach services, and agencies that offer home-based testing for partners and children.

■ **Create strong linkages from PITC services to chronic HIV care**

All patients who test positive for HIV need to be effectively linked with chronic HIV care services. Determine whether the newly identified PLHIV needs emergency or fast-track HIV or TB care and treatment; act immediately if they do. Patients who do not require urgent care still require comprehensive assessment and care including clinical staging, CD4 count, cotrimoxazole prophylaxis, TB prevention, prevention with positives, and monitoring for Opportunistic Injections (OIs) and disease progression, so that ART and other interventions can be provided in a timely manner.

within the community

Entry points to HIV care

Door-to-door testing

Home-based care

PITC

Outreach
❑ Adolescents
❑ Sex workers

Traditional healer

Family/Sexual partner of Index case

District Hospital

Medical

Pediatrics

PITC

Surgical

Nutrition rehabilitation unit

HEALTH CENTRE

Adult Acute Medical Centre

STI

TB

PITC

Family planning

Pediatric/Under 5

Antenatal/post-partum and newborn care/PMTCT

Chronic HIV Care Clinic

PLHIV Referred to Health Centre

PLHIV Referred to Health Centre

Other Community-based Organizartions

PLHIV Organizations

CITC

Self-referral

Private providers using PITC

Chronic HIV care

The recommendation of HIV testing and pre-test information should be integrated into the evaluation process for all patients with unknown HIV serostatus. This can be done several ways (and can vary depending on which clinic is operating that day and the staff available).

■ **Group pre-test information with HIV testing by lay provider before the patient sees the health worker**

This is an efficient way for a lay counsellor (or nurse) to give group pre-test education in the waiting area, where a large queue often forms in the morning.

Patients may consent to HIV testing while they queue for services – they move to a room labelled 'Counselling Room' where the lay counsellor immediately performs a rapid HIV test and then provides post-test counselling.

In the case of patients who declined to be tested while in the waiting room, the information can be re-emphasized during the consultation. The clinical provider then has another chance to recommend HIV testing and counselling.

Private space needs to be available for the actual test and post-test counselling. In a small health centre, this counselling room may be shared by all 'clinics'. Larger health centres with more specialized staff and spatial separation between clinics may have counselling rooms located in different areas of the health centre.

A disadvantage of this approach is that the other laboratory tests the patient may need are not done at the same time, and this may be less appropriate when managing people who are ill. However, it can also expedite the care of sick patients if results from a finger prick sample for HIV and malaria rapid tests are already done before seeing the provider. For antenatal clients, the HIV, test can be done at the same time as several routine tests (done during pregnancy) before seeing the provider.

■ **Pre-test information and HIV testing by the health worker in the consultation room**

If there are a sufficient number of nurses or other health workers, the recommendation, pre-test information and HIV testing and counselling can be carried out in the consulting room. This has the advantage that the test is recommended by the health worker in the context of the clinical assessment, and can be combined with other laboratory tests.

■ **Pre-test information and recommendation of the HIV test by the health worker, then patient is sent to the laboratory or lay counsellor**

The health worker may recommend the HIV test and counselling during the clinical assessment. The worker provides the essential pre-test information, and then sends the patient to a lay counsellor (or the laboratory) for the actual test. The results and post-test counselling can be provided by a lay counsellor, and the result goes back to the health worker.

When provider-initiated testing and counselling is initially scaled up and demand for testing is high, consider scheduling more part-time lay counsellors during morning peak hours. When capacity is exceeded, it may be necessary to schedule return appointments for HIV testing and counselling. Making testing available outside usual working hours may also increase uptake .

■ **Partner and family testing**

Devise an efficient and acceptable approach to partner and family HIV testing and counselling, and internal referral of discordant couples for counselling (by people trained and experienced in couples counselling). Or refer these coupless to community services for counselling.

■ **Consider several approaches**

Encourage couples to be tested and counselled together from the start.

From the chronic HIV clinic, set up mechanisms to facilitate partner and family testing within the clinic or at home. Special arrangements are particularly important for men; you can also consider weekend family clinics.

Link with home-based HIV testing and counselling. There are variations in how home-based HIV testing and counselling is organized with which set up varies. There may be an NGO or community testing programme that you can link. Your district or health centre may set up a home testing scheme (summarize key steps; put a cross-reference to tools for starting this). This may require you to release team members from their regular duties for this activity.

Example: In Botswana, groups providing home-based care were missing many opportunities for HIV testing of family and partners. This was remedied by training the care groups, supplying them with HIV test kits, and supervising their work.

3.2c INTEGRATE CHRONIC HIV CARE OF MEN,NON-PREGNANT WOMEN AND CHILDREN

The HIV care clinic is for patients who have been diagnosed with HIV (usually during a previous visit to the outpatient department) and have been registered in chronic HIV care. During each encounter, the patient's needs for acute care, symptom management, prevention, and chronic HIV care and ART should be considered and provided for in a coordinated fashion; all within a single visit. If the patient has an infant or young child, their growth and development are monitored and immunizations and mebendazole and vitamin A prophylaxis are provided as appropriate for their age group.

Counselling and support to encourage treatment adherence, as well as psychosocial support and most of the prevention interventions for PLHIV (disclosure support, risk reduction, and discordant couples counselling and partner testing) can be provided by a lay counsellor (ART Aide or similar designation). Effective triage means that patients who are stable and do not need to see a clinical provider may be sent directly to the medication dispensing window for refills of drugs.

The health worker does the HIV clinical review, considers the clinical stage, and provides the appropriate clinical care. If there is an acute problem, specific treatment and advice and symptom management are provided. A summary of the care and specific information from each visit, as well as chronic HIV care interventions are recorded on the country-adapted HIV Care/ART Card.

3.2d INTEGRATE HIV SERVICES INTO ANTENATAL, LABOUR AND DELIVERY, POSTPARTUM AND NEWBORN CARE (PMTCT)
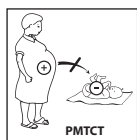
Your health centre likely already provides maternal and child services, and may already have a 'vertical' PMTCT project. Your country's national guidelines may have changed recently to encompass more effective ARV prophylaxis (AZT from 28 weeks), and to support more pregnant women receiving ART, both for their own health and to prevent MTCT. An integrated approach can help you place a larger number of pregnant women on ART.

In this instance, integration refers to HIV services included on the same visit with ANC, labour and delivery, postpartum and newborn services that aim to reduce maternal and newborn mortality. The HIV services include (but are not limited to) PMTCT interventions. Delivering HIV and maternal services together, means that clinical co-management of pregnancy and HIV, requires co-supervision by the district teams responsible for MCH and HIV programmes. They will need to decide: (1) which sites will provide full HIV services, including ART, at ANC sites[1]; (2) which will do only HIV testing and counselling, clinical and immunological staging, ARV prophylaxis, and refer for ART[2]; and (3) which will do only HIV testing and counselling, then refer for clinical staging, CD4, ARV prophylaxis and ART. This *Operations Manual* can be used to support either of the first two integrated approaches.

Full integration of HIV services, including providing ART to eligible pregnant women in ANC, requires recommending HIV testing and counselling for all pregnant women with unknown status.

The ANC clinic is an important entry point into HIV care for women who are HIV-positive, but do not know it. Pregnant women should have routine HIV testing and counselling recommended while queuing for the ANC clinic. After receiving HIV testing and counselling, they can return to their place in the queue and be evaluated by an ANC provider (nurse or midwife). Or their ANC provider can recommend HIV testing and counselling during the first visit and then carry out the test.

Nurses and midwives providing ANC care are need to be able to do clinical staging, to prepare and start pregnant women on ART and AZT prophylaxis, to monitor therapy (including determining haemoglobin), and to respond to side effects and opportunistic infections.

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[1] Sometimes referred to as Model 1
[2] Model 2

ANC clients newly diagnosed with HIV can be immediately started on chronic HIV care on the same day by the nurse or midwife who has been trained in this care. This can minimize the chance that a pregnant woman will not return on another day to the HIV care clinic for PMTCT interventions.

Example: In many hospitals and large health centres, pregnant women with HIV are identified in the ANC clinic, but then are referred for HIV services located in another area of the facility, or even in another facility altogether. This often results in significant numbers of pregnant women "lost to follow-up", with many of them not appearing at the chronic HIV care clinic, even if it is in the same facility. This is one of the reasons that pregnant women with HIV do not receive ART. There are many ways to solve this problem that has including elaborate methods of referral and tracking. For a health centre that is generally smaller and fewer staff than a hospital, integrating chronic HIV care including ART into the ANC clinic is an effective way of avoiding this problem.

A pregnant woman who is HIV-positive needs chronic HIV care, including cotrimoxazole prophylaxis, ARV prophylaxis or ART. The CD4 test should be drawn on the same day and results obtained as soon as possible, to allow rapid initiation of ART when indicated. It is also particularly important to do intensified case finding for TB (a TB screen on each visit; one of the Three Is), and to pay careful attention to TB infection control in the ANC settings. A pregnant woman can receive these from the ANC clinical provider, who is trained in chronic HIV care. A separate clinic date is not necessary.

Clinical co-management at one site is efficient and more acceptable for pregnant women who often do not want to attend both the ANC clinic and a separate chronic HIV care clinic. This includes integrating HIV testing and counselling, clinical review, and cotrimoxazole prophylaxis into the clinic visits of HIV-exposed infants when they return for immunization, or when they come to the 'Under 5' clinic, and/or when they accompany their mother on chronic HIV care visits.

If their infants are to survive, it is important to emphasize to the mother that it is crucial and potentially life-saving for the child to return for cotrimoxazole and HIV testing at six weeks of age. The centre must ensure that service integration supports this emphasis.

If ART is not provided on-site, there needs to be an effective mechanism to refer HIV-infected women to care and treatment services. Referral forms facilitate the enrolment of HIV positive women into HIV care.

- The referral form is completed by the referring provider in the antenatal clinic.

- There should be a mechanism to support and ensure the patient is seen in the HIV care and treatment clinic; for example, by providing support for transportation, or involving a case manager or other support individual.

- Once the patient is seen and evaluated in the care and treatment clinic, there is follow-up and feedback to the antenatal clinic to confirm the patient was seen, and to coordinate care (linked care) .

3.2e INTEGRATE CARE OF HIV-EXPOSED INFANTS WITH THEIR MOTHERS

- **HIV-positive post-partum woman with HIV-exposed infant**
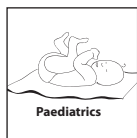
After delivery, both mother and infant (HIV-exposed) will need continued chronic HIV care. This is a key moment when both could be lost to follow-up that can have serious ramifications on the child's health. Strengthening the integration of services is particularly important for HIV-exposed children, all of whom will need prompt treatment if they are HIV-positive. Most settings have serious problems with lack of follow-up of infants of HIV-positive mothers who have received PMTCT interventions. This results in the majority of them being lost to follow-up for their HIV-exposed infants. Approximately half of HIV-infected children will die before their first birthday without appropriate HIV care and ART. PCP is a significant cause of death of HIV-infected children in the first 12 months of life; this could be prevented through cotrimoxazole prophylaxis.

Both the mother and infant should be seen for chronic HIV care by one clinical provider at the same time. This is easier for the mother, and increases the likelihood that she will come to the health centre regularly, compared to if she had to bring the infant for a separate visit (or go to a different facility). Integrated family-based care will help ensure that the HIV-exposed infant will have a DBS sent for virological HIV testing and will start cotrimoxazole at six weeks of age, along with ART if necessary. Infants should also receive routine child health services (immunization, prophylaxis, growth monitoring, etc.).

For patient flow within the health centre, there are two options. In Option 1, the mother and infant are referred to the HIV clinic for non-pregnant adult women and children (this can be integrated with the outpatient department in small health centres).

In Option 2, the mother and infant continue to attend a special HIV clinic day that is run by the ANC clinical provider. The advantage of this option – appropriate where

a high percentage of pregnant women have HIV – is that the ANC clinical provider and already has a relationship with the family.

The 'Under 5' clinic is another opportunity to identify HIV-positive children. Mothers bring their children to this clinic for services such as nutrition screening, immunizations or paediatric acute care. The clinical provider should refer children who fit the criteria for HIV testing (acutely ill, low weight, etc.) to the counselling room for rapid HIV testing or DBS.

3.2f   INTEGRATE TB AND HIV CARE AND TREATMENT (TB-HIV CO-MANAGEMENT)

HIV care should include the 'Three Is': intensified case finding for TB (screen for TB on each visit), INH preventive therapy, and TB infection control.

Assure rapid diagnosis and initiation of TB treatment:
All people with HIV who are not suspected of having TB should be eligible to be put Isoniazid (INH) preventive therapy. Patients suspected of having TB should move to the front of the queue for all services and should undergo prompt evaluation for TB. Sputum specimens collection is carried out away from other people, and sputums are sent to a quality-assured laboratory for acid fast bacillus (AFB) smear and culture (when possible). Turn-around time for sputum AFB smear results (the time from sputum specimen collection to receiving the result) should not be more than 24 hours. A patient-tracking system assures that people suspected of having TB who are AFB smear-negative receive additional procedures (e.g. a chest x-ray and referral visits) or treatment as quickly as possible. Treatment for TB begins immediately once the diagnosis is made, and a plan for assuring adherence with treatment is developed.

If the total number of chronic HIV care patients is low, the clinical provider may evaluate the patient in one of the outpatient department rooms. Regular acute care patients may be seen in between chronic HIV care patients, or in the second outpatient department room if there is another clinical provider. If the number of chronic HIV care patients is high, additional rooms may be required (see *Infrastructure* chapter).

Having patients collect TB drugs and ARVs from the same window used by other patients can help reduce stigma. The pharmacy technician or whomever is dispensing drugs must ensure the patient understands the various medications and their dosing schedule, and that the patient is counselled further on treatment adherence.

TB patients co-infected with HIV need chronic HIV care as well as TB care. All HIV-infected TB patients need cotrimoxazole and ART. Many of them will be severely immunosuppressed and will be started on ART during TB treatment.

There are two options for HIV-positive TB patients. Option 1 is for the health centre to refer the co-infected TB patient to the HIV clinic immediately after diagnosis of HIV. This will mean that during TB treatment, the patient will have regular clinic appointments with the TB nurse for TB care, and with another clinical provider for chronic HIV care.

Option 2 is for the TB nurse to evaluate the patient and start cotrimoxazole and ART if necessary. This requires that the TB nurse be trained in IMAI Chronic HIV Care and IMAI TB Care with TB-HIV Co-management or comparable national guidelines. At the end of TB treatment, the patient can then continue to be followed in the HIV clinic for ongoing chronic HIV care.

TB programme. Given the high rate of TB-HIV co-infection, every effort should be made to strengthen the health centre's TB programme before starting up and while delivering HIV services. Sputum smear microscopy should either be available on-site or as a 'send-out' test. Patients diagnosed with TB should receive anti-TB drugs according to standard national DOTS protocols. Administering TB drugs outside of the National TB Programmes (NTP) guidelines can lead to drug resistance that is dangerous for the patient and community alike. If resistance is suspected, and when possible in all TB-HIV patients, sputum should be sent for culture and DST.

3.2g INTEGRATE FAMILY PLANNING AND SEXUAL AND REPRODUCTIVE HEALTH INTO HIV SERVICES AND MATERNAL CARE

Reproductive health, family planning and HIV programmes share a common audience. Therefore, integration programmes can expand entry points for offering access to HIV, reproductive health (RH) and family planning (FP) services, reducing stigma, addressing health worker shortages, preventing unplanned pregnancies and mother-to-child transmission, and encouraging male participation. Models of integration (and linkages) include integrating reproductive health and family planning services within HIV programmes or HIV/AIDS services within RH/FP programmes. Examples of how this can be achieved include:

- Facility level linkages in which HIV and family planning are co-located in the same facility, with clients referred to a different part of the facility for different services;
- Room level linkages in which HIV and family planning rooms are rotated to avoid the problem of clients being identified as seeking HIV services;
- Provider level linkages in which health providers offer both HIV and RH/FP services at the same session.

Key areas for integration include:

- family planning and prevention of mother-to-child transmission (preventing unintended pregnancies decreases mother-to-child transmission). Family planning counselling, services and access to contraception, managing sexually transmitted infections, HIV prevention counselling, testing and care, should be part of maternal and child health services;
- family planning counselling and services linked with HIV testing and counselling. During HIV testing and counselling, family planning information and implications of HIV status can be discussed, with contraception (e.g. injectables, pills, condoms, female condoms) provided or made available through referral;
- provision of reproductive health/family planning within care and treatment programmes. Accurate information on the risks and benefits of child bearing, reproductive intentions and choices, and access to contraception and other reproductive health services should be an essential part of chronic HIV care.

3.2h   INTEGRATE STI MANAGEMENT INTO ACUTE AND CHRONIC HIV CARE

During chronic HIV care, the clinical review of PLHIV should address STI symptoms and yearly syphilis testing. If patients disclose behaviours that place them at increased risk of acquiring or transmitting an STI, it is important to emphasize to both patients and partners the need for more frequent screening, stronger condom promotion and risk reduction counselling.

Staff need to be trained in HIV/AIDS awareness, pre- and post-test counselling, rapid HIV testing, risk reduction counselling and HIV prevention 'messaging'. Staff should also be trained in STI diagnosis and treatment, and should be aware of the most common STIs in their locality.

3.2i   INTEGRATE HIV INTERVENTIONS INTO SERVICES FOR ADOLESCENTS

Adolescents provide an example of why there is a special need for an integrated approach to health centre services due to social/behavioural factors. Most adolescent care and treatment is technically the same as for adults, but how it is delivered can have an impact on whether or not it succeeds.

It is therefore crucial to improve health centre organization and work methods to facilitate caring for adolescents. This includes:

- establishing special times for adolescents at the centre, for both acute care and for adolescent PLHIV in chronic care. As much as possible, provide a 'one-stop shop' in an adolescent-friendly clinic;

- identifying staff who are particularly good at managing adolescents;
- finding a sympathetic nurse or receptionist to facilitate adolescent care;
- using adolescent volunteers to make the clinic more adolescent-friendly;
- allowing drop-ins;
- organizing care so that the adolescents can avoid seeing adults they know;
- establishing an alternative waiting area;
- in some settings, providing contraception and pregnancy care in the general medical clinic (to avoid uncomfortable queues at family planning or antenatal clinics).

3.3   LINKAGES WITH OTHER SERVICES

■ **Definition of service linkages**

Linkages refer to the relationships that the health centre maintains with other facilities and organizations in the district that provide services needed by patients, but are not provided directly by the health centre. Linkages include:

- the systematic and effective referral of patients and their families from one service to another within the district health system or network. Effective referral systems are important to ensure that a client receives the designated services. A health centre may have the capacity to provide integrated HIV services, but some care, treatment and support is still provided by outside agencies/services and this requires effective linkages. Community services used by patients complement the clinical services provided by the health centre, and effective linkages between the two are required
- internal linkages between clinics organized within the health centre or between clinicians and the pharmacy and lab.

A referral network works best when relationships between service providers are formalized and organizations agree on procedures. In order to establish collaboration between the health centre and community- and home-based programmes, a formal coordinating system should be organized. This coordinating system should incorporate an advisory team and a dedicated management team. This advisory team is often called the community advisory board (CAB); how health centres can set up and work with a CAB is described in the *Community* chapter that follows.

Examples of linkages within the district health network:

District Team Support
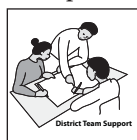
- Health centre staff refer a severely ill patient to the district hospital.
- the health centre provides clinical back-up and supervision to organizations in the community that provide home-based care and other needed services.
- The health centre HIV clinical team links with NGO-provided psychosocial support or mental health care outside the health centre.
- The health centre team links with community DOTS supporters and home-based carers.

Health centres provide primary health care, but also offer clinical supervision and other support to a wide range of health-related services in the community. In some countries, community activities are directed, provided or supervised by the district team. Linkages between services at these three levels of the district health system – hospital, health centre, and community – and integration of health services within the health centre are essential for successful HIV services within the continuum of care. In some countries, community services include health posts or dispensaries, which are intermediate between health centre and community. These can play an important role in ART refill and other services.

3.3a APPLYING BEST PRACTISES IN LINKAGES

Establish a "referral network" to ensure linkages between the health centre and the community and district hospital:
- An effective referral network will expedite access to needed services.
- Identify gaps in services and take steps to bridge them.
- Identify one organization to take a leading role as a coordinating organization for referrals.
- Track referrals between the organizations in the network.
- Be aware that facilities behave differently – at some of them referral works; at others patients are lost.

Allocate specific health centre staff to be responsible for linking patients to other services:
- Consider employing and training lay 'case managers.' Lay people, especially expert patients, can be very effective in linking patients with services outside the health centre.

Involve PLHIV and other active community members in identifying available organizations able to provide different kinds of paramedical and psychosocial support.

Identify a contact person within each organization who can make sure services are effectively and rapidly provided.

Set up preparatory meetings with the contact person/representative from each service organization to:
- present the most common needs of adults and children affected by HIV and their families.
- clarify the services their organization can provide;
- discuss ways to link with the health centre for services needed by patients and their family;

■ Make sure everyone understands the meaning of 'shared confidentiality'.

Keep an updated contact list for both clinical- and community-based services:
■ See the sample resource/contact list in Annex 2-1;
■ See the section on communications/cell phones in chapter 5, *Infrastructure*

Create a system to document linkages:
Define the usual patterns of linkages within the district health network.

Create feedback loops to inform the organization initiating the referral so it knows that the requested service has been delivered and has met the needs of the client.

■ Document outcomes of referral.
■ Develop a form for referral and back-referral to keep track of patients and ensure the quality of the linkages. The referral form should include information about where the patients should go, when then should go, who they are looking for, what they should expect to receive/why they are being referred.

Host regular meetings of the multi-disciplinary team:
■ Multi-disciplinary team members come from within and outside the health centre.
■ Pay attention to both internal and external linkages. This should include key community-based organizations (CBOs) and other external services, as well as counsellors, laboratory and pharmacy (internal) services.
■ Facilitate communication.

Example of effective linkages from a project in remote rural Kenya: Community health workers (CHWs) were given a cell phone, solar charger and extra batteries so they can make calls in emergencies.

Be active to avoid losing patients when they are referred:
■ Accompanying patients is much more effective than sending them alone with a referral note.
■ Ensure that intended referrals happened (both internally and externally) by cross linking registers and holding regular meetings between services. Referral notes with a carbon copy can help during follow-up. Meetings between teams to review patients can happen during continuing medical education (CME) collaborative meetings, etc (if these are funded).

Example: Use a simple index card for each HIV-positive mother to be sure each infant is recorded in the 'Under 5' HIV-exposed register.

3.4   TRIAGE

■ **Definition of triage**

Triage is the sorting of patients into priority groups according to their needs and the resources available. Triage is an important organizing principle for any health centre that manages large numbers of patients. Making HIV services available at health centre level both increases the patient load and brings in more patients with severe illness from opportunistic infections. In addition, quality management of HIV patients requires a special 'HIV triage' to be sure that patients at high risk receive priority interventions rapidly, both for treatment and prevention of transmission, as well as to prioritize tracing and tracking of patients lost to follow-up. Some deaths can be prevented by quickly identifying very sick children and adults on arrival at a centre and starting treatment without delay.

3.4a   APPLY BEST PRACTISES IN TRIAGE

■ **Set up effective triage for all patients.**

WHO has developed simple algorithms based on an ABC approach (Airway-Breathing-Circulation) for children, women of childbearing age, and other adults. These allow rapid assessment of emergency cases that require immediate emergency treatment; priority cases that need rapid attention; and non-urgent cases that can wait their turn in the queue. Ideally, using this ABC approach, patients should be immediately checked on arrival in the queue or waiting area. All staff should be prepared to carry out the simple rapid assessment to identify the few patients who need immediate treatment. Health workers trained in IMCI have learned to assess first for danger signs.

■ **Set up effective HIV triage to identify the HIV-infected patients who need urgent treatment or preventive interventions.**

In addition to the basic medical and surgical triage applicable to all patients, HIV/AIDS has special priority signs and circumstances that require a special 'HIV triage' to ensure that urgent interventions are delivered in a timely fashion.

■ **HIV triage needs to occur whenever a new HIV infection is diagnosed; on each routine chronic HIV care visit; and whenever a PLHIV returns for an acute problem.**

Triage is the first step in a chronic HIV care visit, when the patient's card/record is retrieved, the patient is weighed, and a decision made as to whether the he/she needs to see a health worker (for a scheduled visit or a new symptom).

■ **HIV triage helps you fast track HIV patients requiring urgent interventions.**
Some newly identified PLHIV need urgent or 'fast-track' HIV care and treatment and preventive interventions. Workers carrying out PITC and the entire clinical team need to know who needs which HIV services and what needs to be fast tracked. In other words, how quickly should particular patients receive certain services?

Identify patients at high risk of transmitting HIV and treat these as 'HIV urgencies'. For example, HIV-positive pregnant women need rapid adherence preparation and initiation of ART or AZT prophylaxis.

Fast track HIV-exposed infants for early HIV testing, diagnosis, cotrimoxazole, and early treatment.

Patients who are clinical stage 3 or 4 need to be fast tracked to start cotrimoxazole and prepare for ART. They should not leave the clinic without cotrimoxazole; and if stage 3, without a CD4, etc.

■ Triage should also identify coughing patients for action to reduce TB transmission:
  ■ Separate coughing patients and ask them to cover their cough.
  ■ Fast track TB diagnosis (see the TB infection control section in *Infrastructure* chapter 4).
  ■ Do not be lax about patients apparently stable on ART; each patient periodically needs a clinical review, including a TB screen even if they appear well. If they do not have TB, they should receive INH prophylaxis.

3.5   PATIENT FLOW: PLAN HOW PEOPLE MOVE THROUGH YOUR HEALTH CENTRE TO RECEIVE VARIOUS HIV SERVICES

Renovating or redesigning a health centre to accommodate integrated HIV services requires careful attention to good patient flow for a typical visit.

The best advice is: "Walk in your patient's shoes!" Move from one area to the next as a patient would during a typical visit. Figure out the best approach for each patient type, examining the typical services they will require at each visit. (see Figure 4, Chapter 5, p.71). Look for barriers and inconveniences.

Patient flow within the health centre is included in the description for each patient type, using a floor plan of a hypothetical small health centre (see table below). Replace

this with your health centre's floor plan, and use the table to help work out an efficient flow for your patients. Work as a team to devise a set of standard operating procedures that make it clear to patients and staff how different types of patients and families move through the health centre. This involves:

■ effective triage to prioritize care (see next section);
■ how to integrate PITC efficiently for different patient types;
■ how people enrol for HIV services;
■ different flow plans for those 'Pre-ART' and those eligible for ART;
■ the records that are kept and the information recorded in them (see chapter 6, *Monitoring services*);
■ how patients gain access to results of tests or to medications;
■ how referral happens;
■ how samples, test results, information flow from one location in the health centre to another;
■ when and how follow-up occurs.

Develop a patient evaluation, if care flow plan, with specific plans for those who need testing and their initial evaluation if positive. Then note all subsequent steps required. All staff members need to know the sequence of activities and patient flow for each category so they know where to send people. Good organization of space and patient flow should:

■ make visits easy for the patient and his/her family and for the providers;
■ enhance uptake of HIV testing (assure ease of access to HIV testing and counselling from the areas providing outpatient acute care, antenatal care and TB care);
■ ensure the patient's right to privacy;
■ minimize waiting time;
■ help with TB infection control;
■ strengthen integration of services and linkages between services;
■ improve the quality of care.

Having clear documentation of standard operating procedures also assists people to step in and do tasks for which they would not normally be responsible, and also helps to quickly orient new staff.

This section describes how integrated HIV services may be provided for a number of different patient types. This requires country adaptation, and then should be used by each health centre team to concretely plan efficient patient flow, clinic hours, etc.

3.6 QUALITY MANAGEMENT OF INTEGRATION, LINKAGES AND TRIAGE

How can you make sure that quality integration, linkages and triage are taking place at your health centre? Improvements in quality need to be fully integrated with service delivery. Achieving and improving quality of care is a slow, persistent process. Several types of information can help:

- **Assess what happens when specific types of patients and/or families attend your health centre. Then asses what happens by patient type: are integrated care and adequate triage and linkages being provided?**
  - Use relevant routine data you are already collecting with the patient monitoring system on the patient cards; focus on just one or two indicators.
  - Use a simple patient mapping tool (how long is the visit? Is the visit "one-stop", or multiple stops? Is there engagement in the next leg of the service?
  - Is integrated care being provided, by patient type?
  - Reconcile patient records and registers (by sampling). Have other family members been tested? Are patients who test HIV-positive enrolled in care? Check follow up on CD4 and TB sputum testing. What happened after patient referral to hospital or to a community-based service – was the care plan shared and discussed; is there a back-referral note? Are the children of HIV-positive pregnant women tested and followed up?
  - Is a system in place for following families longitudinally? Are family units engaged in care and treatment?

- **Observe whether triage for severely ill patients is taking place at the door and in the queue.**

- **Is adequate 'HIV triage' taking place? Are PLHIV who need urgent interventions identified and receiving them in a timely fashion?**

- **Are well patients with HIV returning for care on a regular basis? Identify key informants on the community advisory board and ask for their assessment of service integration. Is the 'one-stop-shop' successful? Are there problems with linked services at hospital and in the community?**

- **Look at both longer- and shorter-term outcomes. Are patients being lost to follow up?**

CHAPTER 4

COMMUNITY

The community is made up of members of the population served by your health centre. These may be HIV-positive people already enrolled in chronic HIV care at your centre. Or they may be people who are not living with HIV, but who are ready to support and improve the delivery of quality HIV care in their community. In areas with high HIV prevalence, most people, if not living with HIV, will have been affected by HIV.

The community adds to the delivery of high quality HIV services in many ways. In addition it supports the health centre in the delivery of these services, resulting in improved quality of care. Community involvement comes in the form of both formal and informal activities. Formal structures may be established including, community or faith-based organizations (CBOs, FBOs); community health workers under the supervision of district health networks or non-governmental organizations (NGOs); DOTS supporters for the national TB system; peer outreach services to high risk groups, as well as home based and palliative care. The resources vastly underutilized by formal health systems include the 'informal' resources in the community in the form of PLHIV support groups; treatment supporters; as well as PLHIV, friends and families.

Health workers have technical skills that members of the community may not have, and these skills should be shared to ensure quality of community-based care. The community, in turn can form a significant component in the delivery of quality HIV services; including counselling, adherence support, development of a referral framework, and dissemination of information.

When planning for and delivering comprehensive HIV services at the health centre, that key community stakeholders are included at all times. Involving community stakeholders in Integrated HIV services at your health centre can also improve the quality of care received by your patients. Determining various ways to involve people living with HIV who are also on treatment is an important means of achieving effective

and sustainable services. Therefore, planning for quality HIV care and treatment should specifically include who should be involved and how linkages between health facility and communities can be maximized and become an integral part of the continuum of care

4.1   COMMUNITY ROLE IN PREVENTION, CARE AND TREATMENT

It is important to approach HIV as a chronic disease and thereby focus on a patient-centred approach, as patients take on their role as the primary manager of their own chronic disease. It is also important to acknowledge the imbalance of power between patients, the community and health workers in order to build good relationships and help strengthen community structures in ways that support long-term patient self-management. HIV care may start at the health centre, but with increasing patient self-management, the vast majority of care takes place in the home and in the community.

Community participation can serve to:
- raise awareness, disseminate information and reduce stigma through education, acceptance and political buy-in;
- improve treatment and care outcomes by providing leadership and supportive services;
- assist in assessing, coordinating and mobilizing resources that complement health centre and hospital services;
- improve services as HIV care and treatment moves from an acute-care model to a chronic-care framework;
- support a sustainable patient-centred approach.

HIV is a life-long diagnosis and the long-term medical and psychosocial consequences of HIV can be mitigated by sustainable community-based services. For many reasons, the needs of PLHIV cannot be met by the health centre alone:

- health centres are often under-resourced;
- the type of support needed by PLHIV is not always health-related;
- PLHIV may respond better to non-medical people;
- distance from the health centre to the patient's home may be great; whereas the patient lives within the community.

■ **Health centre role in community linkages**
The health centre can help to ensure the effective seamless community linkages needed for good chronic care of PLHIV. Key functions of the health centre include supporting

community structures that offer adherence support, patient self-management and psychosocial support.

An important mechanism to facilitate the linkages between the community and the health centre is the establishment of a community advisory board (CAB). The CAB is composed of interested stakeholders from the community as well as members of the health centre team. The role of the CAB and steps to form it are discussed below. It is essential that health centres and CABs establish a plan that links community- and home- based care activities with health centres, and that incorporates all key stakeholders involved in patients' treatment needs. Formalized referral systems should be developed to link health centres and community-based resources to their patients.

■ **Interaction between the health centre and community structures**

It is important to formally link with community and home-based care structures that provide additional services to PLHIV and their families in the areas of physical, preventive, psychological/spiritual, and social care. These links were introduced in the *Integration* chapter.

Use participatory approaches to engage with the community and to find mutually acceptable solutions for services and linkages.

Participatory methods are tools to allow greater communication and discovery between the health centre and targeted community. This approach may take more time, but the investment ensures a better working relationship as well as, targeted, accepted and more sustainable solutions.

Exercises such as role-play, community mapping, spider diagrams, and wheel charts can break down barriers between health centre staff and community workers, encouraging both to adopt a common language for identifying and solving problems together.

The health centre should provide community groups with understandable, culturally appropriate and accurate treatment and prevention literacy materials and training.

■ **Promoting health centre and community services**

The health centre and CAB can work together to strengthen awareness and use of each other's services. PLHIV need to be aware of the services available and where and when it is most appropriate and effective to use them. This is especially true for PLHIV in rural areas where access to the health centre and district hospital mean considerable travel and expense. On the other hand, a well-timed visit to the health centre can prevent significant symptoms or disease progression. By working together, the team and the CAB can work out protocols for effective and efficient two-way referral.

■ **How to map community assets**

The point of a community asset mapping exercise is to generate a list of all organizations and facilities providing HIV-related services in your catchment area. It is important to initially focus on "assets" and not on "needs" within the community. The mapping exercise can reveal rich resources that can support a long-term, sustainable patient-centred approach to HIV in the community and relieve the health centre's burden, thus improving chronic care. Use participatory tools to facilitate a common understanding of "community" and what roles stakeholders play.

4.2   COMMUNITY ADVISORY BOARD (CAB)

The goal of establishing a CAB is to define stakeholder opportunities, create a sense of shared responsibility, and ensure there is a platform for ongoing dialogue and cooperation. The CAB is independent of the health centre and can provide a forum for information, education and communication. The role of the CAB includes to:

- defining the vision of a comprehensive HIV care programme for the community within the bounds of national and provincial policy;
- assessing the available HIV services in the catchment area by undertaking a mapping exercise (see How to map community assets below);
- defining the roles and responsibilities of the care providers to achieve the vision at institutional and individual/staffing levels (i.e. developing standards);
- reviewing the programme established by the health centre, as well as community service provided by the health centre;
- assisting in development of a referral network;
- organizing community resources to advocate for services and funding;
- organizing community launch and acceptance of planned services when new to the community;
- monitoring service provision and review the impact on the community. This monitoring and review needs to include all key stakeholders involved in the treatment and care needs of the patient;
- advising the health centre whether the programme is meeting the needs of the community and also recommending that the health centre needs to meet specific community needs.

■ **Forming a CAB**

Establish an HIV CAB based on meetings between the district, health centre team and local stakeholders, such as community leaders (political or religious); PLWHA; women's groups, local associations, etc.

It is important to assure that:

- the CAB meets at regular intervals;

- board members regularly attend its meetings;
- board composition is reasonably representative of the diverse needs and interests of the communities the health centre serves;
- the role and functions of the CAB are clearly defined;
- board members understand their obligation to keep confidential any information about specific individuals and their HIV status.

■ Membership

This is a volunteer appointment. Members will have a chance to learn about HIV and influence what happens in their community, voluntary CAB role may be recognized by the community. It is strongly recommended that the CAB includes PLHIV.

Possible members of the CAB include:
- the health centre HIV coordinator;
- community stakeholders providing services (e.g. women's groups, faith leaders, etc.);
- people at risk[1;]
- local leaders (e.g. mayor's, chiefs, religious leaders, school principals etc);
- staff from other CBOs/FBOs/NGOs providing care at community and home levels;
- community health workers;
- health centre staff.

■ Functions of the CAB

Specific functions of the CAB are to:
- create linkages/referrals to known providers;
- create relationships with untapped entities;
- update contact list for stakeholders, assets, referrals, etc (see How to map community assets below);
- schedule and facilitate regular meetings;
- follow-up on tasks (monitor implementation);
- develop a plan to evaluate the impact of health centre-community integration and linkages (pre- and post- assessment tools, indicators, etc.) See Annex;
- evaluate impact.

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[1] It is important for the health centre and CAB to determine the best approach to include various key populations at higher risk of HIV infection. This can best be accomplished by including most at risk populations in the CAB, some of whom are already infected with HIV. In this way, approaches to the target groups will be more acceptable, sustainable and effective. Sometimes, it will be difficult for people within these groups to participate because of the 'double stigma' they face or, more importantly, criminalization of their activities. The health centre and CAB must avoid putting these populations most at risk of arrest, or of getting in trouble with the law. In some countries, the outreach activities identify them as members of outlawed groups.

Based on your context, there may be additional issues that need discussion and integration into CAB responsibilities. Before finalizing the system, the health centre/community team should also conduct several community meetings and present the results of its findings through this process for additional feedback and discussion.

Topics for consideration at CAB meetings:
- list and prioritize factors affecting community health (including HIV-related priorities);
- determine priorities for community and health centre interactions with the community;
- holding individual or focus group discussions with community leaders and/or stakeholders to discuss potential areas for interaction;
- develop implementation plan and discuss how to achieve priority items.

The following is an example from ICAP's experience with developing site CABs:

CAB preconditions	CAB functions
Diverse/representative membership; members of HIV-affected community	Observe and report information about the community, as well as share information about HIV services with the community
Commitment and interest in learning; willingness to share	Serve as representatives of the community; share concerns and perspectives with HIV service providers
Ongoing and sufficient support	Build trust and acceptance of HIV services
Clear mechanism for information exchange	Promote access to HIV care
Meeting accessibility, e.g. location, transportation, child care	Advise on appropriate/culturally sensitive HIV information and activities
Sense of civic responsibility/volunteerism	Monitor ethical issues and patient rights
Recognition by community represented and institutions that are advised	Advocate for HIV services and funding

■ **Summary of community's role and linkages between the health centre and community**

HEALTH CENTRE		COMMUNITY
	Information, training, updates ↔	
	Coordinated patient management plan ↔	
	Clinical back up Follow-up patients at home ↔	
	Referral, back-referral ↔	
	Supervision, quality assurance ↔	

HEALTH CENTRE

- Empower patient self-management
- Incude PLHIV on clinical team
- Provide supplies and clinical back-up
- Provide updated map of services, how to contact
- Establish link with non-clinical support services
- Have vurse trained in supervision CHWs

COMMUNITY

- Community treatment and prevention literacy
- Casefinding: TB, HIV
- Home-based testing and counselling
- Treatment supporters: TB, ART
- Patient self-management
- Home-based care including palliative care
- Peer support groups
- Peer outreach to sex workers, MSM, adolescents
- Follow-up lost patients
- CHW delivery certain MCH, HIV services
- Promotion of services at health centre
- PLHIV organizations
- Community advisory or management board

Community support can be even more extensive. In Tamil Nadu, India, substantial management and support responsibilities for health centres have been turned over to the community actively participates in health centre management and provides key supplies such as colour-coded waste bins (see *Infrastructure* chapter).

4.3 TECHNICAL ROLE OF THE COMMUNITY IN SERVICES:

■ **Community treatment and prevention literacy**
Members of the different communities, especially PLHIV and at risk subgroups, are in the best position to make decisions about the approaches to treatment, prevention, and testing support that will be most effective in their communities. Treatment and prevention literacy is a community-based activity that helps people learn factual evidence-based information in a non-threatening manner, thus addressing stigma and

discrimination, as well as myths about these issues in the community. It is important to engage the community to dispel myths and support changes in how cultures approach prevention so that your health centre can provide effective services.

This can be particularly important if:
- stigma and discrimination are particularly high in a community as it can be difficult to attract patients to treatment centres or to identify treatment supporters;
- myths around prevention in communities result in less regular use of condoms, or failed attempts to support the idea that people should have fewer sexual partners;
- myths about treatment adversely affect adherence (e.g. myths that assert treatment is poison, or claims that foodstuffs or local tribal remedies can cure HIV).

Key steps include the following:
- Involve people who are respected by the community;
- Make sure that treatment and prevention messages are clear, easily understood and delivered in the most culturally- and linguistically-appropriate manner – people in communities may speak more than one language even if they may not be able to read;
- Do not assume that people in communities who cannot read are not able to learn about the science behind treatment and prevention; even those with very little education are able to learn very well;
- Particular groups within the community who are at high risk of HIV infection will require more specific messages (men who have sex with men (MSM) or commercial sex workers (CSWs);
- Enlist the support of PLHIV and counsellors who will appeal to the particular sub-group.

Many examples exist of community-based treatment and prevention literacy.

The Treatment Action Campaign (TAC) of South Africa is a good example. TAC is active in most provinces of the country. It has created a movement of PLHIV and HIV-affected people who advocate for treatment access by ensuring that advocates are well informed about treatment and prevention science. Training takes place in local languages interspersed with scientific terms in English that the advocates learn with ease. The result is a critical mass of people who are informed and can support people on ART.

■ **Peer support groups**

Peer support groups assist with treatment support and literacy. They help patients deal with side effects, etc. and feelings of isolation and they work to combat stigma and discrimination. Peer support groups can be health centre-based or community-based. It is important that these groups are supported by the health centre and that effective linkages are established and maintained. Local peer support groups should be linked with national groups in order to facilitate advocacy and skill building. These grups are also important from a regional and international perspective to ensure that the diverse 'voices' of PLHIV are represented in decision-making at all levels.

The purpose of peer support groups is to:
- ■ exchange information and skills;
- ■ discuss positive and negative experiences and provide support for each other;
- ■ provide extra support to PLHIV with managing symptoms, side effects and challenges of lifelong treatment adherence;
- ■ improve the sense of self-esteem of PLHIV and help them become self supporting (both of which are necessary in achieving good long-term chronic care and patient self-mangement).

Consider separate peer support groups for peer outreach to vulnerable groups as it is important to consider the needs of specific groups, and when necessary, to establish separate peer support groups for them. These may be for women, men, children or other vulnerable people such as MSMs, CSWs and alcohol or substance-users. Different target groups may require different approaches since they may have varying needs, some of which may be specific to that group. It is helpful to ensure that people are comfortable and prepared to take advantage of the benefits offered by the peer process.

■ **PLHIV organizations**

PLHIV organizations and networks often begin by forming support groups based within the health centre or in the community. Their role in providing advocacy, technical support through treatment and prevention literacy, as well as psychosocial support are important and should be bolstered by the health centre and the CAB. Support groups may also become independent from existing health centre or community structures over time, although they will still benefit from continued support and linkages.

■ **Treatment supporters (TB, ART)**

Treatment supporters are key in providing PLHIV with the assistance they need to adhere to treatment regimens, and to increasingly progress to self-management of their HIV, especially when starting life-long treatment. Treatment supporters may be linked to health centres, community-based or family-based.

In many cases, treatment supporters are experienced PLHIV who have learned to manage their own treatment and prevention strategies, and to deal well with the psychosocial impact of HIV disease. Their role is to pass this expertise on to their clients.

Treatment support should be executed in a manner that:
- is acceptable to PLHIV and their families;
- ensures that confidentiality is maintained, and treatment supporters do not inadvertently signal the HIV status of their clients through their duties. In many communities, disclosure of HIV status can lead to stigma and discrimination.

■ **Assist with patient tracking (i.e. follow-up patient visit 'no-shows')**
Community-based systems for supporting patients assist health centres with tracking patients lost to follow-up. Involving the community in developing mechanisms for follow-up is helpful in reducing the number of patients who are lost over time. Innovative follow-up mechanisms include home visits, including PLHIV on the clinical team, and mobile phone reminders (see Chapter 6, *Monitoring services*). It is important to ensure that patients consent to this tracking and that confidentiality is maintained.

Strategies for reaching out to patients and ensuring that they have adequate care that are developed in a particular community need to respond to the particular needs of patients who live there. Take into account that some patient groups may be more at risk than others. Some patient groups should be selected for extra attention and they often benefit from targeted interventions.

Pay special attention to groups of people at high risk of being lost to follow up:
- orphaned children
- MSM
- commercial sex workers
- migrant workers
- alcohol or other substance users.

Many individuals at high risk of not arriving for scheduled visits may be marginalized and difficult to reach. In many instances, they may respond favourably to targeted interventions delivered by people in support groups whose members come from these same risk categories. (see Peer support group section on p.49).

■ **Psychosocial support**
PLHIV whose symptoms are under control from a medical point of view may still face significant challenges due to HIV-related stigma and discrimination. Often,

the challenges to treatment adherence; preventing and treating side-effects; and maintaining good follow-up with medical centres are not related to the patient's medical condition at all. Psychosocial support is critical to ensuring positive outcomes for PLHIV who face these challenges in different ways. Therefore, effective community structures with both group and individualized approaches to psychosocial support need to be linked seamlessly to health centre- and community-based medical care services.

■ Home-based care, including palliative care
Community- and home-based care deliver services that respond to the continuing care needs of a PLHIV outside the health centre.

Community- and home-based care programmes:
- function as entry points for HIV testing and counselling, as well as identifying eligible candidates for ART;
- follow-up patients who are discharged from a health centre or hospital but who still require direct monitoring and need active care;
- provide continuing care so that families and communities handle some patient care needs;
- strengthen the chronic-care approach to HIV treatment, care and prevention by supporting structures close to home where decisions are made about adherence, prevention and side-effect management.

In addition, these programmes help to offset the financial and human capacity constraints of many health centres. These centres benefit from the additional resources offered, as well as providing support for quality community- and home-based care programmes.

There are several models of how community- and home-based care programmes can be structured and linked with health centres.

4.4   CASE FINDING (TB, HIV)

Once appropriate community-based structures are in place to support scale-up of testing for HIV and TB, the health centre should actively begin provider-initiated testing and counselling (PITC) and TB screening. PITC should be offered to all patients at the health centre (refer to PITC guidelines). Everyone who tests positive for HIV should be screened for TB. Likewise, all patients with TB symptoms should be offered HIV testing and counselling.

To reach people who do not come to health centres, community organizations should be contacted to determine appropriate community-based testing mechanisms that can

be initiated or strengthened. This can include reinforcing client-initiated counselling and testing services; initiating testing services in CBOs or FBOs; and introducing home-based HIV testing and counselling.

Note that case finding is not just about identifying who is infected with HIV. Case finding should emphasize the positive benefits of HIV testing and counselling, including access to treatment, care and support services, as well as receiving feedback on behaviours that promote HIV prevention. Health centres should also emphasize that testing is not a one-off event. It is an ongoing process that needs to be linked to supporting individuals and communities in their prevention efforts, including assisting people who are already living with HIV.

Furthermore, testing should be seen as an opportunity to reinforce prevention strategies with people who test positive or negative. Case finding depends on testing.

■ Home based HIV testing and counselling
In some communities, home-based testing and counselling can be an effective way to increase the number of people who know their HIV status. Effective programmes will incorporate CBO and/or FBO services so that both people with HIV-positive or HIV-negative results receive support and are linked with health centre services for ongoing care.

■ Integrate MCH and HIV services
Community-based organizations can also help provide maternal and child-health (MCH) services. Links between MCH and HIV services can be a way to provide services more effectively, including nutrition counselling, etc. MCH services should be designed to include men as well as women in order to educate people as widely as possible.

4.5   COMMUNITY HEALTH WORKERS (CHWS)

Community Health Workers (CHWs) are valuable members of the clinical team that provides services to the community. CHW's may or may not be part of the district health network, but effective linkages are essential. CHWs are not a substitute for a weak health system and need to work in a strong health system with effective linkages to health centres. CHWs should receive adequate and sustainable remuneration for their work. Health centres and CABs need to identify the possible tasks that CHWs can realistically deliver (see the table on p.53 and note that each CHW can only effectively provide a limited number of services. Other services can be delivered by community/family volunteers/community carers). In some countries, TBAs deliver 40% to 50% of all infants and with special training they can play an important auxiliary role in HIV prevention and home-based testing.

Successful CHW programmes include:
- good planning and realistic expectations;
- identified person(s) in the health centre who liaise with CHWs;
- association with wider community mobilization efforts;
- appropriate selection and recruitment processes and then appropriate training;
- continuing education including educational and mentoring activities with health service staff to ensure understanding of the CHW role, as well as continuous health centre supervision and support;
- financial compensation for CHWs (there is no evidence that volunteerism can be sustained for long periods);
- adequate logistical support;
- political leadership and sustained commitment and investment;
- close working relationship between CHWs (and TBAs) and health center staff.

Assistance provided by CHWs

Nutrition	• nutritional assessment and referral • breastfeeding/infant feeding counselling and support • community therapeutic feeding • link to or provide food security interventions • provide education and reinforce good clean water and sanitation practises and access to safe water
Child health	• checking vaccination and PMTCT records and follow-up • growth monitoring • information on education on oral rehydration • screening for malaria • community IMCI interventions • identify and refer HIV-exposed and -infected children
PMTCT/maternal care	• home-based delivery of ARV prophylaxis • back-up to home delivery when centre delivery not possible • promoting PMTCT interventions such as supporting home-based delivery of ARV drugs; mother-to-mother programmes, or 'PMTCT graduate' programmes
HIV care/ART and TB (including prevention by people who are HIV-positive to protect their own health)	• ART and TB treatment support • TB case detection and referral • home-based HIV testing and counselling, link with treatment and care at centre • screening for mental health • provide insecticide-treated bed nets and safe water vessels

Prevent HIV transmission	• home- and community-based HIV testing and counselling including partner testing, active support for disclosure • risk reduction and sexuality counselling and support for discordant couples, etc. • support positive prevention by PLHIV • screen for STIs, refer for STI care
Malaria	• treat malaria – oral antimalarials • identify when referral and transfer to health facility is required • provide insecticide-treated bed nets
Palliative care	• symptom management including pain management, management of diarrhoeal disease, skin problems, constipation, difficult breathing, etc. • end-of-life care
Psychological/spiritual care	• screening and support for mental health/emotional problems related to HIV disease • active support for disclosure of HIV status • bereavement counselling • referral to and provision of spiritual/religious programming (support groups, ceremonies, spiritual leadership guidance) (see list of psychosocial support for children – *IMAI Chronic care*)
Social Care	• link to or provide food security interventions, income generation activities, livelihood strengthening interventions • assist in accessing child protection interventions • assist in accessing government grants/social welfare support • assist with succession planning

How to support community health worker activities

Organize a monthly meeting for community health workers who are involved in activities such as providing nutrition, a malaria, TB or HIV assistance. This is an important opportunity for health- centre staff to provide clinical support to community health workers. Having PLHIV on the clinical team and on the CAB bolsters the support provided in key areas.

Organize these meetings in collaboration with the CAB to ensure good links between health centre staff and the community health workers.

Hold separate meetings for community health workers in each area of work. For example, all community health workers involved in educating the community and identifying malnourished children should come to the same meeting.

Invite community health workers from NGOs in the district, as well as those who use the health centre as a base. In order to ensure that activities are sustainable, health centre workers should facilitate these meetings with a view to empowering and enabling NGOs to take the lead. Investing in NGO leadership will pay off in the long run; resulting in systems and programmes that support the efforts of PLHIV and maintain functional links with the health centre.

Ensure that several health centre staff are available to discuss problems with CHWs and to provide them with feedback.

Example: Agenda of a monthly meeting for community health workers

1. Short educational session or demonstration of skills: this can be as simple as discussing the best way to explain HIV, or how to provide treatment support. The topic may be chosen by the nurse or the CAB depending on the needs of the specific group of community health workers. It is important to highlight the experiences of both the health centre and the community health workers, and learning should be in both directions.
2. Report on educational and mobilization activities.
3. Report on clinical activities and distribution of drugs and commodities (for community health workers with clinical activities related to malaria, TB or HIV, etc.).
4. Follow-up of patients lost to treatment; treatment support, discussions of adherence problems, etc.
5. Renumeration/payment for CHW work.

INFRASTRUCTURE

5.1 INFRASTRUCTURE CONSIDERATIONS FOR HEALTH CENTRES

This chapter addresses the challenges posed by a health centre's space, design, power, water, hygiene and sanitation and equipment requirements for it to be able to deliver quality HIV prevention, care and treatment services that are integrated with basic essential primary care services.

The physical work environment often influences (positively or negatively) the mind-set of the service providers and their efficiency and ability to innovate in delivering expanded services. A good work environment can facilitate better HIV services and reduce workload. A disorganized work environment impairs the health centre team.

To improve the work environment, you need to start with improving how you use existing resources. This chapter should help you reorganize the existing space in your health centre and to consider important renovations and refurbishments. First, the chapter presents essential infrastructure requirements (sections 5.2 through 5.13; summarized in the table on the next page), followed by the infrastructure requirements for each area of the health centre (sections 5.14 to 5.21). The final section provides a quality management approach to developing an enabling physical work environment (the 5 Ss). However, the chapter does not deal with design and construction of new health centres.

The chapter will also provide guidance on improving infection control within your health centre. The emphasis is on preventing TB and HIV transmission; special sections are devoted to these subjects. The material also covers safe water, hygiene and sanitation to avoid transmission of enteric and other pathogens. This is essential to providing quality HIV services, as patients with suppressed immune systems are especially vulnerable to water and airborne contamination. The chapter material

Table 1. Essential infrastructure requirements

Space
Adequate space for HIV care integrated within primary care

Privacy and confidentiality
Protect the privacy of the patient's diagnosis and avoid stigma

TB infection control
Prevent TB transmission between patients and to health workers, without stigma

HIV infection control
Prevent HIV transmission through safe infections, phlebotomy, sharps disposal, gloves and other personal protection equipment

Water, sanitation and hygiene for infection control

Water supply
To provide safe drinking water

Hand washing, other hygiene practises and waste water
To provide sufficient quantities for handwashing, personal hygiene, laundry, cleaning and food preparation

Safe waste management at health centre
Sufficient quantities of safe water for handwashing, personal hygiene, laundry, cleaning and food preparation

Latrines/toilet
Patients, staff and care givers able to use a toilet without contaminating the health centre or its water supply

Cleaning
Visibly clean health centre

Communications
Phone or radio to communicate with district clinician and management team, mentor

Power
Electricity for essentials (mobile phone, microscopy, emergency lights)

Fire safety
Fire extinguisher or sand

reflects WHO essential environmental health standards for health care settings. Improving ventilation, cough hygiene and patient flow for TB infection control are particularly important and urgent since these interventions will also prevent the transmission of other respiratory infections. Most interventions for HIV infection control will also reduce transmission of other blood-borne infections such as hepatitis B.

These infrastructure interventions need to be accompanied by providing information about and promoting hygiene with staff, patients, and care givers so that they are knowledgeable about essential necessary behaviours to limit disease transmission at health facilities and in the home.

5.2 SPACE NEEDED FOR HIV SERVICES (INTEGRATED WITHIN PRIMARY CARE)

Determining the space requirements will depend on how many HIV patients you have or anticipate having, how many are on ART, and the room size. Based on the size of your HIV patient population and your staff, decide whether:

- outpatient HIV services will be fully integrated with other basic services (patients returning for chronic care are mixed with other patients attending for other problems), or;

- you will have a special 'HIV clinic' either full-time or part-time. For example, providing an integrated 'HIV clinic' one day a week for routine continuity of HIV services should be sufficient for 100 HIV patients. Additional HIV patients will require more HIV clinics per week, or more space.

This decision will dictate the amount of space required and how it is configured.

Planning for adequate space for HIV services within a health centre must accommodate the reality of existing basic clinical services. Table 2 (over) presents the suggested minimum space requirements. The *Operations Manual Adaptation Guide* provides additional details and guidelines for district planners and managers to determine optimal space use.

Table 2. Suggested space requirements for HIV/AIDS services at the health centre*

Functional spaces	Quantity	Dimensions (minimum)	Remarks
Waiting area	One		Careful attention to ventilation required to minimize nosocomial transmission of TB Adequate waiting space for an additional 25 visits per 250 PLHIV in care, including room for stretchers and/or wheelchairs Additional waiting space may be needed near counselling, laboratory/phlebotomy and pharmacy venues if these are not near the OPD
Registration/triage area	One	1.5m x 1.5m (2.25m^2) minimum; optimal 9m^2	
Medical records/HMIS	One	1.5m x 1.5m (2.25m^2)	
Consultation – exam rooms	Three minimum + one for every 250 to 500 additional HIV-positive patients	3.0m x 3.0m (9m^2) minimum; optimal 16m^2	Consultation-examination rooms used for ANC, family planning, OPD, EPI, MCH, under-5, TB/DOTS and HIV services and counselling and testing
Labour and post-partum room	One	3.0m x 6.0m (18m^2)	Small health centres may not have labour and delivery services
Delivery room	One	3.0m x 6.0m (18m^2)	A bathroom should also be easily accessible
Counselling rooms – HIV counselling and testing (CITC, PITC), adherence, psychosocial support	Three minimum + one for every 250 to 500 additional HIV-positive patients	1.5m x 1.5m (2.25m^2)	Counselling requires visual and auditory privacy, but may otherwise include less formal spaces, such as booths, tents, and outside (covered) areas Testing and counselling may be conducted in a number of different private spaces, including allocated rooms and other spaces

Group counselling space		Large room or covered outdoor space for 20–50 people	May be outside (covered) space or in waiting area. For group counselling, support group meetings, and peer education/ support groups
Laboratory – analysis of specimens	One	3.0m x 3.0m (9m^2)	Minimum of one metre of working surface for each individual, each piece of equipment, and for staining. Rapid testing may be conducted in consulting or counselling rooms provided a work surface is available
Phlebotomy/side laboratory	One	2.0m x 2.0m (4m^2)	May not be a separate room, but you need to identify sufficient space for phlebotomy and ensure its rational layout in relation to the laboratory and clinic
Specimen labelling, preparation, results	One	1.5m x 1.5m (2.25m^2)	Usually within the lab
TB sputum collection		Open air	Conducted in the open air
Pharmacy/dispensary	One	3.0m x 3.0m (9m^2)	With compounding space, sink, dispensing/counselling area
Pharmacy stores	One	1.5m x 1.5m (2.25m^2)	The store needs to be large enough to fit all supplies. It should be a room or, in the case of a very small health centre, a cupboard or cabinet that is kept locked
Toilets – staff	Two	1.5m x 1.5m (2.25m^2)	
Toilets – patients	Two	1.5m x 1.5m (2.25m^2)	Use one for urine collection

* Adherence and psychosocial rooms can be used for counselling and testing during the initial scale-up of PITC before there is a large patient population in care and treatment.

5.3 PRIVACY AND CONFIDENTIALITY

Unfortunately, profound stigma continues to surround HIV infection, which means that attention to patient confidentiality is very important. It is important for health centres to maintain the privacy of HIV clinics and ensure that a person's HIV status is not identifiable to others in any way.

Examples include:

■ Signage that is discreet, as well as clear and helpful. Patients may be more likely to attend a clinic labelled 'family care clinic,' 'comprehensive care clinic,' or even 'infectious diseases clinic' than one labelled 'HIV/AIDS clinic'.

■ Appointment systems that shield patient's names from view (of the public/or other providers). Appointment books need to be considered private medical records, and whenever possible health centre staff need to avoid calling out patients' names in public areas such as waiting rooms. How is this possible? HIV-positive and HIV-negative patients need to be processed in the same manner (e.g. their names called out in the same way) so that their status is not identified by others in the waiting room.

■ Medical records that minimize accidental or involuntary disclosure of HIV infection. A patient's HIV status needs to be clearly indicated on their medical charts; however, this marking needs to be discreet to avoid unnecessary disclosure. Patient medical records need to be secured at all times. Colour-coding or obvious marks that designate HIV status on patient-held records need to be avoided. In addition, written referrals to services such as radiology and laboratory testing need to look as much like referrals from other areas of the health centre as is feasible. For example, simple codes may be used to record HIV status, CD4 counts and ARV drugs dispensed on patient-held maternal health cards.

These concerns need to be balanced with the efforts to normalize HIV infection as a chronic disease and to emphasize the confidentiality that applies to all clinical care within a health centre.

■ You are strongly encouraged to seek feedback from PLHIV on the issues of privacy and stigma. The ability to gain PLHIV input will vary from facility to facility. In some cases, including PLHIV on community advisory boards will be the best way to obtain information, while in others, focus groups or less formal methods may be equally revealing. See chapter 4,*Community* for more details.

5.4 TB INFECTION CONTROL

TB control

TB infection control at the health centre is a very high priority to prevent transmission of TB between patients and to health workers. WHO and the StopTB Partnership have just released a 10-step programme for TB infection control. The version below to health centres:

10 Essential actions for effective TB infection control: safety without stigma

1. **Include patients and community in advocacy campaigns.** The community needs to be well-educated about TB infection, prevention and control. Patients need to understand that they will be better off if they know their HIV status, may be eligible for isoniazid preventive therapy (IPT), and have a right to rapid TB diagnosis and treatment. They need to know that TB can be spread by coughing, and to expect health settings and community services to require people who are coughing to cover their mouths when doing so. They need to understand that health workers may wear personal respiratory protection sometimes, or that patients may be asked to wear a mask in order to protect others. Safety without stigma should be the goal. A request to wear a mask or provide a sputum outside the centre, or in a well-ventilated room should not be stigmatizing, but should seem as part of a safer clinic for everyone. Patient and health worker safety may include receiving health care in the community to avoid unnecessary admissions to health care facilities. Information, education, and communication (IEC) campaigns need to include themes such as "Our community is TB-safe", or "Our health facilities are stopping TB".

2. **Adapt an infection control plan.** Each health centre should have an infection control (IC) plan and a staff person or team responsible for IC. The plan identifies high-risk areas for TB transmission, and provides information on TB and HIV rates for health workers and patients. The plan provides area-specific infection control recommendations for the health centre, including special standard safety procedures for its laboratory.

3. **Ensure safe sputum collection.** Sputum collection can be potentially hazardous for health workers and other patients. Workers need to explain to patients that safety without stigma is the goal of good TB infection control. they need to stress that sputum need to be collected outdoors if feasible (see chapter 8, *Laboratory*).

4. **Promote cough etiquette and cough hygiene.** In at least the waiting area, every health centre should have a poster on TB infection control and cough

etiquette (see figure 3) When coughing, patients need to be instructed to cover their mouths and nose with hands, a cloth such as a handkerchief, a clean rag, tissues, or paper masks. All staff are responsible for safety and are advised to work together to help patients adhere to this practise.

▪ When tissues, cloths or face masks are not available, patients need to be instructed to lift their arm up and cover their nose and mouth with the inner surface of the arm or forearm when they cough or sneeze.

▪ No-touch receptacles for disposal of used tissues and masks should be available in the waiting areas.

5. **Triage TB suspects for 'fast-track' or separation (see also *Service integration* chapter).** Screen all patients on arrival for chronic cough (i.e. >two to three weeks), fever, weight loss, night sweats, haemoptysis, or contact with a person with TB. Explain to all health centre visitors that safety without stigma is the goal, and that the screening is part of quality care. Patients need to understand that it is in their interest to know their HIV status, that they may be eligible for IPT and have a right to rapid TB diagnostic services and treatment. Individuals suspected of having TB should be 'fast-tracked' for rapid diagnosis and care services, or should be asked to wait near an open window, or in a comfortable area separate from the general waiting room (outdoors when possible). When possible, use community-based treatment. Patients with known or suspected drug-resistant TB should be separated from other TB suspects.

6. **Assure rapid diagnosis and treatment initiation.** Patients suspected of having TB should move to the front of the queue for all services and need prompt evaluation for TB. (This preference does not put them before patients with emergency problems such as difficulty breathing or bleeding). Sputum collection should be done away from other people, and specimens sent to a quality-assured laboratory for AFB (acid-fast bacillus) smear and culture (when possible). Turn-around time for sputum AFB smear results should be no more than 24 hours if testing is done on-site. A patient-tracking system assures that TB suspects who are AFB smear-negative receive additional procedures (e.g. chest x-ray and referral visits), or treatment as quickly as possible. DOTS treatment for TB begins immediately when TB is diagnosed, and a plan for assuring adherence to treatment is developed. All people with HIV who are not TB suspects should be eligible to start on IPT.

7. **Improve room air ventilation.** Patient waiting areas should be open and well-ventilated. This includes leaving windows and doors open when possible

to maximize cross ventilation. Appropriately placed simple fans can assist ventilation. When weather permits, open-air shelters with a roof to protect patients from sun and rain are recommended. Patients should not wait for services in narrow, poorly ventilated corridors. When health centre renovations are being carried out, the management team should consider TB infection control as integral to new building plans.

8. **Protect health workers.** Health workers should know the symptoms of TB and be given a health assessment including screening for TB and HIV at least every year. All workers are encouraged to know their HIV status, and those with HIV infection should be given the opportunity to minimize exposure to people with TB, e.g. offered a change of duties. HIV-infected workers should be screened for isoniazid preventive therapy as part of basic HIV care and treatment.

9. **Capacity building.** All health workers should receive TB infection control training, and be engaged in improving their own and patient safety. This training may be combined with other infection control training (see *Human Resources* chapter*).

10. **Monitor infection control practises.** Overseeing infection control practises should be a part of every supervisory visit. This should include a facility tour to check that IC is being implemented and that all essential IC supplies are available. At the very least, facilities should have an IC plan. When feasible, monitoring annual TB cases among health workers can also provide useful information on transmission of TB in facilities. Surveillance of TB disease among health workers is another means of evaluation. Additional on-site measures include examining medical records of a sample of TB patients, looking at the time interval from admission to suspicion of TB, time to ordering sputum for AFB, time from ordering to collection of sputum, collection of sputum to reporting of results, to initiation of TB treatment and interviewing patients to discuss their understanding of infection control, safety and stigma.

How to promptly identify TB suspects in the waiting areas

Before patients enter an enclosed part of the facility, a designated staff person should ask each adult and any child capable of coughing forcefully (usually age 14 or older) about symptoms or recent history of TB. The questioning should occur before patients wait in line for long periods to register or obtain services. Attention should be paid the patient's right to privacy, and screening should be conducted in a manner that is sensitive to the issues of stigma that may surround TB.

Simple screening questions are:

> **"Do you have a cough?"**
> If patient answers "yes", ask:
> **"For how long have you been coughing?"**

An adult who has coughed for two weeks or more may be considered a 'TB suspect' for pulmonary TB. To determine whether a patient may be under investigation, or is a diagnosed case of TB who may still be infectious, the staff member needs to ask:

> **"Are you being investigated or treated for TB?"**

If the answer to either is "yes," the person doing the screening classifies the patient as a TB suspect or case.
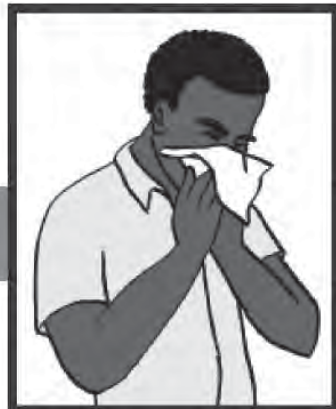
Figure 3. General medical out-patients waiting room

Respiratory patients wait the other patients

Before ventilation
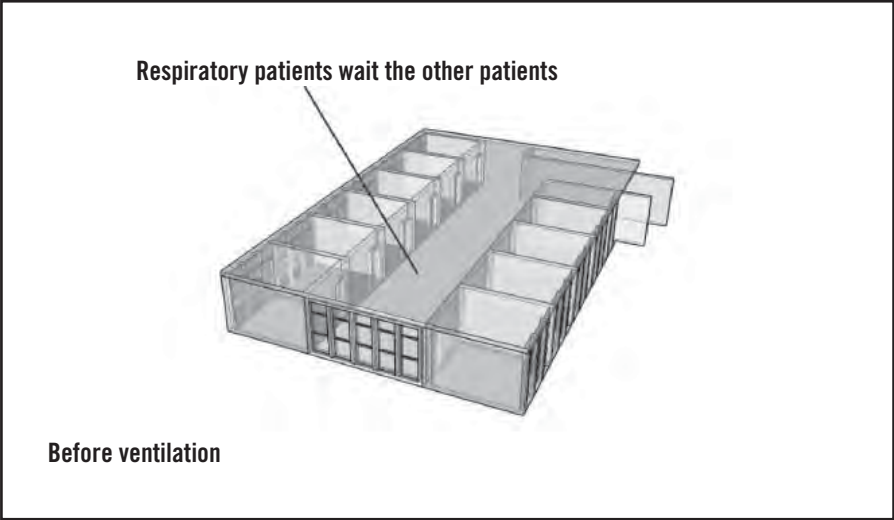
Figure 4. General medical out-patients waiting room

Respiratory patients relocated to outside waiting area

New consulting room entrance
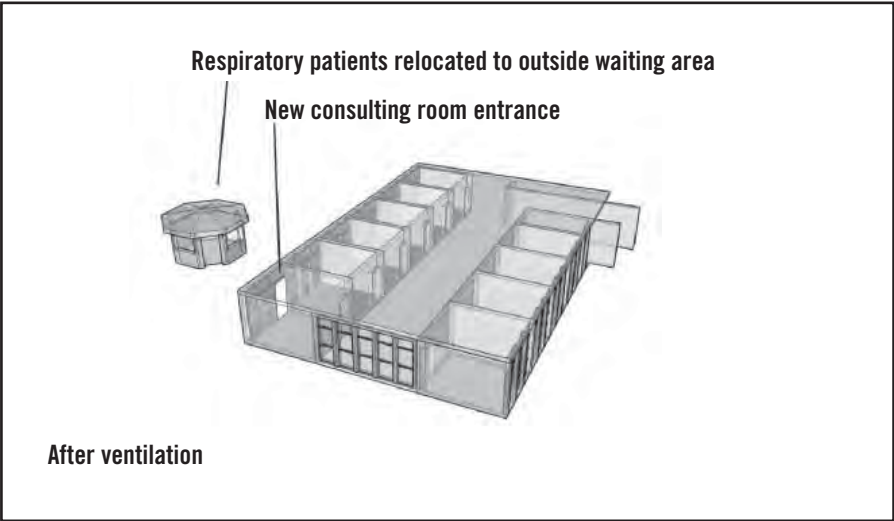
After ventilation

5.5   HIV INFECTION CONTROL

Minimizing occupational and nosocomial exposure to HIV is also dependent on work practise and administrative controls, including training and supervision in injection safety, and in the safe and appropriate use and disposal of sharps. Additional environmental controls include ensuring adequate and appropriate space and layout for phlebotomy services and areas; accessibility of sharp disposal containers; personal protective equipment for staff; and the availability of post-exposure prophylaxis. More detail on this can be found in the *Human Resources* chapter.

5.6   WATER SUPPLY AND WASTEWATER

Both the quantity and quality of water and safe disposal of wastewater are important in health centres.
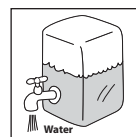
Water quantity

Water quality is a key element of infection control within health facilities. Particular care is needed to ensure that immunocompromised patients have access to safe drinking water, given their high susceptibility to infection. It is essential that the water presents no risk to health, and that it is protected from contamination inside the health setting. The following section assumes the health centre has a supply of safe water always available.

Provide safe drinking water from a protected groundwater source (spring, well or borehole), or from a treated supply, and keep it safe until it is drunk or used. Untreated water from unprotected sources can be made safer by simple means such as boiling or filtering, chlorination and disinfection.

Water quality is also important for food preparation, pharmacological and treatment applications, and for bathing.

It is particularly important to provide adequate water for hand washing at multiple sites in the health centre (see next section).

Non-potable water (water that is below drinking-water quality) should be used only for cleaning, laundry, and sanitation.

Water quantity

Water quantity is a major factor in meeting all essential needs of the health centre, especially those which require large daily supplies, such as laundry and basic floor, bed and clinical equipment cleaning.

The actual quantities of water required will vary depending on climate. But when considering local water-use practises for health centre infrastructure (toilets or latrines and laundry facilities), WHO estimates a health facility requires approximately five litres of water for every outpatient visit. This includes water used for all purposes: hand washing, cleaning, laundry and drinking. Water storage is also important and experience suggests that when possible, facilities should have a three-day supply of stored water (cistern or other).

Minimum water quantity required[1]	
Outpatients	5 litres/consultation
Inpatients	40–60 litres/patient/day
Operating theatre/maternity	100 litres /intervention
Dry supplementary feeding centre (depending on waiting time)	0.5–5 litres/consultation
Wet supplementary feeding centre	15 litres/consultation
Inpatient therapeutic feeding centre	30 litres/patient/day

[1] These guidelines include water used for all purposes: hand hygiene, cleaning, laundry, drinking and cooking. The figures should be used to plan and design water-supply systems. The actual quantities of water required will depend on several factors such as climate, availability and type of water-use facilities (including type of toilets), level of care and local water-use practises.

An increase in water quantities may involve only minor modifications in piped supplies, or expansion of pumping rates. However, in many cases major supply increases may require costly infrastructure investments in new water sources (wells, boreholes, river intakes, etc.) or water collection facilities (ponds, reservoirs, storage tanks). Any decision to expand a water system will need to consider current and future needs, water quality, available water resources and costs.

Waste water disposal

Wastewater is produced from washbasins, showers, sinks, etc. (grey water) and from flushing toilets (black water).

■ Wastewater should be removed rapidly and cleanly from the point where it is produced.

- Wastewater drainage from health settings should be built and managed to avoid contamination of the setting or the broader environment.
  - Wastewater should be removed in standard waste drainage systems to off-site sewers or on-site disposal systems.
  - It is best if the health centre wastewater can be connected to a properly built and functioning sewer system, which is in turn connected to an adequate treatment plant.
  - If the sewer does not lead to a treatment facility, an on-site retention system with treatment will be necessary before wastewater is discharged.
  - Open wastewater drainage systems should be covered to avoid the risks of disease vector breeding such as mosquitoes, and contamination from direct exposure.

- Small quantities of infectious liquid wastes (e.g. blood or body fluids) may be poured into sinks or toilets. Most pathogens are rendered inactive by a combination of time, dilution and the presence of disinfectants in the wastewater.

- Toxic wastes (e.g. reagents from a laboratory) should be treated as health-care waste. They should not be poured into sinks or toilets that drain into the wastewater system.

5.7   HAND WASHING AND OTHER HYGIENE PRACTISES

Provide water for hand washing after going to the toilet/latrine, before handling food, and before and after performing health care. This may be done using simple and economical equipment, such as a pitcher of treated water, a basin and soap or wood ash in some settings. This should be available for every clinical consultation room; in labour, delivery, postpartum, and other inpatient areas such as in the laboratory, near waste disposal areas and near the latrine/toilet.

Hygiene basics

- Basic hygiene measures by staff, patients and carers (hand washing in particular) should not be compromised by lack of water.

- Water (with soap or a suitable alternative) needs to be available at all critical points, and located close to users in order to encourage them to use water as often as required.

- Train staff on infection control procedures.

Infection control is a key component of health worker training and supervision. Hand hygiene is particularly critical, and should be facilitated by ensuring easy access to hand washing facilities and supplies (soap, disinfectants) and through ongoing education and surveillance. In larger settings, non-clinical staff such as cleaners, waste technicians, and kitchen staff are also responsible for infection control, and should be able to apply ITS basic principles to their daily work.

Promoting correct hygiene is important for staff, patients and care givers. All should receive ongoing reminders of the routine measures required to prevent the spread of infections, whether in the health facility or at home. This education may be as simple as identifying the location and correct use of toilets and hand washing points. Managers should stress that promoting hygiene is intended to change personal behaviours that enable the spread of infectious organisms. Without behaviour change by all stakeholders at the health facility, hygiene – both personal and institutional – will not lead to safe and healthy conditions.

5.8   LATRINES/TOILETS

Latrine

This may entail measures as basic as digging simple pit latrines. (Note that the risk of transmission of soil-based helminths is increased with the use of defecation fields. Wearing shoes or sandals provides protection from hookworm infections).

Basic requirements for latrines/toilets at a health centre

■ Number of latrines/toilets – four: one for staff (two if separate toilets are required for male and female staff); one for male patients; one for female patients; one for young children. In large health centres, more toilets or latrines are required. The number required depends on several local factors including the average time patients wait before consultations latrines/toilets.

■ Design to respond to local cultural and social conditions (e.g. anal cleansing with water).

■ Equip patient toilets to make them easy to use by people with physical handicaps, heavily pregnant women, elderly people and people who are sick[2].

■ Children's toilets are particularly useful where latrines are used, and where the size of the drop-hole and the conditions inside a normal latrine are off-putting for children, or inconvenient for carers.

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[2] See Jones and Reed 2005 for detailed design features.

- Signpost toilets/latrines clearly to help users find them.

- Water points, with soap and adequate drainage should be provided at the exit of all toilets, and their use should be actively encouraged.

- Design, build and maintain toilets/latrines so they are hygienic and acceptable to use and do not become a source for disease transmission:
  - Measures to control fly and mosquito breeding are needed;
  - A regularly monitored cleaning schedule is required.

Minimize the risk of violence (including sexual violence). Latrines/toilets should be carefully located, with locks for the user (to protect people while using them), and with lights for use at night (both the toilet and access areas).

5.9   CLEANING

Management needs to provide cleaning supplies that enable staff to routinely clean surfaces and fittings to ensure the health-care environment is visibly clean and free from dust and soil. Ninety per cent of microorganisms are present within "visible dirt". The purpose of cleaning is to eliminate this dirt.

Cleaning
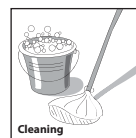
5.10   HEALTH CENTRE WASTE MANAGEMENT

- Use appropriate standard precautions at all times in handling wastes (see IMAI or IMPAC or other clinical guidelines).

Waste Management

- Segregate at the point of generation the four categories of waste (sharps, non-sharps infectious waste, non-sharp non-infectious waste, and hazardous waste):
  - Have three colour-coded containers at convenient locations in all work areas.
  - Keep hazardous waste containers in lab and pharmacy.

- Train all staff in waste management.

- Make sure waste treatment and disposal happen properly and consistently:
  - Properly identify waste packages to warn health personnel and waste handlers about their contents.
  - Locate the waste-disposal zone at least 30 metres from groundwater sources.
  - Fence off the waste-disposal zone.

■ Put a water point with soap/detergent and disinfect to clean and disinfect containers, next to the waste treatment and disposal area with a soak-away system or sewer for wastewater disposal.

■ Discuss with the appropriate local authorities the efforts that are underway to reduce waste management risks, and try to obtain their support for additional measures if necessary.
■ Health care waste workers should be immunized against HBV

Table 3. How to set up three colour-coded waste containers for most rooms in the health centre (plus a hazardous waste container in the pharmacy and laboratory only)

Waste Management

Waste category	Segregate using colour-coded waste containers	Collect	Dispose
Sharps (needles, scalpels, etc.) – infectious or not	**YELLOW** Safe sharps container • puncture-proof • covered • closable • upright and stable during use • leakproof at sides and bottom • clear label for user	Close lid or cover, seal with tape, and submit for waste pickup when they are no more than ¾ full. Never overfill or force items into these containers Collect regularly for disposal	*Sharps* should be disposed of in a sharps pit (buried drum in small centres or emergency structures, concrete-lined sealed pit in other settings) Off-site disposal may be necessary for safe incineration at the district hospital (if available) or a private facility in charge of collection and treatment
Non-sharps infectious waste* (anatomical waste, pathological waste, dressings, used syringes, used single-use gloves)	**YELLOW** or **RED** bags or containers 15–40 litre capacity with lids	Should be collected, emptied, cleaned, disinfected and replaced after each intervention (e.g. in an operating or maternity unit) or twice daily The bags should not cleaned and reused	*Non-sharps infectious waste* should be buried in a pit fitted with a sealed cover and ventilation pipe for on-site treatment in small health centre settings or, on-site or off-site high-temperature incinerated or steam sterilized. Special arrangements may be needed for disposing of placentas, according to local custom
Non-sharp, non-infectious waste (paper, packaging, etc.)	**BLACK** containers 20–60 litre capacity	Should be collected, emptied, cleaned and replaced daily; alternatively, plastic bags may be used inside the containers	Joins the municipal waste stream or buried in a pit, a landfill site or non-food and non-medical items recycled. If space is limited, it should be incinerated. Ashes and residues should be buried in a pit

* Cholera stools, body fluids from other highly infectious diseases.

Table 4: Hazardous waste container

Waste category	Waste containers	Collect	Dispose
Hazardous waste.* **Hazardous Waste**	Appropriately labelled containers placed in secure location	Health centres produce very small quantities of this waste. These can be stored in a small, labelled container at the pharmacy	Send to district hospital or another central health facility for specific treatment and disposal Manage stock of chemicals and pharmaceuticals well to reduce waste quantities and save on purchase costs

* Hazardous waste includes some outdated drugs, laboratory reagents, strong disinfectants; radioactive waste, batteries, mercury, etc. Each hazardous waste requires specific treatment and disposal methods based on national regulations.

Transport sharps boxes to a treatment facility

High temperatures (e.g. steam or incineration) kill microorganisms and reduce the volume of waste. Some hospitals have on-site treatment facilities; health centres usually do not, but may be able to transport full sharps boxes for treatment elsewhere. Sharps disposal requires special facilities and personnel. Health facilities can try to use waste treatment options available at other facilities such as cement factories for incineration or municipal centralized facilities.
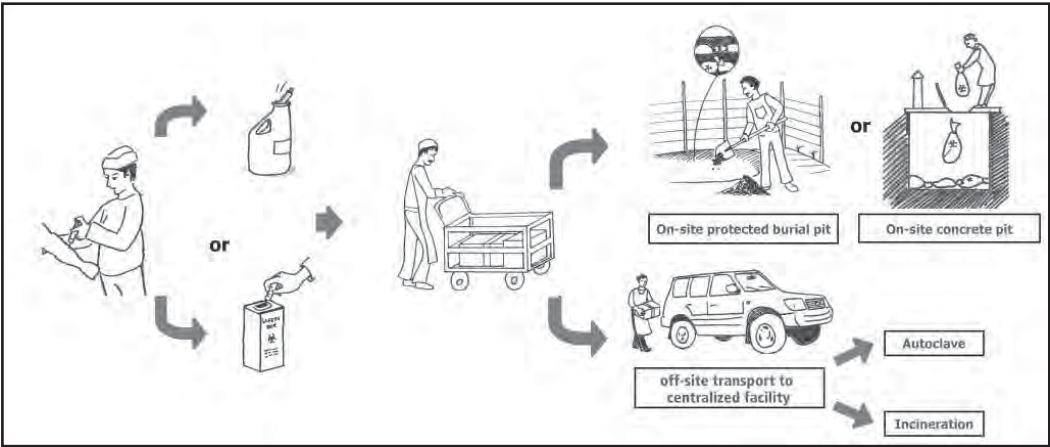
Cecile Arnaud, Consultant, WSH-WHO

5.11 POWER
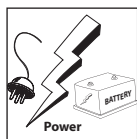
All health centres need some electricity. Ambient light can be used during the day for most tasks, but emergency lights, electricity to charge a mobile phone, and (in health centres performing malaria or sputum microscopy) minimum levels of electricity for a microscope are required. These can be powered or recharged from the mains electricity supply or, if this is not available by:

■ solar panels;

■ generator;

■ using a vehicle battery. (This is an option when a vehicle is regularly available and a second battery can be installed).

How you achieve temperature control in your pharmacy storage area will also influence your power needs:

■ First, use methods that do not require power: add ceiling and air vents; keep windows and doors open.

■ Second, add a fan.

■ If an air conditioner is needed, it will require significant energy.

The reagents for essential laboratory tests, and drugs required for services described in this *Manual* (including first-line ARV drugs) do not require refrigeration. If possible, avoid formulations and laboratory reagents which require refrigeration beyond what is needed for the cold chain for vaccines. If a refrigerator is required, it can be run on propane, or from a bank of batteries (referred to as a solar refrigerator).

Decisions need to be made based on the power required and the times of the day it is needed (total possible load). See Annex 5.1 for a guide to estimate the power requirements at your health centre.

PV/Generator Hybrid System for your PV Home

CHARGE CONTROLLER

BATTERY BANK

DC LOAD CENTER

PV ARRAY

INVERTER WITH BATTERY CHARGER

GENERATOR

BATTERY CHARGER

DC TO AC CONVERSION (INVERTER)

AC LOAD CENTER

AUTOMATIC TRANSFER SWITCH

Courtesy of: Blackwood Solar Systems
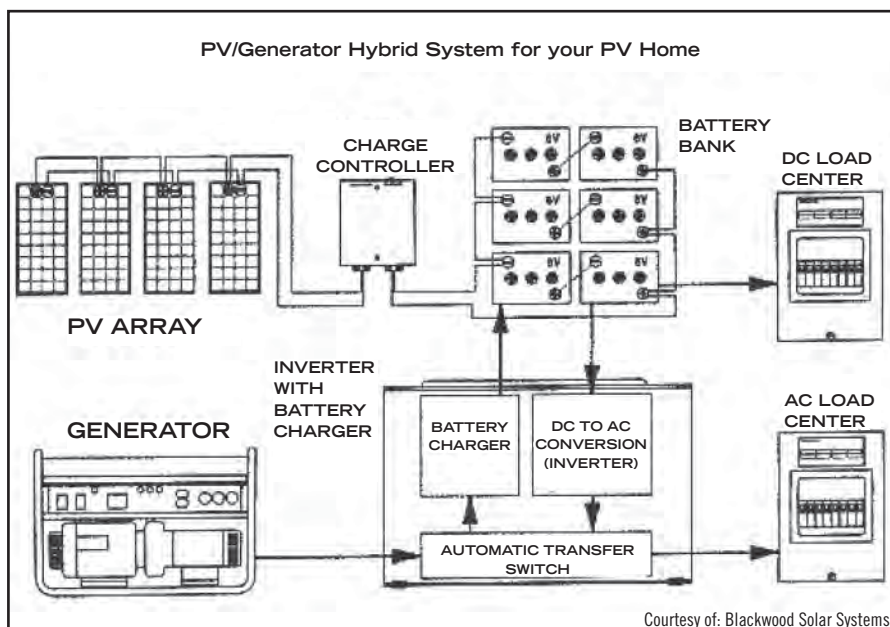
If batteries are used as the main power source, decisions need to be made as to whether AC electricity is generated via an inverter (with about a 10% loss in energy) or direct current is used (see *Operations Manual Adaptation Guide*).

5.12 COMMUNICATION INFRASTRUCTURE

IIt is essential that the clinical team has the physical means to communicate with each member and to consult on side-effects, other complications, etc. The centre must have reliable distance communication between it and the district-based medical officer (also a part of the clinical team). Furthermore, clinical mentors need to be available to offer advice by cell phone, landline or radio.

Communication

This is particularly important when initiating ART in uncomplicated patients at the health centre, under the supervision/standing orders/prescription of the medical officer. In addition, if oral morphine is used in palliative care, communication may be needed between the palliative care nurse-specialist or district medical officer able to prescribe the drug, and health centre staff that are providing medical back-up to home-based care.

Distance communication is also important for transmitting management information and laboratory test results.

Ways to improve distance communication

- Telephone:
    - Mobile telephone networks are an alternative when landlines do not exist. If reception is poor, explore whether an antenna can augment the signal.
    - Blocked SIM cards can be provided which only allow calls between the health team and the hospital clinician, district management team, warm lines (see below for explanation), etc. This can be an effective way to provide air time to health workers.
    - Another solution is a system using SMS: you send an SMS to the district clinician or other mentor, who then calls you back and answers your question. SMS can also be used to transmit laboratory and other data. Computer systems exist which can organize SMS messages between the district hospital laboratory and sites.
    - A warm line is a telephone number that you call and someone calls you back. Some countries have warm lines available for consultation on ARV therapy and OI management, poisons, palliative care, etc.
    - A phone log should be kept to record clinical consultations.

- Citizen's Band (CB) radio – a cheap and effective method of communication.

- Runners – send messages with truckers and others regularly driving near the district hospital.

- E-mail – may be feasible in some settings, but can be burdensome to health workers who are not used to typing, particularly if there is a language barrier with the mentor, and when internet connections are very slow.

Encourage health workers on your clinical team to use the above methods to ask questions about difficult cases. Provide clear instructions about when to consult and how to present the case (these are included in IMAI basic HIV/ART training). Confused presentations over a phone or radio can create frustration on both sides, with the result that the health worker becomes reluctant to continue calling for advice.

5.13   FIRE SAFETY

Make sure you have a functional fire extinguisher or at least buckets of sand.

How to use a fire extinguisher:

1) Remove safety clip

2) Aim at base of fire

3) Squeeze

4) Sweep

INFRASTRUCTURE BY HEALTH CENTRE AREA

For laboratory infrastructure, see chapter 8, *Laboratory Services.*

5.14   WAITING AREA INFRASTRUCTURE

Often HIV patients need to see several providers on a single visit, increasing their potential waiting time. Considerations for waiting area infrastructure include attention to space, ventilation, comfort and rational layout that facilitates links within the health centre, and decreases waiting time.

Ventilation: Well-ventilated waiting areas are a key element of the environmental control measures needed to minimize transmission of tuberculosis. If the climate permits, covered outdoor waiting space is preferred to enclosed indoor areas. The use of benches in unventilated hallways is particularly discouraged. If naturally ventilated space is not available, the addition of extra windows and/or the use of fans can be a simple and effective way to enhance ventilation. As described above, coughing patients with known or suspected TB should be separated and triaged for rapid evaluation to minimize their time waiting in crowded areas.

Comfort/safety/privacy: Attention to simple issues can have a significant impact on patient comfort. In many facilities, patient education, counselling and IEC materials are provided in waiting areas to enhance the patients' knowledge and skills and to minimize boredom. As noted above, thoughtful attention to issues of privacy and stigma is important throughout the health centre. For example, the use of a separate waiting area for patients with HIV can run the risk that their HIV status may be disclosed in an involuntary manner. The same caution applies to the practise of only calling HIV patients' names in the waiting area.

Waiting area infrastructure

Comfort/safety/privacy	Furnishings	Equipment and supplies
Well-ventilated, covered outdoor waiting space, or very well-ventilated indoor area with adequate space. and windows with window fans. Coughing patients should be separated and triaged for rapid evaluation to minimize time in crowded waiting areas Effective roofing, shelter from sun as needed, and access to toilet and hand washing facilities Play area for children	Fan(s) if needed Sufficient bench space for patient load at peak times	Educational posters, written/pictorial IEC materials. Where available, TV/VCR with IEC materials Condom dispenser

5.15 TRIAGE, REGISTRATION, PATIENT MONITORING INFRASTRUCTURE

Introducing HIV/AIDS care and treatment services into a health centre requires setting up (or expanding) appointment and registration systems. Patients must be identified, visit registers completed, and patient medical records folders retrieved and prepared. In addition, many clinics conduct initial triage at the time of registration by using a simple symptom checklist (often focusing on the presence/absence of cough or new symptoms or illness to determine fast track procedures), and by measuring vital signs.

Registration and triage may take place within the waiting area, or in a nearby room or rooms as space permits and privacy dictates.

Triage infrastructure

Comfort/safety/privacy	Furnishings	Equipment and supplies
The ventilation, comfort and security issues described above apply equally to waiting and registration areas	Desk or table

Two chairs

Filing cabinets that can be locked, or similar shelving/ storage to organize patient files. | See medical record supplies below

When vital signs are taken at triage
• adult and infant scales
• thermometer
• sphygmomanometer
• stethoscope

Condom dispenser |

An adequate patient monitoring system requires a designated desk or table space where patients are enrolled into HIV care. This is where a new medical record or patient card is opened for the patient being enrolled, and where information is transferred from the card to the registers simultaneously, or at the end of the day or week. This may be combined with the triage/registration area or be located near it.

Individual patient medical records should be organized in a logical way, generally by patient ID, whether unique or facility-specific. The records should be kept in locked filing cabinets or shelves in a room that can be locked. Registers should also be kept in a secure location (see chapter 6, *Monitoring Services* for a description of generic forms and registers, for country adaptation).

Registration for chronic HIV care and patient monitoring infrastructure

Comfort/safety/privacy	Furnishings	Equipment and supplies
Locked storage Visual and auditory privacy when patient information is being conveyed	Desk or table Two chairs Filing cabinets that can be locked, or similar shelving/storage to organize patient files	Blank patient cards (facility- and patient-held, as relevant for HIV care/ART, TB, ANC) Other forms such as laboratory requests, prescription forms, transfer or referral forms, etc Any and all facility-held registers, appointment books, blank reporting forms, etc Calculator

5.16 GROUP EDUCATION AND SUPPORT INFRASTRUCTURE

Experience shows that facility-based patient education and patient support groups can be highly effective means for providing pre-test information, support adherence, decreasing stigma, and transferring important 'positive living' skills. If possible, these groups need space at the centre for carrying out their work. If available, large rooms or covered areas with space for 20–50 people can be valuable resources for such group counselling and support services.

The availability of space for community NGOs active in providing home-based testing, care and treatment support is also desirable.

Group education and support infrastructure

Comfort/safety/privacy	Furnishings	Equipment and supplies
Comfortable seating Visual and auditory privacy Well ventilated	White- or black-board	Adapted patient information materials (posters, brochures, hand-outs) and counselling support tools (flip charts, diagrams) Demonstration tools including male and female condoms and penis model Condom dispenser Adherence support tools (pill boxes, etc.) Optional • TV/VCR • videotapes or DVD

5.17 CLINICAL CONSULTATION ROOM INFRASTRUCTURE

The essential elements of a clinical consultation are a thorough medical interview and a complete physical examination.

Space requirements for clinical consultations: Most national and international guidelines recommend that patients with early HIV disease ('pre-ART' patients) return for clinical assessments every three to four months, and that patients with advanced disease and those on ART return monthly until stabilized on treatment; then after that, every three months. These recommendations enable some general estimates regarding patient load and visit frequency.

- Expect roughly 33–63 visits per week for each 250 HIV-infected patients enrolled in chronic HIV care.

- A single clinical consultation room, fully staffed and dedicated to HIV services five days a week, can accommodate roughly 125–150 patient visits/week, or – using the assumptions in chapter 1 – can handle a total of approximately 750 PLHIV who are receiving chronic HIV care.

These estimates provide the basis for the recommendation that a health centre providing HIV services should have, at a minimum, three consultation rooms for all outpatient services for general medical care, with an additional room for each additional 250 to 500 patients enrolled in HIV care.

A health centre providing HIV services to 250 patients can expect 7–13 extra visits a day for clinical services. Assuming some additional visits will be required for laboratory, pharmacy, and counselling purposes means that this number will increase to an extra 20–25 visits/day.

As you scale up PITC and have more patients enrolled in HIV care, the relative use of counselling rooms for testing and counselling will change, compared with use of the rooms for adherence counselling and psychosocial support.

Clinical consultation infrastructure

Comfort/safety/privacy	Furnishings	Equipment and supplies
Auditory and visual privacy Well- ventilated Sink for hand washing in the room or next to it	Desk with a drawer that can be locked At least three chairs Examination table with privacy screen Hand washing area Fan, if needed Additional light source (standing lamp), if needed Three colour-coded waste containers Easy access to hand washing Optional • bookcase • additional storage • cabinet that can be locked	Clinical support tools for provider (clinical algorithms, dosing guides, desktop guides, posters, textbooks, etc.) Basic diagnostic set (stethoscope, thermometer, sphygmomanometer, stadiometer), hand washing supplies. (This assumes adult and infant scales are in the triage area) MUAC tapes Patient education materials Wall charts on HIV prevention Condom dispenser

5.18 COUNSELLING INFRASTRUCTURE

The need for counselling space is often underestimated by managers, creating barriers and bottlenecks to HIV service delivery. Although some counselling is often provided in the course of clinical consultation, facilities providing HIV services require additional individual space for the large range of counselling required to ensure the delivery of quality HIV services (see list below). Additional counselling infrastructure is required, both to support the scale-up of treatment and care, and for prevention scale-up.

Counselling within HIV services includes:
• HIV counselling and testing, accompanied by post-test prevention messages • Adherence counselling • Reproductive choice and family planning counselling • Partner and couples counselling • Discordant couples counselling • Safer sex and risk reduction counselling • Disclosure support • STI counselling • Counselling on adult male circumcision • PMTCT counselling • Infant feeding and nutrition counselling • Psychosocial support • Counselling for children and their caretakers • Post-rape counselling

Counselling space can be shared, and the relative proportion of use for various counselling purposes will vary over time. Counselling space can be less formal than the space needed for clinical, laboratory or pharmacy services. It requires only auditory and visual privacy, and room for several people to sit comfortably. Less formal spaces that can be used include booths, tents, and outdoor (covered) areas.

For facilities with larger numbers of PLHIV, the diverse space needs for counselling require at least one additional room or space. It is also extremely helpful if a larger area is available for group counselling, support group meetings and peer education.

Depending on catchment area and anticipated volume of HIV testing, most facilities will need additional space for HIV counselling and testing (CITC and PITC). This space is most useful if it is located next to the clinical consultation rooms. Space is required to support both group and individual pre-test information and post-test counselling for PITC, as well as ongoing pre- and post-test counselling for client-initiated counselling and testing (CITC).

Every patient on ART should receive adherence assessment and support at each visit. Adherence counselling requires personalized attention, time for questions, explanations, pill counts and a pharmacy review. So it can take as much or more time than the clinical examination, even for experienced patients. Most facilities find that at least one adherence counselling area is required for each clinical consultation room used for HIV care and treatment.

Counselling infrastructure

Comfort/safety/privacy	Furnishings	Equipment and supplies
Covered Well-ventilated Adequate lighting Space for at least three people to sit comfortably Protect privacy and confidentiality by • good positioning within the facility – discreet signs • visual and auditory privacy	Essential: Comfortable seating, fans (if needed), and supplemental lighting (if needed) Usually additional • desk • bookcase • storage cabinets • white- or black-board If offering point-of-service testing: chairs, desk or table for rapid testing and additional storage Three colour-coded waste containers Easy access to hand washing	Adapted patient information materials (posters, brochures, hand-outs) and counselling support tools (flip charts, diagrams, prevention wall charts) Demonstration tools including male and female condoms and penis model Condom dispenser Adherence support tools (pill boxes, etc.) Optional • TV/VCR • Videotapes or DVD Supplies for fingerstick testing and rapid HIV test and DBS collection in infants

5.19 PHARMACY/DISPENSARY INFRASTRUCTURE

The estimates in this category assume that HIV pharmacy services are integrated into the existing dispensary, with additional space for storing HIV-related drugs and supplies. It also assumes there is no refrigeration.

The pharmacy store has special requirements for the control of temperature, light, humidity/water, and pests:
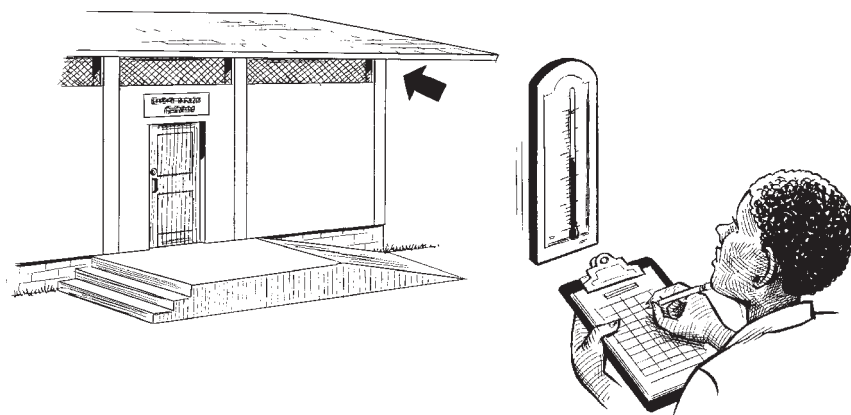
Control the temperature in the store

Check that there is a ceiling in the store. If there is no ceiling, build one. Consider using cardboard from discarded boxes. Allow warm air to escape by opening the door and windows while someone is in the store. Put air vents in the walls or ceiling. Depending on the temperature and humidity, a fan or air conditioner may be needed. Check the temperature twice a day and record the findings.

Control the light in the store

If direct light enters the store through windows, block it out by either painting the windows white or hanging curtains. Curtains should be white or reflective on outside rather than black or a dark color that absorbs heat.
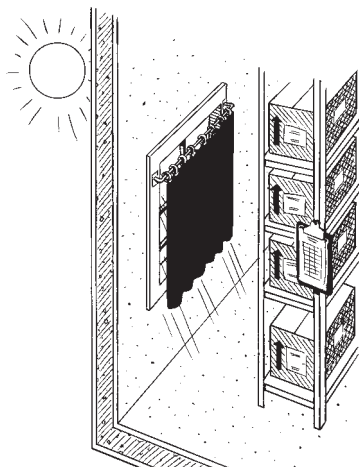
Prevent water damage and control humidity

Check that there is good drainage. There should be drainage channels around your store. The roof should have gutters. Allow air to move freely. Secure the air vents and windows with bars embedded in cement or other security devices.

Keep the store free of pests including common pests such as rats, cockroaches, ants, bats and wasps. Spilled items may attract pests. Clean spills and remove broken containers immediately. Use metallic window screens to keep out insects. Keep boxes off the floor by storing them on shelves.

Pharmacy infrastructure

Comfort/safety/privacy	Furnishings	Equipment and supplies
Two locks on the room door, or a cabinet with different keys. Restrict access/limit the number of keys that are made, especially for areas where narcotics and expensive items are kept Inside the store, there should be an additional secured area where narcotics and expensive items such as antiretroviral (ARV) medicines are kept Additional private space for patient counselling by pharmacy staff in a dedicated counselling room adjacent to the dispensary, or private booths built at dispensary windows Special requirements for the control of temperature, light, humidity/water, and pests	Shelves to store supplies Shelves are an easy way to organize supplies* Three colour-coded waste containers Easy access to hand washing Hazardous waste container (expired drugs, laboratory reagents) Window screens	See detailed drug and commodity lists for health centre Condom dispenser

* If there are no shelves in your store, make temporary ones. Use cardboard boxes, stacked bricks and boards or pallets. Do NOT put boxes or boards directly on the floor as it may get wet.

5.20   OUTDOOR SPACE INFRASTRUCTURE

Ideally, the facility will also have sufficient outdoor space for parking/vehicle storage to support the diverse activities requiring transportation (community outreach, tracing patients who do not adhere to their medication regimens, specimen transport, supervisory visits, etc.). Outdoor space can also be used to provide surge capacity for emergencies, and to support the rapid growth of 'informally housed' services such as counselling, peer education, mobile health facilities, etc.

5.21   LABOUR AND DELIVERY INFRASTRUCTURE (FOR LARGE HEALTH CENTRES)

Labour, delivery, and post-partum care are not HIV-specific services, but integrated PMTCT interventions are crucial to HIV prevention.

Labour and delivery units in health centres should ensure they use strict standard precautions to protect patients and health workers from infectious diseases. Health workers should have access to protective shoes, gowns, and masks. Delivery areas should be able to be cleaned easily and quickly (e.g. use plastic-covered delivery beds that can be easily cleaned between patients). As deliveries can occur outside of normal clinic hours, there should be storage areas within or easily accessible to labour and delivery units, where drugs and supplies (e.g. rapid HIV test kits, ARVs for prophylaxis) can be readily obtained at all times. Rapid HIV testing in labour units requires an efficient set-up.

Labour and delivery unit infrastructure

Comfort/safety/privacy	Furnishings	Equipment and supplies
Warm and clean room Hand washing • Clean water supply • Soap • Nail brush or stick • Clean towels Sterilization • Instrument sterilizer • Jar for forceps • Curtains if more than one bed	Wall clock Delivery bed: A bed with removable stirrups that supports the woman who is semi-sitting, or lying in a lateral position Clean surface (for alternative delivery position) Work surface for resuscitation of newborn near delivery beds 3 colour-coded waste containers Receptacle for soiled linens and a bowl or plastic bag for placenta if not mixed with infectious waste Easy access to hand washing	Equipment • blood pressure machine and stethoscope • body thermometer • fetal stethoscope • baby scale • self inflating bag and mask – neonatal size • mucus extractor, suction tube • light source:torch with extra batteries, bulb • heat source if needed • room thermometer • delivery instruments • sterile scissors • needle holder • artery forceps or clamp • dissecting forceps • sponge forceps • vaginal speculum Supplies • clean bed linen • gloves: utility, sterile or highly disinfected, long sterile for manual removal of placenta • long plastic apron • urinary catheter • syringes and needles • IV tubing • suture material for tear or episiotomy repair • antiseptic solution (iodophor or chlorhexidine) • spirit (70% alcohol) • swabs • bleach (chlorine-base compound) • clean (plastic) sheet to place under mother • sanitary pads • clean towels for drying and wrapping the baby • cord ties (sterile) • blanket for the baby • baby feeding cup • impregnated bednet Medical records • partograph • labour record • L&D register

5.22 HOW TO CREATE AN ENABLING PHYSICAL WORK ENVIRONMENT

Work Environment Improvement (WEI) is an important foundation for delivering quality health services. It also provides a basis for higher productivity. The 5 Ss (which stand for **SORT, SET, SHINE, STANDARDIZE, SUSTAIN** – see summary on next page) are a simple, standardized and universal managerial tool that can help your health centre team conduct Work Environment Improvement as a part of their routine work during working hours. This is one approach that can be adapted to the specific circumcumstances of a health centre.

Tips for improving your health centre work environment using the 5 Ss

■ Mobilize all staff to participate.

■ Explain advantages: workload reduction and avoiding unnecessary difficulties at work.

■ Managers should take the initiative by doing small-scale WEI in their own office.

■ Use non-monetary incentives.

■ Avoid too much new information or too many sessions or additional hours after work.

■ Start with a limited number of offices or rooms – make a showcase to demonstrate the advantages.

■ Appoint a 5 S manager (this person should NOT be the actual health centre in-charge): one person should be the responsible person for the entire process of 5 S activities. Also appoint a committee.

■ Avoid the usual hierarchy; construct a "sham-flat-organization"(all staff as peers). The 5 S manager should assess every area in the health centre, even that of the health centre manager.

■ Top management and the 5 S manager can announce that a specific time in working hours, in most cases, the first 10 minutes of the morning, is called "the daily 10-minute 5 S time".

- Praise people if the performance is excellent.

- Use evaluation from outside of the organization as an incentive for the staff. A 5 S day (festival) should be arranged as a day for publicity on 5 Ss.

- Take photos to demonstrate the change achieved with 5 Ss.

- No-Blame policy. Blaming staff, particularly in front of other people, should be avoided if they do not participate in 5 S activities.

- Recognize you are on the upward spiral of development. Even if you are a bit tired, you have to continue this movement.

- Develop a learning culture within the organization using 5 S activities.

- Use 5 S as a preparatory stage for future problem-solving processes (see chapter 11, *Quality Improvement*).

5.23 5 Ss: SORT, SET, SHINE, STANDARDIZE, SUSTAIN*

S1 SORT — *SORT the essential from the unnecessary and unused*

The starting point of workplace improvement is removing unnecessary and unused items and clutter from the workplace. **Sort** the essential items from the unnecessary. First, tag them (for example, with a red sticker). You may not be able to immediately discard most of the unnecessary items since they may be government property. Establish an 'unwanted items' store' to accommodate the removed items. Remove tagged items one by one, and send them to the 'unwanted items' store.

S2 SET — *SET items in proper order*

After you remove the unwanted items, **set** (put) the remaining essential items for work in order. Encourage staff to check the sequences and processes by which they work, and assign the best location and orderliness to each item in order. This can significantly reduce the workload and minimize the time cycle of the work. Identify a specific place for storing each item. This helps reduce the time of routine work. This step is the occasion to re-think work efficiency without discussing the aspect of quality of service. A comfortable and efficient working environment is a key concept to grasp at this stage. For example, this will help address, clients' waiting time which is part of quality of service and is important for client satisfaction.

*Courtesy of: JICA –Kenya

S3 SHINE — *SHINE and maintain cleanliness throughout the workplace*

A clean and dustless environment is a precondition for good health service delivery. '**Shine**' should become a part of workplace culture to maximize the effects of S1 and S2. (It is also important to know that carrying out cleaning without first doing S1 and S2 is not useful). Maintaining a clean workplace cannot be achieved without full participation by both management and technical staff. Laboratory staff need to clean their equipment; the manager needs to clean his/her desktop and drawers. All staff, who have a specific working territory should be responsible for keeping it clean. A routine short 10-minute cleaning session before starting work in the morning is the basis to maintain cleanliness throughout the workplace.

S4 STANDARDIZE — *Make SORT, SET and SHINE routine throughout the workplace*

Steps S1 to S3 can easily be conducted in an *ad hoc* manner, but systematic participation by all staff is not easy to maintain in an ongoing fashion. To ensure the continuity of 'Sorting', 'Setting' and 'Shining', leaders of 5 S activities should:

- Make the 5 S concept visible throughout the workplace (use posters, leaflets, stickers and a logo) to cultivate an atmosphere supporting 5 S performance.

- Create a competition between different sections of the health centre in terms of S1 to S3. The role of management is very important in this step. Praise successful sections in front of the others.

- Institute a simple but regular monitoring system. Carry out supportive supervision by designated 5 S committee members during working hours; report back in team meetings; perhaps every two weeks.

S5 SUSTAIN — *Improve discipline for conducting SORT, SET, SHINE, and STANDARDIZE*

Provide periodical learning opportunities for all categories of the staff. Plan both monthly and small *ad hoc* sessions. Provide feedback and implement ideas offered. People have to be praised if their performance is excellent. Institute an annual 5 S festival with external evaluation. Grant small awards to teams to improve their working environment (such as a table for tea or utensils). Steps S1 to S3 remove all barriers and make hidden undesirable conditions visible. Now there can be a transition to quality improvement activities.

MONITORING SERVICES, PATIENTS AND PROGRAMMES

INTRODUCTION

This chapter describes how to collect, manage, analyse and use routine clinical information for HIV patient management, HIV programme monitoring and reporting. The chapter assumes that the health centre will adhere to national recommendations for standardized data collection for HIV services, which may include minimum data requirements, standardized forms (cards and registers) and required reports. The text also emphasizes how health centre staff can actively integrate monitoring into service delivery to ensure local use of the information collected and to promote high quality HIV care.

Patient monitoring is the routine collection, compilation and analysis of data on patients at every visit over time, using information taken directly from paper forms or entered into a computer. Patient monitoring is often referred to as 'patient tracking'.

Patient management is clinical team action to provide care and treatment on behalf of and in consultation with an individual patient over time (assisted by written records). Patient management may also be referred to as 'clinical management' or 'clinical monitoring'.

Programme monitoring is the routine tracking of priority information about a programme, including its outputs (e.g. number of people served) and outcomes. Monitoring at the health centre level requires many types of information, including summarized patient data.

Monitoring a chronic disease such as HIV is different than monitoring acute illness
Information about health status and clinical services recorded on the same patient every visit over time is known as 'longitudinal' information. Your health centre may already use this approach to monitor pregnant women and their newborn children, or to monitor people receiving TB treatment. When the information on each patient is kept in a unique folder over time, it is known as a longitudinal medical record.

Managing and monitoring HIV patients may be a new challenge for your health centre as HIV patients will receive care and treatment for life. Keeping accurate information from every visit in one longitudinal record for each patient is essential to successful HIV care and treatment.

Simple, standardized, but flexible
Governments have set national standards for minimum data and tools to monitor primary health services (e.g. standardized ANC cards and registers, child health cards, TB cards and registers). There are also national standards for monitoring HIV patients and services, including:

■ minimum standard data that every health centre should collect;

■ recommended tools (cards and registers) the health centre should use to monitor HIV patients and services;

■ standardized data tables the health centre is required to report on regularly.

The HIV monitoring system is <u>simple and standardized</u>, You only collect information that will be used, but you collect all the information necessary for good patient management, programme monitoring and reporting at the health centre. You adhere to the nationally recommended minimum data and use the required standard forms, registers, and reports, but you make sure to promote active use of data to review your performance and to promote higher quality services.

This Manual assumes that at most health centres, the longitudinal HIV medical record is paper-based. But, at selected health centres with more capacity, there may be a computerized database of patients. At these sites, longitudinal HIV medical information is recorded on paper, but also entered into a computer to enable quicker retrieval, analysis, monitoring, and evaluation of the care of larger patient populations. Where possible electronic record systems may make

it easier to link individual patients over time and across services, but only if health centre staff have skills to enter, analyse, retrieve and interpret data.

6.1   HOW TO MONITOR HIV PATIENTS AND PROGRAMMES

Integrate the monitoring of some HIV services into the monitoring of other health services

Delivering HIV services works best when these services are integrated into all of the services your health centre already provides. This is also true with monitoring of HIV services. Key information about the delivery of specific HIV services such as provider-initiated testing and counselling, PMTCT interventions, and TB/HIV care has been added to the standard forms, cards, registers and reports that the health centre already uses when patients seek these other health services. For example, the standard ANC register has been modified to add columns for 'date of HIV testing' and 'HIV test result' to allow your health centre to monitor PMTCT services as part of delivering antenatal services.

In an integrated programme, early identification of HIV and prompt entry of HIV-infected people into HIV care is critical. So for example, it is important to monitor whether:

■ people who receive other health services (e.g. TB, ANC, labour and delivery, Under 5' services) have HIV testing and counselling recommended and receive their results on the same day;

■ people identified as HIV-infected through other health services do enrol in HIV care (and receive HIV treatment if needed).

Similarly, it will be important for patients receiving HIV services to also receive other health services as necessary, such as antenatal care with integrated PMTCT interventions, or TB treatment when appropriate.

Implement a specific monitoring system for HIV patients
Separate HIV patient records, registers and reports are needed to monitor the specialized HIV prevention, care and treatment services that HIV-exposed infants and HIV-infected people receive (see Annex 5.2).

The nationally recommended specific monitoring system for HIV-exposed and HIV-infected people is essential for delivering high quality HIV prevention, care and treatment including HIV patient management, HIV programme monitoring and evaluation, and HIV reporting. Information on pregnancy, family planning, nutrition, and TB screening and treatment is included to ensure the HIV-positive client receives these services. Patient management works best when all patient health information – both HIV-related and non-HIV-related – is located in one patient medical record, chart or file.

Formally enrol each HIV-infected patient into HIV care

After a patient's HIV test is confirmed as HIV-positive, on their first HIV care visit they need to be enrolled into lifelong HIV care. On this visit:

- Assign a unique HIV patient identification (ID) number that the HIV-infected patient will use for the rest of his/her life, regardless of the place where he/she receives HIV care and treatment services

- (If applicable in a national system) provide a patient-held ID card that demonstrates formal enrolment in the national HIV care and treatment programme

- Open a health centre-held longitudinal HIV medical record for this patient (this often includes a summary HIV care/ART patient card)

- Assign a row in the HIV care (pre-ART) register.

> Note: A patient may have several ID numbers at the health centre (e.g. ANC number, TB number), so you need to cross-reference these with the unique HIV ID number on all patient records to ensure that all of this patient's services are linked in the record system.

Maintain a longitudinal medical record for each HIV-infected patient

The next step is to update the unique longitudinal medical record during each patient visit to the health centre for HIV prevention, care and treatment services. This includes all clinical visits, as well as all counselling and support services, laboratory tests and pharmacy visits to pick up medications.

Your health centre will be using the national standardized HIV patient card, or set of standardized clinical encounter forms. This longitudinal record

documents HIV prevention, care and ART for the HIV patient over time. This includes a facility-held patient card that contains a front page that is a summary of key events and data. The second page includes information recorded at every HIV care visit, such as clinical signs and symptoms, the occurrence of opportunistic infections, medications prescribed, TB screening data, etc. The medical record also contains any clinical notes, laboratory tests ordered and results, referrals and other relevant clinical information.

The principle behind the card and any set of standardized forms (e.g. flow sheet, initial evaluation form, encounter form) is the same – to routinely collect common standard minimum data elements at every HIV patient visit to the health centre to inform and improve the quality of HIV prevention, care and treatment. This includes information collected during counselling, psychosocial support and education with a health worker.

Write clearly on the patient card so other staff can read, transcribe, abstract, or tally that information. Store records in a secure and organized location, retrieve there on the day a patient has an appointment or otherwise presents for HIV care services. Make sure you replace a record after new information has been added to it and transcribed to the pre-ART or ART register (or entered into a database, if one is used at the health centre).

Make appointments and actively follow up on any that are missed

To effectively monitor HIV prevention, care and treatment services you need to set regular appointments with patients, and keep track of whether they keep them. Use an appointment log; and keep it at registration to monitor if patients come to clinic on the day of their appointments, are late for them (by a day or two), or miss their appointments altogether. Late and missed appointments signal that health centre staff need to:

- actively follow up with the patient or their treatment supporter through phone calls or home visits;

- assess the patient's ability to keep appointments in the future;

- reinforce the importance of adhering to regular HIV care and treatment appointments;

- evaluate the effectiveness of activities to promote attendance at appointments and treatment adherence.

Track HIV patients transferring in or out

Good monitoring of HIV services requires a 'transfer protocol' that describes the expected procedures for a patient to transfer officially from one facility to another for his/her HIV prevention, care and treatment. This protocol involves moving the longitudinal medical record (or a summary of key information from the record) from one centre to another to ensure continuity of patient care. The process can be made easier with:

- a simple transfer form, the top half of which includes key summary patient information and is filled out by the referring facility and the bottom half by the receiving facility in order to promote communication between facilities;

- one national standardized patient monitoring system across all HIV care and treatment sites;

- record of patient status (e.g. 'active' to 'transferred out') in the relevant HIV record and register(s);

- adherence by both health workers and patients to the transfer protocol on the receiving and referring sides.

If a patient returns to the clinic after the transfer, but his transfer status has been well-documented, it is less likely that he would be mistaken for a new patient.

Monitor referral and linkages of HIV patients to home and community services

Effective HIV service monitoring includes documenting the need for and referral to a wide range of home- and community-based services. To document referral and ensure services are received, you need to:

- use standardized referral forms (see Integration chapter);

- designate a staff member to do active follow-up;

- use standardized indicators and forms to monitor community-based services (based on the same data elements and indicators as health centre tools).

Integrate monitoring of PMTCT interventions within routine maternal and child health monitoring
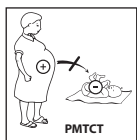
HIV-positive pregnant women require specific monitoring for both their own HIV care and treatment services, and specialized services to prevent transmission to their child, either during pregnancy or delivery or via breastfeeding. Monitoring the services they receive can be challenging as they often receive services at different health centres or other facilities.

It is very important to establish longitudinal monitoring for HIV-positive pregnant women when they are first identified as being HIV-infected during pregnancy:

■ Document the results of provider-initiated testing and counselling services for all women attending ANC or delivery at the health centre.

■ Conduct active follow-up of HIV-infected pregnant women (and their infants) during pregnancy, labour, delivery and the postnatal period.

■ Promote rapid enrolment of HIV-infected pregnant women into HIV care services, as well as rapid treatment adherence support and ART, if they are eligible.

■ Track whether HIV-infected pregnant women and their newborns receive ART or ARV prophylaxis.

This is accomplished by adding HIV variables to the maternal-held pregnancy card antenatal, labour and delivery registers and records, and the 'Under 5' card (see Annex 6.4).

Expect specific monitoring of HIV-exposed infants

Newborns and infants of HIV-infected mothers are special patients that need to be monitored over time. Their HIV status is unknown until confirmed by special virologic testing. Their prognosis is poor if they are HIV-infected, but not tested and placed on early ART. Mothers and their newborns are frequently lost to follow-up because mothers may not deliver the child in a facility. It can also happen because children may receive routine health care for at a different centre or location, and its staff may not know the child is HIV-exposed and needs special services.

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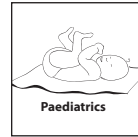
Therefore, it is very important to establish longitudinal monitoring of mother-child pairs when a woman is first identified as HIV-positive during pregnancy. To achieve this, in addition to the monitoring described above, it is necessary to:

- Record key information listed below on the exposed infant on the mother's HIV card, and on a card started for the HIV-exposed infant, and store them together.

- Establish a special longitudinal register for HIV-exposed infants in order to monitor if the following have taken place:

  - age-appropriate HIV-testing (e.g. sending a DBS for virological testing by the time the child is two months of age);

  - receipt of HIV test results;

  - cotrimoxazole prophylaxis by two months of age, and ART if the infant is HIV-positive;

  - infant feeding practice;

- Enrol HIV-infected infants into HIV care and start ART as soon as an HIV diagnosis is confirmed.

Cross-monitor HIV services among TB patients, and TB services among HIV patients
High co-morbidity between TB and HIV requires effective coordination, referral and communication between TB and HIV programmes, as well as TB/HIV co-management by clinical teams in order to ensure effective care and treatment of both diseases.

Integrated monitoring of the HIV services that TB patients receive is based on recording HIV data on the standard TB treatment card, registers and reports (see Annex 6.3) on activities that:

- ensure all TB patients receive HIV counselling and testing (with results), or otherwise know their HIV status;

- ensure that HIV-positive TB patients are enrolled in HIV care and started on ART;

- monitor TB treatment adherence and outcomes among HIV patients.

Similarly, integrated monitoring of the TB services that HIV patients receive is based on TB data elements on the standard HIV care/ART card and registers, as well as reports on activities that monitor or ensure:

- All HIV patients receive TB screening at every visit.

- All people suspected of having TB have sputum smear microscopy, and that these results are received and recorded on the patient card (see Laboratory chapter)

- INH prophylaxis is provided to HIV patients as indicated.

- patients with active TB disease receive appropriate treatment.

Monitor family HIV status of HIV-infected patients

Family members, especially spouses and young children, of HIV-infected patients are vulnerable to HIV infection. Furthermore, HIV-affected families often need special preventive and supportive services that may be provided at the health centre or in the community. Therefore, you need to use the HIV care/ART card to record:

■ The HIV status of family members (unknown, HIV-negative, or HIV-positive);

■ Enrolment into HIV care (and the associated HIV ID number);

■ If these patients need and receive preventive and supportive services.

Reviewing these data in the patient record may prompt the services to take place. For example, if a health centre staff member is checking if family members' HIV status is recorded, it may encourage them to ask each HIV patient about HIV prevention behavior, counselling and testing for their family members, and if the patient and family have received needed HIV care and support.

6.2 HOW TO IMPLEMENT AN INTEGRATED PATIENT MONITORING SYSTEM

Learn about national monitoring standards and systems (e.g. nationally standardized HIV minimum data elements, indicators, forms, registers and databases)

Your country has adopted a set of national HIV indicators required for reporting by all health centres that deliver HIV services. Some of these indicators are derived from the national standardized HIV patient monitoring system that is used to monitor HIV-infected people receiving HIV services. Others are derived from the national MCH and TB patient monitoring systems that will have been (or are being) updated to include HIV data.

Generic illustrative forms to support these interlinked systems should be replaced by the country-adapted forms during adaptation. These are based on the updated Three interlinked patient monitoring systems for HIV care/ART, MCH/PMTCT (including malaria prevention during pregnancy), and TB/HIV: standardized minimum data set and illustrative tools.

Standardized tools used in the national monitoring system are listed in the text box that follows.

In addition, some donors or supporting partner organizations may require or request additional indicators to be used. Therefore, your reporting requirements will depend on the HIV services you deliver, and may also rely in part on the donor or partner that supports your health centre. The centre team needs to know the required indicators to be reported, and the due date and recipient of the report.

Standardized tools in three interlinked patient monitoring systems for HIV care/ART, MCH/PMTCT and TB/HIV (see 3ILPMS and annex 6 for a more detailed description of each tool)		
For HIV prevention, care and treatment services: • Patient-held card if applicable • HIV care/ART patient card • Pre-ART (HIV care) register • ART register • Cross-sectional (e.g. quarterly) reporting form (HIV care, treatment, MCH/PMTCT and TB/HIV) • Cohort reporting form (ART only) • Appointment book • Transfer/referral form	For MCH PMTCT services: • Patient-held maternal health card (with HIV fields added) • Patient-held child health card (with HIV fields added) • ANC register (with HIV fields added) • L&D register (with HIV fields added) • Labour record/partograph, postpartum record (with HIV fields added) • Summary forms • HIV-exposed infant register	TB HIV services • Facility-held TB treatment card (with HIV fields added) • TB suspects register (with HIV fields added) • TB laboratory register (with HIV fields added) • TB BMU register (with HIV fields added) • Quarterly report on TB case registration • Quarterly report on TB treatment outcome and TB/HIV activities

Consider existing monitoring systems at the health centre, and assess what is needed
Review the monitoring systems (including forms, registers, reports) already in use at your health centre, and ask:

▪ Does the health centre clinical team routinely review and use the information produced in those systems?

▪ Does the health centre send reports from the data to the district in a timely way?

▪ How can the systems be improved?

▪ Does the health centre have a strong relationship with the district health management team that provides supportive supervision of HIV monitoring?

Review the updated national standards and systems for monitoring HIV care/ART, MCH/PMTCT and TB/HIV, and ask:

- What will you need to do to implement these monitoring standards and systems?

- How will you introduce them?

Consider space, file storage and other infrastructure needed for monitoring
Adequate space and good organization of patient records, registers and reports are important. Use the 5 Ss system (see Infrastructure chapter), including the idea that:

- Monitoring HIV services integrated with MCH and TB requires little or no additional space beyond what is needed to accommodate the ANC register, the TB register, etc..

- Monitoring services for HIV-exposed infants and HIV-infected people will need additional space. This includes space to:

  - permanently store all of the longitudinal medical records in an organized and secure fashion;

  - temporarily stack/store the folders of the patients who will be seen on HIV clinic days. The location should also be secure to maintain the confidentiality of patient information;

  - allow a data clerk or other health centre staff to work on the monitoring forms, registers, and reports (e.g. to review, transcribe, and tally data from and to patient records, registers, and reports). Depending on volume of HIV services and the number of patients, this space may need to be set aside every day, or only on selected days during the week;

  - in large health centres with computerized HIV databases, space for the data clerk must include the area and security needed to store a computer, as well as other infrastructure requirements (adequate electricity, back-up power supply, protection from dust, etc.).

Maintain confidentiality and security of patient records

PLHIV often face stigma and discrimination. Therefore, all health centre staff who handle, process, stack, and store HIV records and registers must ensure that they maintain the confidentiality of patient information. This means that patient records should be stored in a locked, secure closet or filing cabinet.

Maintain stocks of equipment and materials

Based on the expected volume of HIV services and patient load your health centre expects to handle, you will need to order and store enough supplies to last from six to 12 months. This may include:

- folders to hold longitudinal medical records;

- folder labels;

- blank patient cards, registers, report forms (see Three interlinked patient monitoring systems for HIV care/ART, MCH/PMTCT (including malaria prevention during pregnancy), and TB/HIV: standardized minimum data set and illustrative tools forms booklet);

- blank forms, such as those for referral, transfer, laboratory test requests, prescription/pharmacy, etc.;

- filing cabinets;

- desks/chairs;

- pencils/pens.

Hire and/or train qualified staff

The health centre should expect the additional work burden associated with monitoring a full range of HIV services. This will require that:

- A key staff person – a data clerk – may need to be added to the health centre team. It is strongly recommended that every health centre delivering a range of HIV prevention, care, and treatment services needs to establish a data clerk position.

Below is a table of staff members and their suggested roles and responsibilities for HIV patient monitoring.

Staff	Roles and responsibilities for patient monitoring
Triage worker or Receptionist or Data clerk	• Maintain appointment book and signal missed appointments • Start or retrieve patient records • Record patient data in patient record (or register, depending on the HIV service provided)
ART aid or Lay counsellor or Professional counsellor	• Record patient data in patient record (or register depending on the HIV service provided)
Nurse or Clinical officer or Other clinician	• Record patient data in patient record (or register depending on the HIV service provided) • Record data on patient-held card, exercise book or 'patient passport' (if used) • Tally data and fill in routine reports • Conduct patient reviews with clinical team (using longitudinal records) and discuss patient outcomes • Review routine HIV programme reports to track its progress • Review registers to assess quality of HIV services • Review quality of HIV patient records and registers with clinical or district supportive supervision team • If data clerk, secretary or other staff not available: • Transcribe data from patient records to registers • Tally data and fill in routine reports
Data clerk or Secretary or Other staff	• Organize and manage patient records and registers • Transcribe data from patient records to registers • Enter patient data into database (if used) • Tally data and fill in routine reports • Review registers to assess quality of HIV services and data • Review quality of HIV patient records and registers with clinical or district supportive supervision team
Community workers	• Follow up and trace lost patients
External clinical mentors and supportive supervisors (e.g. from district team)	• Review quality of HIV patient records and registers with clinical or district supportive supervision team • Provide supportive advice and recommendations to help improve clinical care and monitoring

Regularly support and supervise HIV monitoring

Supportive supervision of documentation and data management is essential for achieving quality patient monitoring. This supervision helps to:

- provide a special, regular opportunity to review the quality of HIV records;

- assist staff with analysing and compiling data for routine reporting;

- train staff on how to analyse and use information to manage patients and improve programmes;

- refresh staff on the importance of providing good data quality to achieve strong patient and programme management.

Supportive supervision of the monitoring system ensures quality of care and of data, and should be integrated with regular clinical mentoring and clinical supervision visits. Ideally; these visits will happen at least once per quarter. Depending on the size and staffing of the health centre, supportive supervision may be done by a senior staff member at the health centre, by staff from a nearby larger health centre that also provides HIV services, or by the district team (see Human resources chapter).

6.3 HOW TO INTEGRATE PATIENT MONITORING WITH SERVICE DELIVERY

For each patient type, you should plan for patient flow in your health centre (see Integration chapter). For every station and staff person that a patient encounters, you need to list:

- the information that needs to be collected

- how it will be recorded (i.e. card, register, form, etc.)

- who will be responsible for recording it.

It may be helpful to create a table that summarizes this information to assist staff in understanding the responsibilities of every stage of patient monitoring, and how information from one station is needed to inform the next station. The table can also help them see how information about different services can be linked

via the patient monitoring system (e.g. clinical assessment, laboratory tests, prescription and pick-up of medications at the pharmacy, etc.), and how patient monitoring activities in an integrated system at the health centre are used.

Example. How PITC is integrated into the first ANC visit

Cadre	Task	Documentation	Location
Peer counsellor	Sensitization, motivation, education	None	Waiting area
Patient attendant or data clerk	Issue health passport (if required), enter name, age, address, measure birth weight	Health passport	Waiting area
HIV T&C counsellor	Group pre-test information	None	Group Counselling room
Lay counsellor	Consent, rapid HIV test, syphilis test, haemoglobin test, post-test counselling	PITC register, health passport (ANC stamp)	Individual Counselling room
Lay counsellor, ANC nurse/ midwife	Post-test counselling, history, examination, vital information, WHO clinical staging Lab: CD4 draw Referral to HIV care and ART Nutritional support Counselling: family planning, infant feeding, drugs: iron, folate, sulfadoxine-pyrimethamine (SP), cotrimoxazole preventive therapy (CPT), ARV prophylaxis, other Next appointment	ANC register, health passport	Examination room

To help staff understand the flow of the patient monitoring system, it may also be useful to draw a diagram of patient flow (based for example on the information in the table above) and show the services provided in each area of the clinic, the data collection tools used for each service, and what key information is collected.

As part of patient monitoring planning and training, you will also need to consider where patient folders and registers will be permanently stored; who will retrieve them when they are needed; where they will be temporarily stored on the days they are needed, but at times when they not actually in use; who will review and process them; and who will return them to permanent storage (you also need to consider the methods staff will use to carry out these tasks).

6.4 HOW TO RECORD INFORMATION IN MATERNAL HEALTH SERVICES

When PMTCT activities are integrated into maternal health services (at ANC, maternity or labour/delivery), key HIV data elements are recorded on standard maternal health data collection tools (maternal health card or health 'passport' kept by the patient). Data may record a single or multiple pregnancies and other health information across a woman's lifespan. Key HIV information records for all pregnant women during maternal health service delivery will reflect the flow of PMTCT services (acceptance of HIV testing, result and receipt of test result and follow-up counselling on family planning and infant feeding). Therefore, key data elements include:

- HIV test date and result;
- Family planning (FP) counselling (and FP method if postpartum);
- Infant feeding counselling, decision, and feeding practise (exclusive breastfeeding (EBF), mixed feeding (MF) and replacement feeding (RF).

When an HIV-positive woman receives her test result, key information to be documented reflects the sequence of events to determine her health status and eligibility for ART or ARV prophylaxis to prevent HIV transmission to the infant, provision of prophylaxis, enrolment in HIV care, and appropriate infant feeding. Therefore, key data elements to record on HIV-positive pregnant women include:

- WHO clinical stage
- CD4 count
- eligibility for ART
- ARV prophylaxis or ART, date, duration (for mother)
- ARV regimen received by or dispensed for infant and date
- cotrimoxazole, INH prophylaxis

- intermittent preventive therapy doses (as relevant)
- date enrolled in (or referred to) HIV care
- family planning counselling (and FP method if postpartum)
- infant feeding counselling, decision, and feeding practise (EBF, MF, RF).

It is a challenge, but also very critical to link key information (and ideally services) about the HIV-positive mother and her HIV-exposed infant to all service delivery sites.

6.5 HOW TO RECORD INFORMATION FOR HIV-EXPOSED INFANTS

An HIV-exposed infant may receive care at several different locations, including clinics that provide postpartum care, 'Under 5' services, immunization, and HIV care and treatment. Standard data collection tools vary by location, but at the very least, a child health card should be issued (and kept by the mother). An HIV-exposed infant register may be used to document HIV testing, test results, and follow-up services for these infants. The child should be formally linked with the mother at the HIV clinic through records and issued an HIV care/ART card (but not enrolled as HIV-positive until this is confirmed). Infant follow-up should be monitored on both the mother's and infant's HIV cards.

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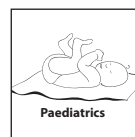
Key HIV information to record for all HIV-exposed infants reflects the flow of services needed to determine the infant's HIV status and provide early prophylaxis and treatment. Therefore, key HIV data elements to record for HIV-exposed infants include:

- infant feeding counselling and practises;
- HIV testing, type (virological testing, antibody), date and results;
- cotrimoxazole and ART initiation and date;
- enrolment in HIV care, date, HIV ID number (if the infant is confirmed HIV-positive);
- final status.

6.6   HOW TO RECORD INFORMATION IN TB SERVICES

When HIV services are integrated into TB service delivery, key information is based on HIV testing, the HIV test result, and the HIV-infected TB patient receiving appropriate services. Key data collection tools include the TB treatment card (for an HIV-positive patient diagnosed with TB, or a TB patient found to be HIV-positive), the patient TB register, and the 'basic management unit' or (BMU) TB register. Key HIV data elements in the TB system include:

- HIV test result and date
- ART eligibility and date assessed
- ART regimen, date started and dosage
- CTX, date started and dosage
- HIV ID numbers (e.g. pre-ART and ART register numbers)
- CD4 count.

It is crucial that health centre staff link services and information across TB and HIV service delivery points. This is made easier by documenting HIV patient ID numbers in the TB data collection system. Recording TB screening and treatment information in HIV services is described below.

6.7   HOW TO RECORD INFORMATION FOR TESTING AND COUNSELLING SERVICES
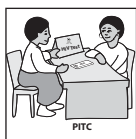
HIV testing and counselling may be provider-initiated (PITC) or client-initiated (CITC), and it may occur in a variety of outpatient or inpatient settings. Standardized recording on TB, maternal, and child cards and registers is described above when testing takes place in ANC, L&D, or TB settings. For PITC in acute care or other settings and for CITC, key information to record in a PITC/CITC register includes:

- demographic and family information
- risk behaviour
- type of testing
- HIV test result and date
- receipt of test result
- referral to HIV care (if test is positive).

6.8   HOW TO RECORD INFORMATION FOR CARE AND TREATMENT SERVICES

For HIV care and treatment services, the <u>patient longitudinal medical record (or card) is the foundation</u> of all HIV data collection, analysis, and reporting activities. This is because information from the HIV patient record is:

■ used to guide patient management at every clinical encounter;

■ transcribed into the HIV (pre-ART or ART) register (or HIV database) where it is used to assess patient populations and health centre performance;

■ summarized (via a register or database) for use at the facility and reporting to authorities at the district and national level.

After a person has been confirmed to be HIV-infected, he/she should be enrolled in HIV care. The first HIV care visit involves:

■ staff assigning a unique HIV patient identification (ID) number the HIV-positive patient will use for the rest of his/her life, regardless of the place they receive HIV prevention, care and treatment services;

■ if applicable, the receipt of a patient-held ID card that demonstrates his formal enrolment into the national HIV care and treatment programme;

■ the opening of a facility-held longitudinal HIV medical record for this patient;

■ the assignment of a row for this person on the HIV care (pre-ART) register on the date of his/her enrolment into HIV care.

Some standard minimum information should be routinely collected for every HIV patient on an HIV care or treatment visit. As a patient moves through 'stations' at the health centre, each staff member is responsible for filling out different parts of the patient record. In addition, there are special points in the continuum of HIV care and treatment that merit additional data collection; this is gathered by various staff who see the HIV patient.

On the first HIV care visit, collect basic <u>patient identification and demographic information</u>, including:

- name
- ID number(s)
- contact information
- sex
- age
- date of birth.

Note that much of this information will NOT change over the course of the patient's life. However, some information (contact information for patient tracking) should be verified at each visit.

On the patient's first HIV care visit on the patient's first HIV care visit, staff record the <u>HIV status of both the patient and his family</u>, including:

- status of patient at enrolment
    - HIV-exposed infant
    - on TB Rx
    - Pregnant or postpartum
- date and location of confirmed HIV-positive status
- HIV type (if appropriate)
- date enrolled in care
- HIV status of family members
- care of HIV-infected or HIV-exposed family members.

As noted earlier, the HIV status of an HIV patient's family should be verified at every visit, and whenever possible staff should reinforce the importance of HIV testing, prevention, care and support, and treatment for affected and infected family members. This update to family information can be done by a counsellor.

In addition, at each HIV care and treatment visit, the clinician should:

- fill in relevant fields on the patient card during the clinical assessment;
- record any additional notes from clinical assessment;
- fill out the laboratory test order form (if needed);

- fill out a prescription form (if needed);
- record the next appointment.

Key information recorded during each HIV care visit reflects the importance of monitoring the health status of PLHIV and documenting any changes since the last visit, including pregnancy (for women), immunologic status, and clinical signs and symptoms. TB screening should be done at every visit and INH prescribed as appropriate. Therefore, minimum standard data elements for each HIV care visit include:

- date of the visit
- date of next scheduled visit
- drug allergies (first visit only, then subsequent confirmation)
- height (first visit only)
- weight
- clinical stage
- TB status:
  - screened
  - referred for testing, test result
  - INH
  - TB Treatment
- pregnancy status:
  - estimated due date
  - gestation in weeks
  - PMTCT referral
  - ANC number
  - family planning method(s)
- new OIs/other problems
- cotrimoxazole:
  - dose
  - tablets dispensed

- - adherence assessment
- other medication dispensed:
  - - medication
  - - dose
  - - tablets dispensed
  - - reason for discontinuation
- reason for discontinuation
- CD4 test dates and results
- other investigation test dates and results
- referral or link to other clinical or supportive care
- hospital days since last outpatient visit.
- HIV transmission prevention interventions for discordant couples, IDU, MSM, sex workers and clients of sex workers

At each HIV care visit, HIV-exposed and HIV-positive children in HIV care and treatment require special attention to growth monitoring and nutritional assessment. Therefore, there are some unique data elements to collect at each visit:

- oedema
- MUAC
- nutritional problems and support including infant feeding practise as relevant
- CD4 percentage (every 6 months).

All HIV patients are assessed for eligibility for ART. Key minimum data elements to be collected about treatment support, eligibility and ART initiation include:

- treatment supporter(s)/medication pick-up information
- treatment supporter(s) contact information

- ARV history

- date (and reason) the patient is medically eligible to start ART

- ART start date

- original first-line regimen.

Health centre staff need to pay special attention to monitoring and managing ART patients in the first three months after ART is initiated. This is to monitor responsiveness to ARV drugs and possible side-effects or toxicities. It is also to ensure a patient adheres to his appointment schedule and to the ARV drug regimen, and understands the importance of continuing to do so for life. ARV drug regimen, dose and number of days dispensed should be recorded at each visit, and adherence and reasons for non-adherence monitored.

For stable ART patients, at each monthly (or quarterly) visit, the HIV care data elements described above should be assessed and documented. In addition, staff must assess and document the patient's ART status. The key minimum data collected depends on the patient's actual ART status, but may include:

- SUBSTITUTE: date, reason, new regimen

- SWITCH: date, reason, new regimen

- STOP: date, reason

- LOST: dates

- RESTART: dates

- TRANSFER IN: facility transferred from, date initiated

- TRANSFER OUT: date, facility transferred to.

- DROP: date

- DEAD: date.

These key definitions and codes used in the three interlinked patient monitoring systems are presented in the following tables.

Term/code	Definitions of special HIV care/ART patient monitoring terms and codes
NEW	Patient who starts ART at any facility in the country or system (where a system refers to a single care and treatment programme, usually a national programme).
	- NEW includes: 1) treatment-naive patients with no prior ART; 2) patients who have received only short-course ARV prophylaxis for PMTCT; and 3) non-naive patients with or without records who received ART from sources outside the system, and have not been counted as NEW in a system that is being monitored nationally (patient seen by private practitioner who buys drugs themselves or is sent drugs).
	- If a facility receives a non-naive patient without records who was previously treated at a facility that reports to the national programme (and therefore reported as NEW once already), an attempt should be made to retrieve the records and confirm that the patient was previously on treatment.
	- In HIV care, NEW also refers to anyone who is registered in the system for the first time.
START	Patient begins the first, original ART regimen in the system.
SUBSTITUTE	Substitution of drugs within first-line or second-line regimen.
SWITCH	Switch from first-line to second-line regimens (or second-line to third-line, or salvage, etc.).
STOP	Patient intentionally stops an ART regimen (usually but not always in discussion with the clinical team) through a planned interruption of ART, or following poor adherence - record the date.
RESTART	Patient who has stopped a previous ART regimen restarts ART.
LOST	Patient who has missed any clinical or drug pick-up appointment. Temporarily LOST is different from DROP as defined below. Both must be clearly defined at national level.

Temporarily LOST is also different from patient non-adherence. A patient may be non-adherent but not LOST. |
| DROP | Patient who has not responded to X number of follow-up contacts after three months from last missed appointment. DROP (or lost to follow-up) is different from the temporarily LOST (above) in categorizing treatment interruptions. Patients categorized as DROP are dropped from the drug supply. LOST and DROP are only used in the context of ART and not chronic HIV care. |

TRANSFER IN (TI)	When a patient who has been receiving ART at one facility in the country or system transfers to another in the same system with records. 'TRANSFER IN' is different from patients who have been receiving ART from sources outside of the system (see NEW). Patients who transfer in are not included in the number of cumulative patients ever started on ART at the facility (see definition below).
TRANSFER OUT (TO)	Patient who has been receiving ART at one facility transfers out of that facility. 'TRANSFER OUT' is not an outcome – rather, patients who transfer in and out of the facility affect the net current cohort (see below). In a national system, a transfer out patient's outcome will be captured by the receiving facility thereafter.
DEAD	Patient dies anytime after being enrolled in HIV care or ART.
ELIGIBLE BUT NOT YET STARTED ART	Patients currently enrolled in care (excluding those who have died, are lost to follow-up or transferred out), are assessed and found to be eligible for ART, but have not yet started it; they then constitute the 'waiting list'.
CUMULATIVE EVER STARTED ON ART	Number of patients who have ever started on ART as NEW at that specific facility; does not include patients who transfer in. Patients who transfer out, or are categorized as DROP, DEAD, LOST, or STOP, are not subtracted.
CURRENT ON ART	Number of patients who are currently on ART at a given facility; does include patients who transfer in. Patients who transfer out, or are categorized as DROP, DEAD, LOST, or STOP are subtracted.
COHORT	Group of patients who start ART in the same month and year, whose status is followed over time, using the ART register.
NET CURRENT COHORT (cohort analysis report)	Patients in a given cohort for whom the facility is currently responsible; consists of those who started on ART at the facility, minus those who have since transferred out, plus those who have since transferred in.

Term/code	Definitions of special TB-HIV patient monitoring terms and codes
CURE	Sputum smear microscopy positive patient who was sputum negative in the last month of treatment and on at least one previous occasion.
TREATMENT COMPLETED	Patient who has completed treatment, but who does not meet the criteria to be classified as a cure or a failure.
TREATMENT FAILURE	New patient who is sputum smear microscopy positive at five months or later during treatment, or who is switched to Category IV treatment because sputum turned out to be Multi-Drug Resistant Tuberculosis (MDR-TB). Previously-treated patient who is sputum smear microscopy positive at the end of his re-treatment or who is switched to Category IV treatment because sputum turned out to be MDRTB.
DEFAULT	Patient whose treatment was interrupted for 2 consecutive months or more.
DIED	Patient who dies from any cause during the course of treatment.
TRANSFER OUT	Patient who has been transferred to a health facility in another BMU and for whom treatment outcome is not known.
NEW	Patient who has never had treatment for TB, or who has taken antituberculosis drugs for less than one month.
RELAPSE	Patient previously treated for TB, declared cured or treatment completed, and who is diagnosed with bacteriological (+) TB (sputum smear microscopy or culture).
TREATMENT AFTER FAILURE	Patient who is started on a re-treatment regimen after having failed previous treatment.
TREATMENT AFTER DEFAULT	Patient who returns to treatment, is positive bacteriologically following interruption of treatment for two or more consecutive months.
TRANSFER IN	Patient who has been transferred from another TB register to continue treatment. This group is excluded from the Quarterly Reports on TB Case Registration and on Treatment Outcome
OTHER PREVIOUSLY TREATED	All cases that do not fit the above definitions. This group includes sputum smear microscopy positive cases with unknown history or unknown outcome of previous treatment, previously treated sputum smear microscopy negative, previously treated EP, and chronic case (i.e. a patient who is sputum smear microscopy positive at the end of re-treatment regimen).

Term/code	Definitions of special PMTCT patient monitoring terms and codes
EBF (EXCLUSIVE BREAST FEEDING)	An infant receives only breast milk and no other liquids or solids, not even water; with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.
MF (MIXED FEEDING)	Feeding both breast milk and other foods or liquids
RF (REPLACEMENT FEEDING)	The process of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs until they are fully fed on family foods. During the first six months, this should be with a suitable breast-milk substitute. After six months it should be with a suitable breast-milk substitute, as well as complementary foods made from appropriately prepared and nutrient-enriched family foods.
UNKNOWN HIV STATUS	A pregnant women whose HIV status is not known during ANC or at the time of delivery, either because she has not been tested; did not receive her result; or arrived without documentation of having been tested; was tested in a previous pregnancy and tested negative; or has had exposure to HIV, but has not been tested since that exposure.
RE-TESTING	When a pregnant or postpartum woman who was previously tested is tested again due to potential HIV exposure since her initial test, or within the window period prior to the initial test.
UNKNOWN ART ELIGIBILITY	The eligibility for treatment among HIV-infected pregnant or postpartum women has not been assessed through either WHO clinical staging or CD4 count testing, and there is no previous history of eligibility for ART.
CURRENT ON ARV PROPHYLAXIS	When a pregnant women has been provided with ARV prophylaxis (any prophylactic regimen as defined in national guidelines), and continues to take the ARV prophylactic regimen (i.e. not reported to have stopped).
CURRENT ON ART	A pregnant women who is provided ART for her own health and is currently on ART (i.e. has not died, stopped, or is not considered lost to follow-up).
POSTPARTUM PERIOD	The period within two months of giving birth (some countries may define this as six months – for country adaptation).
FINAL STATUS (FOR CHILD)	The final HIV status of the child based on either HIV virological testing (i.e. virological testing) or rapid antibody testing. Final status includes 'positive status' or 'negative status' and can be used for infants in the following categories: • Non-breastfeeding HIV-exposed infant six weeks or more of age (but not yet eligible for antibody testing) who tests either positive or negative using virological testing testing; • Breastfeeding HIV-exposed infant who tests positive using virological testing testing technology at six weeks or more of age; • Breastfeeding HIV-exposed infants testing positive at 18 months of age; • Non-breastfeeding (exclusively breastfed and weaned by 15 months of age) HIV-exposed infant testing positive or negative at 18 months.

6.9   HOW TO USE REGISTERS TO MONITOR SERVICES AND PATIENTS

Registers are used to summarize in one place the patient information of many people. Generally, registers are set up so that each row represents a patient, and each column represents indicators of the patient's health status or health services received over time. Registers have limited space, so the columns of information are selected with great care, and the information in each column should be limited to that which is absolutely necessary and used frequently for patient management, programme monitoring or reporting.

As mentioned above, registers may be the centre's only source of patient information for some services (such as antenatal care) when there is not a complete facility-held record for a patient. For example, you may use registers to record information about pregnant women over the course of a pregnancy. Alternatively, registers may be a way to track patients and summarize patient-level information on many patients. This information may be otherwise contained in facility-held patient records, but, for various reasons, is not easily reviewed, analysed or summarized directly from those records. This is how and why HIV care (pre-ART) and the ART registers are used in HIV patient monitoring.

In longitudinal registers (that follow the same patient over time) such as the HIV care (pre-ART) and ART registers, patients are generally listed by the date of a meaningful event (such as enrolment into HIV care or initiation of ART). Each patient is entered only once in the register, and information from later visits or events is entered on the patient's row at a later date. A group of patients that begins a meaningful event around the same time (e.g. month) is called a 'cohort'. For example, you may have heard of the term 'birth cohorts', which refers to people born in the same year and followed over time. With respect to HIV services, the term 'cohort' refers to a group of people who enrol in HIV care in the same month, or people who initiate ART in the same month and year (more information is available on the country cohort report form in the Three interlinked patient monitoring systems for HIV care/ART, MCH/PMTCT (including malaria prevention during pregnancy), and TB/HIV: standardized minimum data set and illustrative tools forms booklet). By aligning patients by their start dates, it is easier to locate any single patient and to analyse groups of patients (e.g. examining retention and survival at 12 months among patients who initiated HIV treatment in the same month).

In the national standardized HIV patient monitoring system, there is an HIV care (pre-ART) register and an HIV treatment (ART) register. When a HIV-infected person first enrols in HIV care, he receives a row on the pre-ART register on the date that he enrols. Information about his health status and HIV services are recorded in his patient record and then transcribed onto 'his' row in the appropriate columns of the HIV care (pre-ART) register.

If a patient becomes eligible for and initiates ART, they receive a row on the ART register in the month they initiate ART. Information about the patient's health status and health services are still recorded in the patient record, but this and any subsequent information is transcribed to the HIV treatment (ART) register (rather than the pre-ART register). Some sites with large patient volumes and more resources may enter the register data from the card into a computer. If they enter the full card into a computer they may forego the use of paper registers altogether, or may automatically print the registers from the electronic patient records. Registers are useful for staff to track patients and at a glance understand how they are doing.

Manually transcribing information from HIV patient records to registers needs great care. However, the task is made easier by the simple and complementary formats of the patient record and the register. Transcribing information from HIV patient records to registers can be done by a non-clinician staff member (e.g. data clerk, PLHIV) who can read numbers, shows good attention to detail and respects the confidentiality of patient information (see section - 6.2).

6.10 HOW TO SUMMARIZE ROUTINE INFORMATION IN ORDER TO REPORT

Reporting

If your health centre delivers HIV services, you will be required to send some information to your district, regional, and/or national authorities on a regular basis. Most countries require monthly or quarterly reporting of some information and annual reporting of other information. To achieve this, you need to:

- allow enough advance time before any deadline to tally, check, and re-tally the information;
- always perform a check of all calculations;
- keep a record of the calculations and any problems encountered;

- present and discuss the information at the health centre (see section - 6.11 and Quality Improvement chapter);
- report information to authorities on time.

Cross-sectional (monthly or quarterly) report

A cross-sectional report usually refers to information about services delivered (e.g. number of tests) or coverage of people or sub-populations reached with services within a specified period of time (such as a month or quarter). This report is designed to provide information about all of the HIV-infected patients—whether they are eligible or not eligible for ART—who are enrolled in HIV care at a centre. It includes the number of people by age and sex (within the last month or quarter):

- enrolled in HIV care
- started on INH
- currently in HIV care
- started on TB Rx
- assessed for TB status at last visit
- new on ART
- currently on ART, tallied for all existing patients
- started on TB Rx
- key MCH numbers summarizing ANC, L&D and HIV-exposed infant activities

Carrying out the actual computations needed to create these summary data may be done by scanning down pages of registers, and adding results page-by-page onto a tally sheet for all services delivered in the time period (see the cross-sectional quarterly (or monthly) report form in the Three interlinked patient monitoring systems for HIV care/ART, MCH/PMTCT (including malaria prevention during pregnancy), and TB/HIV: standardized minimum data set and illustrative tools. forms booklet).

Cohort report

A cohort report refers to information about a group of people who are followed forward together in time from a common event. The cohort report shown in the draft Three interlinked patient monitoring systems for HIV care/ART, MCH/PMTCT (including malaria prevention during pregnancy), and TB/HIV: standardized minimum data set and illustrative tools. forms booklet). provides an overview of how patients are doing on ART at six, 12, and 24 months, such as: number and proportion of patients who are alive and on ART and

continuing on a first-line regimen; and median CD4. It assesses success of the programme. On a monthly or quarterly basis, the centre team will summarize information from the ART register on the ART cohort analysis form for those cohorts that have reached six or 12 months on ART; then for every year of completion of ART. These cohort data are verified and collected on an annual (or more frequent) visit by the district management team (see section - 6.2).

Other useful indicators that can be tallied using the registers or cards are described in the common indicators of HIV service delivery tables below. An annual (or bi-annual) patient monitoring review can be carried out to check the quality of indicators tallied from existing registers or cards. This review consists of: validating or completing the ART cohort analysis form; tallying relevant register data; and systematically sampling HIV care/ART patient cards. The annual patient monitoring review draft document (in field-testing) provides a more detailed description of how this is done.

Other centre reports not derived from the patient monitoring systems

Health centre staff may also be asked to produce a report or fill out a checklist on indicators that show the policies, practises or services offered by the centre, and the availability of services or commodities during some recent period. See Supply Management chapter for how to report on drug stocks and other supplies. Laboratory reports are often aggregated counts of how many tests were conducted in a given period, sorted by the type of test conducted and the result. These can be based on counts from laboratory registers (see Laboratory chapter).

Common indicators of HIV service delivery derived from patient monitoring systems

The following table provides an example of global, national and subnational data that can be collected and used at all levels to monitor quality of care, and to provide a basis for creating various programmes. Those in bold are Universal Access, UNGASS, HIV drug resistance early warning indicators, or other national indicators. (Note: Many indicators are expressed as a percentage. The calculation of percentage is as follows: (Numerator/Denominator) * 100.)

Indicators	Source	How to calculate the indicator
PMTCT		
Percentage of pregnant women who were tested for HIV and received their results	ANC/L&D registers	Numerator: Number of pregnant women attending ANC and L&D services who were tested for HIV and received their results; women with known HIV infection attending ANC for a new pregnancy during a selected time period. Denominator: Estimated number of pregnant women during a selected time period.
Percentage of HIV-infected pregnant women	ANC/L&D registers	Numerator: Number of pregnant women attending ANC and L&D services who tested positive for HIV and received their results; women with known HIV infection attending ANC for a new pregnancy during a selected time period. Denominator: Total number of pregnant women who were tested for HIV and received their results; women with known HIV infection attending ANC for a new pregnancy (with known HIV status) at least once in ANC or L&D during a selected time period.
Percentage of HIV-infected pregnant women who received ARVs to reduce the risk of mother-to-child transmission*	ANC/L&D registers	Numerator: Number of HIV-infected pregnant women who received ARVs to reduce mother-to-child transmission during a selected time period. Denominator: Estimated number of HIV-infected pregnant women during a selected time period.
Percentage of HIV-infected eligible pregnant women who are receiving ART	HIV care/ART card - (sample of cards)	Numerator: Number of HIV-infected pregnant women on ART during a selected time period. Denominator: Number of HIV-infected pregnant women eligible for ART during a selected time period.
Percentage of infants born to HIV-infected women who received an HIV test within 12 months	HIV-exposed infant register	Numerator: Number of infants born to HIV-infected women who received an HIV test within 12 months during a selected time period Denominator: Estimated number of HIV-infected pregnant women giving birth in the last 12 months during a selected time period.

*   UNGASS Indicators are reported annually
** HIV Drug Resistance Early Warning Indicators
All denominators are actual numbers unless specified as 'estimated'.

Percentage of infants born to HIV-infected women who received a virological testing test by two months of age	HIV-exposed infant register	Numerator: Number of infants born to HIV-infected women with a DBS test sent for virological testing by two months of age during a selected time period. Denominator: Number of infants born to HIV-infected women who reached 2 months of age during a selected time period.
Percentage of infants born to HIV-infected women initiated on cotrimoxazole prophylaxis within 2 months of birth	HIV-exposed infant register	Numerator: Number of infants born to HIV-infected women started on cotrimoxazole prophylaxis within two months of birth during a selected time period. Denominator: Estimated number of HIV-infected pregnant women giving birth in the last 12 months during a selected time period.
Percentage of HIV-exposed infants who are 3 months of age and are on: exclusive breastfeeding, replacement feeding, or mixed feeding	HIV-exposed infant register	Numerator: Number of infants born to HIV-infected women who are: a) exclusive breastfeeding; b) replacement feeding; c) mixed feeding(MF) at or around 3 months during a selected time period. Denominator: Number of HIV-exposed infants whose feeding practise was assessed around or at three months (through the mother) during a selected time period.
Percentage distribution of the final status of HIV-exposed infants at 18 months	HIV-exposed infant register	Numerator: Number of HIV exposed infants whose final status at 18 months recorded as: a) positive; b) negative, still breastfeeding; c) negative no longer breastfeeding; d) dead. Denominator: Total number of HIV-exposed infants identified.
Percentage of HIV-infected women who are using a family planning method at last visit	HIV care/ART card - sample of patient cards	Numerator: Number of HIV-infected women who are using a family planning method at last visit during a selected period of time Denominator: Total HIV-infected women in a selected time period.

* UNGASS Indicators are reported annually
** HIV Drug Resistance Early Warning Indicators
All denominators are actual numbers unless specified as 'estimated'.

Treatment and care		
Percentage of adults and children with advanced HIV infection receiving ART*	ART register (cross-sectional report)	Numerator: Number of adults and children with advanced HIV infection receiving ART during a selected time period. Denominator: Estimated number of adults and children with advanced HIV infection during a selected time period.
Percentage of adults and children with HIV known to be on treatment 12 months after initiation of ART*	ART register (Included in cohort analysis)	Numerator: Number of adults and children who are still alive and on ART at 12 months after initiating treatment. Denominator: Total number of adults and children who initiated ART who were expected to achieve a 12-month outcome including those who have died, stopped ART and those recorded as lost to follow-up.
Percentage of HIV-infected children under 5 years with CD4% classification not severe at 6 or 12 months	ART register (included in cohort analysis)	Numerator: Number of HIV-infected children under 5 years with last available CD4% classification not severe at 6 or 12 months after initiating treatment. Denominator: Total number of HIV-infected children under 5 years at 6 or 12 months after initiating treatment.
Percentage of patients initiating ART at the site during a selected time period who are taking an appropriate first-line ART regimen 12 months later**	ART register (included in cohort analysis), with validation from HIV care/ART card (sample of cards)	Numerator: Number of patients initiating ART at the site during a selected time period who are on an appropriate first-line ART regimen (including substitutions of one appropriate first-line regimen for another, but not substitutions of dual- or mono-therapy or an inappropriate three-drug regimen) 12 months from ART initiation. Denominator: Number of patients initiating ART at the site during a selected time period, excluding from this number, if available, the patients who transferred out during the 12 months after initiating ART. Patients who died, stopped ART, switched to second-line ART, or were lost to follow-up must be included in the denominator.

*   UNGASS Indicators are reported annually
** HIV Drug Resistance Early Warning Indicators
All denominators are actual numbers unless specified as 'estimated'.

Percentage of patients initiating ART at the site during a selected time period who are initially prescribed, or who initially pick up from the pharmacy, an appropriate first-line ART regimen**	ART register, with validation from HIV care/ART card (sample of cards)	Numerator: Number of patients initiating ART at the site who are prescribed, or who initially pick up from the pharmacy, an appropriate first-line ART regimen during a selected time period. Denominator: Number of patients initiating ART at the site during a selected time period.
Percentage of patients initiating ART at the site in a selected time period who are lost to follow-up during the 12 months after starting ART (cohort)**	ART register (included in cohort analysis)	Numerator: Number of patients initiating ART at the site in a selected time period who were not seen at the clinic, or pharmacy, > 90 days after the date of their last missed appointment or last missed drug pick-up that occurred within their first 12-months of ART, and who are not known to have transferred out or died. Denominator: Number of patients who initiated ART during a selected time period, excluding re-starts or transfers in.
Percentage of patients initiating ART at the site during a selected time period who attend all clinic appointments on time (defined as within 7 days of the scheduled appointment) during the first 12 months of ART**	HIV care/ART card - sample of cards	Numerator: Number of patients who attend all appointments within seven days of the next scheduled or expected appointment date during the first 12 months of ART. Denominator: Number of patients who initiated ART during a selected time period, excluding re-starts or transfers in.
Percentage of patients attending clinic appointments on time after a selected month**	HIV care/ART card - sample of cards	Numerator: Number of patients who attended two consecutive clinic appointments within seven days of the next scheduled or expected appointment dates after attending the clinic during a selected month. Denominator: Number of patients who attended a clinic appointment during a selected month.
Percentage of patients initiating ART at the site during a selected time period who picked up all prescribed ARV drugs on-time during their first 12 months of ART (cohort)**	HIV care/ART card - sample of cards	Numerator: Number of patients initiating ART at the site during a selected time period who picked up all their ARV drugs before their previously prescribed drugs would have been exhausted at each pick-up during the first year of ART, or until they were classified as dead, transferred out, or stopped ART. Denominator: Number of patients initiating ART at the site during a selected time period.

*   UNGASS Indicators are reported annually
** HIV Drug Resistance Early Warning Indicators
All denominators are actual numbers unless specified as 'estimated'.

Percentage of adults and children enrolled in HIV care and eligible for CTX prophylaxis (according to national guidelines) and are receiving CTX prophylaxis at last visit	HIV care/ART card - sample of cards	Numerator: Number of adults and children receiving CTX prophylaxis among those enrolled in HIV care at the last visit. Denominator: Number of adults and children enrolled in HIV care who are eligible for CTX prophylaxis at the last visit.
Percentage of HIV-infected persons receiving ART who experienced side-effects, OIs, or other problems	HIV care/ART card - sample of cards	Numerator: Number of HIV-infected persons receiving ART who experience a) side-effects; b) OIs; c) other problems. Denominator: Total number of HIV-infected persons receiving ART during a selected time period.
TB/HIV		
Percentage of TB patients who had an HIV test result recorded in the TB register	BMU TB register	Numerator: Number of TB patients registered during a given time period who had an HIV test result recorded in the TB register. Denominator: Total number of TB patients registered during a given time period.
Percentage of registered TB patients who had documented HIV status recorded who are HIV-positive	BMU TB register	Numerator: Number of TB patients registered over a given period of time with documented HIV-positive status. Denominator: Total number of TB patients registered during a given time period with documented HIV status.
Percentage of HIV-positive TB patients who receive cotrimoxazole preventive therapy	BMU TB register	Numerator: Number of HIV-positive TB patients, registered over a given time period, who receive at least one dose of CPT during their TB treatment. Denominator: Total number of HIV-positive TB patients registered over a given time period.
Percentage of HIV-positive registered TB patients given ART during TB treatment	BMU TB register	Numerator: Number of HIV-positive TB patients, registered over a given time period, who receive ART. Denominator: Number of HIV-positive TB patients registered over a given time period.

*   UNGASS Indicators are reported annually
** HIV Drug Resistance Early Warning Indicators
All denominators are actual numbers unless specified as 'estimated'.

Percentage of adults and children enrolled in HIV care who had TB status assessed and recorded during their last visit during the reporting period	Pre-ART and ART registers, HIV care/ART card - sample of cards	Numerator: Number of adults and children enrolled in HIV care who had their TB status assessed and recorded during their last visit during the reporting period. Denominator: Total number of adults and children enrolled in HIV care seen at least once during the reporting period.
Percentage of adults and children newly-enrolled in HIV care given Isoniazid Preventive Therapy (IPT) for latent TB infection	Pre-ART register	Numerator: Number of adults and children newly-enrolled in HIV care who start treatment of latent TB infection over a given time period. Denominator: Total number of adults and children newly-enrolled in HIV care over a given time period
Percentage of estimated HIV-positive incident TB cases that received treatment for TB and HIV*	ART register	Numerator: All HIV patients on TB treatment and who were on ART during a selected time period. Denominator: Estimated number of incident tuberculosis cases in people living with HIV during a selected time period.

* UNGASS Indicators are reported annually
** HIV Drug Resistance Early Warning Indicators
All denominators are actual numbers unless specified as 'estimated'.

6.11 HOW TO USE THE PATIENT MONITORING SYSTEMS TO PROMOTE QUALITY AND MONITOR PROGRAMMES

Information can be used to improve patient management and programme performance. Yet, too often staff do not have the skills or time to analyse and reflect on the information that they collect, and to discuss how the observations can improve the clinical services the health centre provides.

Review of information in the records and registers should take place regularly and should provide signals back to clinicians about patient progress, outcomes and programme performance. Special time needs to be set aside and staff assigned to do information and quality reviews. This is an indispensable part of delivering high quality HIV services (see Quality improvement chapter).

Review routinely collected information weekly with clinical team

Summarize and discuss information commonly contained in registers with health centre staff to gauge how well the programme is performing.

Review cross-sectional and cohort reports with health centre staff

Use other methods to measure performance

Use other methods to monitor the performance and success of your health centre's HIV services, e.g. abstract of data from a systematic sample of patient records. Examples and methods of using monitoring data to achieve quality improvement are provided in the Quality Improvement chapter.

Compare trends over time

Another way to assess programme progress and quality of care and to demonstrate scale-up, change, improvement, etc. is to make comparisons using tables or graphs to display information (on the same indicator) collected at several points over time. Trends may emerge from examining sequential cohorts over time, or from sequential quarters over time. In carrying out this comparison, some key questions to consider include:

- What is the change or trend observed?

- Does the change or trend make sense?

- Is the change or trend in the expected direction?

- What might explain the change?

- Could it be a 'real' change in the phenomenon, or could the change be due to a difference in data quality over time?

Conduct periodic evaluation activities

Occasionally, special activities to analyse available data or to collect some additional data may be warranted to evaluate programme implementation, recognize successes and identify and explain challenges. For example, combining a review of patient data with records of interviews and/or observations can highlight challenges to programme operations (e.g. why are PLHIV reluctant to have their family members take an HIV test?).

Managers of health centres with greater capacity may wish to collect information beyond the standard minimum data set to help them better understand and improve their HIV services. For example, the standard patient monitoring system will show if a health centre is struggling with large number of ART patients who are lost to follow-up, but not why. It might be prudent to train and deploy a team (e.g. PLHIVs) to track individuals lost to follow-up into the community to determine and document their vital and health status and the reason(s) they have not continued with ART. Then the health centre team can change its programme approaches to increase the chances of HIV patients remaining in their system and adhering to ART.

6.12 HOW TO CHECK THE QUALITY OF THE INFORMATION COLLECTED

What is data quality?
High data quality can be achieved if information is:

- accurate (valid) – data measure what they are meant to measure;

- complete – all forms and fields are filled in every time and are legible;

- reliable – data are measured consistently over time;

- timely – data are collected, analysed, used and reported on time (if there is a deadline), or within a timeframe that feeds back usefully to clinical care;

- precise – data have sufficient detail to measure the aspect of interest.

Incomplete, illegible or lost records cannot help clinicians understand how to manage HIV patients or how to improve programmes, and will compromise patient care. Data quality can be promoted by carefully recording and transcribing information. However, everyone makes mistakes at some point, so data quality reviews are strongly recommended. Such reviews can be done routinely (e.g. incorporated into the data clerk's daily scope of work) or as a special periodic activity, for example, as part of a quarterly supportive supervisory visit by a team outside of the health centre.

There are several ways that the health centre can check the quality of the data.

Routine review of patient records

A clinician or a clinical assistant should quickly scan the patient record at the end of each patient visit to ensure that all information has been filled out, is legible and is accurate. Another staff member can review the records later and note if they are incomplete, but this person would not likely be able to process missing or illegible information. The data clerk or other staff member who transcribes information from patient records needs to make note of incomplete, missing, or nonsensical information so the problems can later be discussed with clinical staff.

Periodic review of patient records

A periodic review of a sample of patient records is a good way to check for data quality. This approach could be incorporated into supportive supervision visits by the district health management team.

Comparison of patient records to registers

Another way to check data quality is to compare the information in the patient record with data in the register. Transcribing from the record to the register can be tedious and is prone to transcription error.

Comparing changes in data (and possibly data quality) over time

Another way to check data quality is to compare information collected at one time point with information collected at another, and to assess whether both appear to be equally complete, consistent, and valid at every interval. Ideally, data quality would improve over time. But, if data quality declines, it can be difficult to analyse trends.

Key definitions used in the three interlinked patient monitoring systems

One way to ensure quality is to ensure that standardized definitions of data elements and indicators are used. see definitions and codes used in the 3ILPMS forms booklet and the example on table on page 121 see definitions and codes used in the three interlinked patient monitoring systems.

CHAPTER 7
SUPPLY MANAGEMENT

INTRODUCTION

Your health centre strives to use practises that have proved to be effective in delivering high-quality services. These best practises should not change when you add new supplies needed to provide HIV prevention, care and antiretroviral treatment (ART) services. Patients will receive ART treatment for life and each centre will care for increasing numbers of patients over time. The need for regular delivery of medicines and other supplies used to treat a chronic illness will be a new challenge for many centres. Following the basic rules of supply management is even more important when you must have a constant supply of antiretroviral drugs (ARVs) and other supplies on hand.

As centre staff, you will need to successfully manage your medicines and other supplies to treat the patients who visit your centre. This chapter outlines a plan to help guide your management of supplies.

7.1   HOW TO PREPARE YOUR STORE

Find out how much space is needed for the ARVs and other supplies including laboratory supplies needed to treat all of the patients your centre serves. Make sure that your centre has the space for storing extra supplies. Discuss with your staff about where you might store the new supplies. These may be kept in the dispensary store or elsewhere. Organize your store before you receive the new medicines and other supplies.
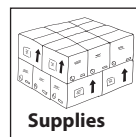
Supplies

Remove supplies you do not use or need

Check all medicines and other supplies in stock. Remove any items from the store that have expired or are no longer used in order to make space for new medicines and other supplies for your HIV services. Always follow government procedures and/or your centre's policy on removing items that have expired. Be sure to return broken or expired medicines and other supplies to the supplier (such as the district hospital or a central, regional or area medical store).

Tidy the store

Clean and tidy all stores in your centre. Organize medicines and other supplies in stock.

Estimate how much storage space will be needed

Talk with your staff members who provide HIV services and try to estimate how much space is needed for each item and what storage conditions are needed. Make sure you have enough storage space to store the supplies needed to add new HIV services (for example, supplies needed for testing, counselling, and ART). Make sure you are aware of temperature, space, and security requirements for your centre (see Infrastructure chapter). For each item, answer the following questions as a guide to help you figure out how much space you will need:

- How many supplies will be received?

- When are your supplies delivered (for example, every Wednesday or every other month)?

- Where will the items be stored? If they are going to be put on a shelf, which one?

- How much space does each item need?

- How long will each item stay in the store?

- Is cold storage needed? If so, in a refrigerator or freezer? (This generic manual assumes no refrigeration; therefore, think about whether any supplies you order will need to be kept cold.)

- How often does the space for storage need to be reviewed as you are adding new HIV services?

■ Is there a way to check the temperature of the store?

■ If you have supplies from donors, is there space for any special storage conditions? (see Infrastructure chapter).

Lock your store

Put two locks on the door of the room or cabinet to prevent theft of costly medicines and other supplies. Each lock should have a different key. Limit the number of keys that are made. Locking the store helps to control the movement of stock and keeps medicines and other supplies from disappearing.
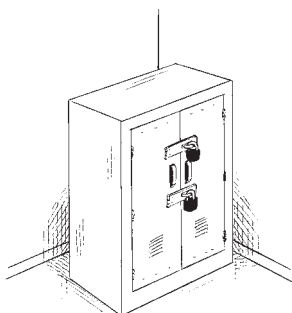
Check the temperature in the store

Check the temperature in the store regularly (at least once a day), and record it on the form called the 'Temperature Control Log'.
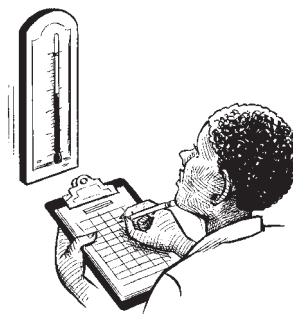
7. 2   HOW TO ORDER SUPPLIES BASED ON PAST USE
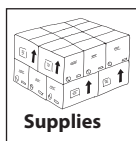
Supplies

Successful supply management means that the required items are always available for the patients who need them. Supplies are more likely to be available if you order enough of them and do so regularly. The amount of supplies to be ordered should be based on the amount your centre has used in the past (defined as past consumption) and the amount that you anticipate you will need in the future (expected use for the next month).

For new programmes such as chronic HIV care and ART services, you may not have enough data on the past consumption of supplies. The number of patients may increase rapidly every month, prompting you to increase your services and supplies. The number of patients to be treated or added each month at your centre might be decided by your national programme manager or district coordinator. It is your job to make sure that ARVs, medicines, rapid HIV test kits and other supplies are always available at your centre. Use the section called 'Order supplies for HIV services' on p. 46 to order ARVs, other medicines and supplies as you scale up HIV services at your centre.

This section covers ordering supplies based on past supply needs and when supply needs are expected to stay the same for next few months. These supplies might include other chronic medicines such as for hypertension or diabetes commonly prescribed for patients attending your centre. These supplies also include drugs used to treat common infections such as pneumonia and diarrhoeal disease and routine supplies for maternal and child health services. Special approaches are needed in high malaria transmission areas to assure an adequate safety stock of artemisinin-based combination treatment packs and diagnostic supplies for malaria, given the high case-load seen during peak transmission seasons.

Calculate the average monthly consumption (AMC) of each item in your store
The monthly consumption of an item is the number of units your Centre uses in a month. This means the number of tablets, capsules, or other well defined unambiguous supply units: for instance a tin or a box that is not labelled with the specific number of units in it would be ambiguous.

■ **Add the number of units dispensed to patients during the last three to six months**
Please note that the units dispensed each month does not include the items returned or issued for disposal or destruction due to bad quality, or those that have been lost, wasted or have expired. If possible, include medicines for emergency use such as for post exposure prophylaxis (PEP).

Assess six months of supply information to take into account seasonal changes for items whose use is stable. Three months of supply information may be better for centres where medicine and supply use is changing

■ **Divide the total number of units dispensed to patients by the number of months counted.**
This results in the average monthly consumption (AMC). The AMC = the total number of units dispensed on average to patients at your centre each month. Calculating the AMC does not work well if there are months when an item is not available. If this is your situation, calculate the AMC only by the data from the months when the item was available. If an AMC is any fraction of a whole number, round up to the next whole number (1/2 becomes 1, and 2.4 becomes 3).

Example 1: Monthly consumption (use)[1]

One method of calculating monthly consumption is to add the quantity of drugs in stock at the beginning of a period (for example, six months) to the quantity of drugs received during that same period, and then subtract the quantity of drugs remaining at the end of the period.

April 2007, quantity of paracetamol 1,000 • 500-mg tablet containers in stock = 14

June 2007, quantity of paracetamol 1,000 • 500-mg tablet containers received = 8

September 2007, quantity of paracetamol 1,000 • 500-mg tablet containers, remaining stock = 6

Therefore, total quantity of paracetamol 1,000 • 500-mg tablet containers consumed over a six-month period = 14 + 8 - 6 = 16.

Average monthly consumption = 16/6

Average monthly consumption to the nearest container = 2 2/3 = 3

---

1 Management of Drugs at Health Centre Level. http://www.who.int/medicinedocs/en/d/Js7919e.7.4. WHO. 2004.

Determine how often your centre receives supplies

The delivery of supplies varies from place to place. Your supplier for medicines and other necessities (such as the district hospital or a central, regional or area medical store), may deliver supplies on a regular schedule, such as monthly or every two or three months. Sometimes supplies may be delivered on different schedules for different services or products. If your suppliers do not deliver on a regular schedule or only deliver supplies when they are available, try to change the delivery to a regular schedule, such as monthly, every two months, or every three months, depending on the availability of transportation and the storage space at your centre.

■ **Note the day that your centre receives supplies**
This could be the first day of every month or the last Monday of every three months, for example. Know your centre's delivery schedule. This information is useful when you are organizing your store.

> The rest of this section is based on an assumption that your centre orders and receives supplies every month with a lead time (period between ordering and receiving) of two weeks. If your centre has a different order and delivery schedule, you have to adjust the maximum and minimum stock levels.
>
> *See the Adaptation Guide for instruction on adapting stock levels to fit your delivery schedule.*

Calculate the maximum stock level

The maximum stock level is the greatest number of a particular item you wish to have in your store. This is to avoid overstocking and expiration of the item. The recommended maximum stock level for an item that is delivered every month is three times the AMC of the item.

> Maximum stock level for monthly ordering = AMC x 3

Calculate the minimum stock level

The minimum stock level is the lowest number of a particular item you wish to have in your store. This can be set as the emergency stock level. If your stock of an item goes below this level you have to place an emergency order to avoid the item going out of stock.

> Minimum stock level for monthly ordering = AMC x 1

Decide how much to order

On the day of the month that your centre orders supplies, check the balance in stock of each item in your store against that item's maximum stock level. Order any items with a balance in stock that is less than the maximum level. The amount to order is the difference between the item's maximum stock level and the amount of the item in stock.

■ **Check the stock level monthly of all products with valid expiry date (> three months) in your store**

■ **Check the balance of each item against that item's maximum stock level**

■ **If the balance is less than the maximum stock level, it is time to order the item**
Calculate the amount to order. This is to bring your stock up to the maximum stock level.

Amount to order = maximum stock level - (minus) amount in stock

■ **If the balance is more than or equal to the maximum stock level, it is NOT time to order that item**
Do NOT order the item. This should not be common, as every order should bring the balance in stock back up to the <u>maximum</u> stock level.

Place an order for the supplies needed at your centre

■ **Make a written request for supplies**
Use a requisition or order form to make a written request to obtain medicines and other supplies for your centre. If your centre does not already have a requisition form, use or modify one Requisition and Issue Voucher or Requisition for Pharmaceutical Supplies (see Annexes 2-3 to meet the needs of your centre). Sometimes different order forms are used for different programmes, such as special donor programmes. Be sure to follow instructions.

Supplies
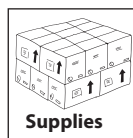
■ **Complete your centre's order information accurately**
Always use generic names of the medicine such as amoxicillin or paracetamol (acetaminophen).

■ **Keep a record of the order**
Make and keep a copy of the requisition or order form, or record the name of item, its strength and form and unit size. Write down the CODE NUMBER if the number is available in a medical supplier's catalogue or list, and the amount requested. Sign the form.

■ **Send or deliver your requisition or order form to your suppliers**
Write down the date your order was sent to your suppliers.

ORDER SUPPLIES FOR HIV SERVICES
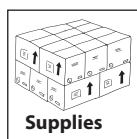
Supplies

Supplies needed to add HIV services. Your centre may decide to expand services, add HIV services, or receive new patients from other centres while continuing to treat its existing patients. This is known as "scaling up" existing ART services. Providing HIV services including prevention, care and treatment (ART) is a challenge. You have to make sure that all essential ARVs, medicines for opportunistic infections (OI) treatment such as cotrimoxazole, and HIV diagnostics are always available for both new and current patients to avoid treatment interruptions. You may not have enough data on the past consumption of all medicines to use the past consumption method to determine the monthly supplies needed. Furthermore, the number of patients on ART may increase rapidly every month. Each ARV may have different stock levels, as the same medicines might be used for different programmes such as ART, PMTCT and PEP.

Order supplies for ART services under the 'Push' system
Your national programme or district coordinator and your HIV team may decide the number of patients who will receive treatment at your centre, and calculate the quantities of each ARV and other medicines needed for these patients (defined as the 'Push' system). In this case your job is to know the number of patients who will come, and to make sure that your centre receives all supplies needed to treat them.

Know the number of patients for ART services
Have regular meetings with your HIV team and establish as accurately as possible the number of patients expected for ART services at your centre during the next few months (see estimates in Planning Chapter).

Know the treatment regimens you will dispense to your patients

ART is a combination of three medicines (triple therapy). Some ARVs come as a fixed dose combination or FDC (a combined product that contains two or three medicines in one tablet). FDC that contains three medicines in one tablet will be supplied as triple combination (for example, d4T+3TC+NVP). FDC with two medicines in each tablet (for example, AZT+3TC) will be used with a tablet containing an additional ARV (for example, NVP or EFV). Other products containing a single medicine in each tablet are also used for ART. Identify other supplies needed for these patients including medicines for the treatment and prophylaxis of OI such as cotrimoxazole and fluconazole.

Monitor the use of supplies for ART services

Monitor the use of ARVs and other supplies closely. It is important to tell your district coordinator or national programme manager when you notice unexpected loss, damage, or change in the treatment regimens or other supplies you have used.

Report on the use of supplies

Follow the instruction of your district coordinator or national programme manager on how and what to report on the use of ARVs and other supplies at your centre. For ART services, monthly reporting on the following items is recommended:

- number of units of ARVs and other OI medicines dispensed during the past month;

- number of units of HIV diagnostics consumed during the past month;

- current stock level for each supply for ART services;

- numbers of adult patients (male or female) on each ART regimen;

- number of children (age, body weight) on each ART regimen.

Know the number of patients for ART services for the next month

Have regular meetings with your HIV team and establish as accurately as possible the number of patients expected for ART services at your centre during the next few months. Your national programme or district coordinator may decide to increase the number of patients who will receive ART services at your centre. If you have a waiting list for ART services you need to know the

number of patients on the list. This will help you to estimate the number of new patients to be added during the next month. Prepare to take appropriate action to receive and organize additional supplies for the greater number of patients. If you do not have enough space to store all expected supplies, discuss this problem with your district coordinator or national programme manager to find a solution.

Receive supplies for the next month

Receive supplies from your national programme or district coordinator. They may provide additional instructions if the supplies are provided by a donor.

Order supplies for ART services under the 'Pull' system

If your HIV team can estimate and decide on the number of patients on ART treatment and you are able to place an order for ARVs and other necessary supplies ('Pull' system), follow the steps below:

- Count the number of patients currently on ART at your centre and find the regimens they receive.

- Discuss with your ART team and estimate the number of new patients who will start ART at your centre during the next month. This may includes the new patients who start ART for PEP and PMTCT. You may start providing ART service to patients who are already on ART at other centres and are now transferred to yours. For example, in April, it is time to estimate the number of patients who are expected to start receiving ARVs and other medicines at your centre during May.

- Estimate the amount of ARVs needed for the next month. This is done in three steps:

Step 1: Estimate the amount of ARVs current patients will use in the next month

Calculate the monthly consumption of ARVs used last month by the patients currently on ART at your centre. Some patients need new ARVs to substitute or switch current regimens due to side-effects or the development of drug resistance. Include them in your calculation.

Step 2: Estimate the amount of ARVs new patients will use in the next month

Patients who are already on ART at other centres and transferred to your centre will need to continue the same ARVs. The remaining new patients will start ART for the first time at your centre. If NVP is one of the three medicines for ART at your centre, it is important to remember that during the first two weeks of ART, NVP is given at a half dose (once daily) and patients start a full dose (twice daily) of NVP in the third week. It is also important to consider that the same FDCs may not be used for this period. Remember to also include the expected ARV consumption for PEP and PMTCT.

Step 3: Calculate the expected amount of ARVs all patients will use in the next month

Add the estimations (in Step 1) and (in Step 2) to find the total amount of supply needed for each ARV for the next month.

Amount of ARVs current patients will use in the next month (a)
+ (plus)
Amount of ARVs new patients will use in the next month (b)
= Expected consumption of ARVs for the next month

Estimate the amount of medicines and other supplies you will need for the next month

For example, medicines to treat OIs and supplies for HIV diagnostic tests. This estimation of the amount of supplies you will need for the following month is done in two steps:

Step 1: Calculate the average increase of supplies over the last quarter (3 months)

If you are in April, divide the increase in use of supplies from January to April by three (number of months).

$$\frac{\text{(Monthly consumption for April} - \text{(minus) Monthly consumption for January)}}{\text{3 (number of months)}} = \text{AMC increase}$$

Step 2: Calculate the expected use of supplies for the next month

Add the average monthly use increase (above) to the monthly use for the last month (April). This will be the expected monthly use of supplies for the next month (May).

Monthly use for April + AMC increase   = Expected monthly use for May

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Calculate new maximum and minimum stock levels

Based on the estimated quantities required for the next month, re-calculate the maximum and minimum stock levels for ARVs, medicines for OI treatment and prophylaxis, and HIV diagnostics. The number of months you used to calculate the maximum and minimum stock levels will not change as you add more patients. For example, in April, these are the maximum and minimum stock levels for May.

New minimum stock level = Expected use for the next month x 1
New maximum stock level = Expected use for the next month x 3

Decide how much to order

Check the balance in stock of each item in your store against that item's new maximum stock level. Order any items with a balance in stock that is less than the new maximum level. The amount to order is the difference between the item's new maximum stock level and the amount of the item currently in stock. If you are in April, this is the amount of supplies to be delivered in May.

New maximum stock - (minus) Amount in stock	= Amount of stock to order

The use of medicines and other health supplies may not be stable throughout the year. For example, the use of malaria medicines changes with seasons. There may be more patients with malaria in one season/month compared with another. The rainy season or bad weather conditions may also disrupt regular monthly supply for your centre. In these cases, you have to adjust the amount to order in consultation with your district coordinator. For instance, if the delivery is expected to be disrupted during the coming months, you may have to order a quantity which brings your stock level higher than the maximum, and place an order earlier than planned.

Place an order for ARVs and other supplies

Order enough of all ARVs and other supplies such as HIV diagnostics so that your stock rises to the maximum stock level of each item. Follow all steps described in the previous section.

TB TREATMENT SUPPLIES

The national TB programme provides complete regimens of anti-TB drugs free of charge for all TB patients. Patients do not have to be concerned with the cost of their drugs, and therefore cost is eliminated as a barrier to taking the correct drugs for the recommended duration.
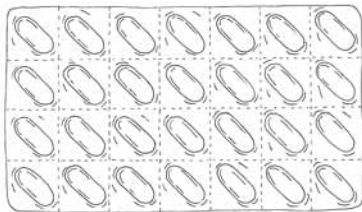
Anti-TB drugs are provided by manufacturers in various different strengths, presentations and methods of packaging. WHO strongly recommends blister packs or strips, preferably of FDCs (fixed dose combinations) to facilitate correct drug intake:

■ strips

■ blister packs of several tablets for a daily dose on one card, or a week's tablets on one card;
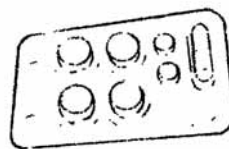
■ blister packs of 28 FDC tablets on a card, such as 28 (HRZE) or 28 (HR) tablets.

In addition, some manufacturers package anti-TB drugs in boxes or bags containing a full treatment regimen for one patient. Each box or bag contains the correct number of pre-packaged daily blister packs or envelopes for the regimen. These **drug boxes** are an important tool to ensure correct drug treatment and avoid interruptions of supply during treatment. Drug boxes are strongly recommended by WHO.

When a TB patient is identified, the health worker determines their category of treatment and specifies the regimen and dosages needed (based on the patient's body weight). A drug box containing the appropriate regimen is labelled with the patient's name and kept for him or her only. In this way, the health facility is certain to be able to provide the full course of drug treatment needed by the patient. The health worker and the patient can be confident that the patient will never come for treatment and find the health facility has run out of drugs. Daily drug administration is simplified for the staff because the drugs are labelled for the patient and are pre-packaged in daily doses. Determining when the patient has completed the treatment is also easy, because the patient continues until all the drugs in the box have been taken as recommended.
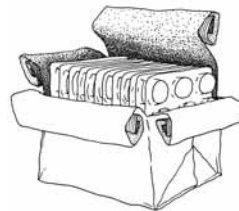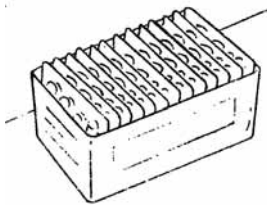
If anti-TB drugs are not pre-packaged as a complete regimen for one patient, WHO recommends assembling drug boxes at your health facility. Health workers may assemble boxes for different treatment categories and body weight ranges ahead of time, or they may partially assemble boxes that will be completed when a TB patient is identified. As soon as a diagnosis of TB is made, a drug box is taken from the shelves. If a box is not already assembled for the category and weight of patient, it is quickly assembled. For example, an additional number of tablets may be added to a box to increase the daily dose for a heavier patient. The box is labelled with the patient's name and kept for them.

Be sure that enough drugs are in stock for all persons with TB expected to start treatment during the next quarter (all categories of treatment).
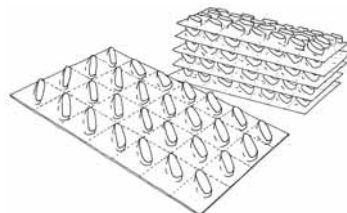
District TB coordinator will order sufficient drugs to cover approximately the same new patients next quarter

It is assumed that the number of new patients in each treatment category next quarter will be the same, or approximately the same, as it was in the previous quarter. At the beginning of each quarter, the district TB coordinator will determine these numbers from records of current cases and will order drugs to be sent to your health facility to meet the expected need.

Make a special order if the health centre stocks are not sufficient.

Though you may not be required to place drug orders each quarter, you should be aware of the usual quantities used, so that you will know whether the supplies you receive are adequate or may be too little.

With experience, you will be aware of the number of people with TB entering treatment each quarter and the quantities of drugs needed to treat them. If you think that the health centre's stocks do not contain sufficient quantities for the quarter, a special order may be needed. Take action or inform the person responsible for drug supplies.

If you are intensifying case finding for TB, you may be finding more cases of TB in your HIV patients and in other patients.

Maintain a TB treatment reserve stock

The expected new cases in each category the following quarter, multiplied by 2, is the number of drug regimens that should be available when your health facility's drug storeroom is fully stocked. The reserve stock allows for possible increases in the number of cases and extra supplies in case of delay in drug deliveries are delayed.

Some additional tablets will be needed for patients who need one extra month of initial-phase treatment (about 10% of patients in treatment Categories I and II) and for heavier adults who need larger than standard doses. Some loose tablets will be needed for children who need less than standard doses.

7.3   HOW TO RECEIVE SUPPLIES

Your centre will usually receive medicines and other supplies from central, regional, or area medical suppliers. However, some supplies might come from other sources, such as donors for example.

RECEIVE SUPPLIES FROM SUPPLIERS

Receive the supplies in person
All supplies should be received by at least one staff member at the time of delivery. Sometimes there will be an additional designated person to receive specific items, such as ARVs, narcotics or psychotropic medicines. If this is the case, both you and the designated person must be present to receive and check the supplies.

Check the delivery form that came with the supplies
Check to make sure that the number of boxes you receive is the same as the number listed on the delivery form. See sample Delivery Form.

Check the outside of the boxes for theft
Check for opened or damaged boxes. Check to make sure that the bottom of the box has not been opened. Someone may have tried to empty the contents from a tin, place the empty tin back into the carton, and carefully reseal the bottom of the box.

Check the supplies against the delivery form and the requisition form
Remove the supplies from the box. Read the delivery form. Check the items ordered against the requisition form. Review the items and the number you received in the box. Check that what you ordered is the same as what you received. If you receive many boxes, open some of them randomly to cross-check the contents.

Ask the driver or delivery person to note the discrepancy
If the supplies received are less than what was ordered, or if you receive items that were not ordered, or that are not listed on the requisition form, ask the driver or delivery person about this and write it on the delivery form. If your centre has a form to report and return items, use it. If not, check with your supervisor or district coordinator and use the Discrepancy Report (Annex 5) to record a missing item or items to be returned.

Ask the delivery person to sign the form before leaving your centre
Do NOT sign for the delivery person. This signature is proof that the supplies have been delivered to your centre.

Write down delivery information in a ledger book
Each time you receive supplies, you must record delivery information in a ledger book or follow the deliveries recording system that you and your staff already use. Always write down a record of deliveries with a pen and not a pencil. Be sure to record the following delivery information:

- date and time of delivery

- requisition order, or issue (delivery) voucher numbers

- delivery person's name and signature

- vehicle registration number

- number of boxes, external packaging, and item quantities

- name and signature(s) of staff who received the supplies

- designated or second staff person's signature.

CHECK RECEIVED SUPPLIES AFTER DELIVERY

Keep all delivery forms in a safe place
After the delivery person has left your centre, carefully check all supplies received. If you find items that were not ordered or that are not listed on the delivery form, follow your centre's policy for returning medicines and supplies and use the Discrepancy Report. If extra supplies, were delivered by mistake, you may be able to keep and use some of them. Check with your supervisor or district coordinator.

Check the expiry date of items that need to be kept cool and store them first
Write down the expiry date and batch number on the delivery form and quickly put them in a cool area or if you have a refrigerator refrigerate the items. If refrigerated items such as certain protease inhibitors were not kept in cold packs during transport, they may have spoiled.

Check the expiry dates of all other items received

Write down the expiry date and batch number of supplies on the delivery form and ledger book. Expired items may harm a patient or have no beneficial effect. Expired test kits or reagents may not give correct results. Follow your centre's policy to return or dispose of them.

Check the basic quality of all items delivered

Check all delivered supplies and write down the names of any medicines or other supplies that are broken or have spoiled.

- Check the colour of medicines and vaccines
  If medicines or vaccines are discoloured (i.e. not the colour they usually are), do NOT accept then; return them to the supplier.

- Check for broken containers and for leaks.
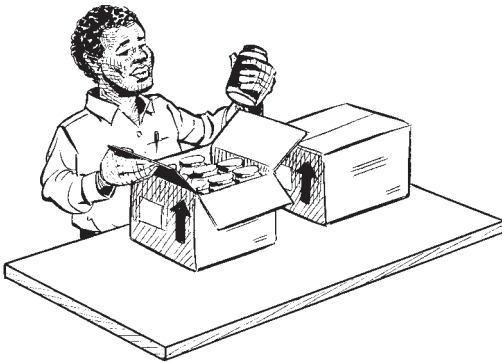
Carefully remove broken containers. If there is a leak, remove the item concerned and throw away any other supplies damaged by the leak (be sure to safely throw away or return broken items).

- Check for unsealed or unlabelled items
  If labels or seals are missing, someone may have tampered with the items. Do NOT accept instead, return them.

- Check tablets and capsules
  Open sealed containers only if you think they have spoiled. Check for unusual odours, or tablets and capsules that are cracked broken, powdery or sticky. Request new items and return those that are defective.

- Check injectable liquids
  Shake the vial and hold it to the light. A clear liquid should not have small pieces in it that reflect light. If a vial has small pieces in it, the medicine has spoiled. Do NOT accept the vial return to the supplier.

- Put any damaged or poor-quality items in a box with a sign or label indicating the contents should be returned to the supplier. Dispose of or return any expired and poor-quality supplies at the earliest opportunity. Always follow your centre's policy on removing poor-quality supplies from your store.

Store the checked supplies in their proper place in the store immediately after checking them
This keeps the store tidy at all times. Apply the storage rules in the next section; 'How to organize supplies'.

Document all discrepancies
Write down all missing or over-issued supplies and expired, damaged, and poor-quality items. If your centre has a form to report and return the items, use it. If this is not the case, check with your supervisor or district coordinator and follow your centre's policy on reporting a discrepancy. Sign the form and keep it on file at your centre.

7. 4 HOW TO ORGANIZE SUPPLIES

Keeping medicines and other supplies neat and orderly will help your staff run the centre and serve patients better. Anyone who works in your store should be able to find supplies easily. As a general rule, do not put any medicines or other supplies directly on the floor or on the ground. Instead, put them on shelves.

Store similar items together on the shelves
"Similar" refers to the route of administration (external, internal, or injectable) and form of preparation (dry or liquid medicines). In the case of ARVs, store them separately from other medicines (for example, in a lockable cupboard or cabinet). Arrange them in an orderly fashion for example, by therapeutic class (nucleoside reverse transcriptase inhibitor: NRTI, non- nucleoside reverse transcriptase inhibitor: NNRTI, protease inhibitor: PI) or by their inclusion in first-line, substituted first-line or second-line ART regimens.

If there are three or more shelves in your store, organize your supplies in the following way:

- Top shelves: Dry medicines (tablets, capsules, oral rehydration packets). If the top shelf is near the ceiling, use it to store items that are NOT sensitive to heat.

- Middle shelves: Liquids, including injectables and ointments. Do not put products for internal and external use next to each other. Do not put dry medicines below them. If liquids leak, the medicines below them may spoil.
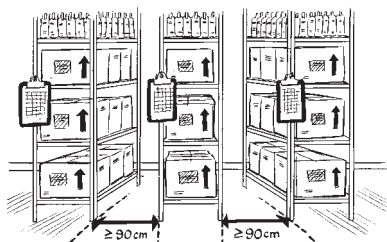
- Bottom shelves: Store other supplies, such as surgical items, laboratory supplies, condoms, and labels.

Use the generic name of each medicine in your store

The generic name of a medicine including fixed dose combination should be listed on its label. There may be many brand names for the same generic medicine. For example, cotrimoxazole (sulfamethoxazole + trimethoprim) may be supplied under the brand names of Cotrex, Cotrim, Bactrim and Septrin.

Arrange and label the supplies on the shelves

Within each group, arrange the supplies in alphabetical order by generic name.

Follow the first expiry, first out procedure to store all medicines and supplies that have expiry dates

- Manufacturers print dates called 'expiry dates' on containers to show how long the contents will remain effective.

As a general rule, do NOT use expired products.

Put items with shorter expiry dates in front of those with longer expiry dates regardless of the date of delivery. This method is referred to as 'FEFO', which stands for FIRST EXPIRY FIRST OUT. FEFO procedures reduce waste caused by product expiry especially of supplies that have a short shelf life such as HIV rapid tests and other reagents for HIV tests. For example, if products received today expire before products received previously, you should put these newly arrived products in the front of those in stock.

Follow the first in, first out procedure to store medicines and other supplies that do NOT have expiry dates
Store items with no expiry dates in the order they are received. Put newly received items behind the items already on the shelves. This method is referred to as 'FIFO', which stands for FIRST IN FIRST OUT.

Remove expired and poor-quality items from the store
Poor-quality or damaged medicines and related supplies are as risky as expired ones. For a quick reference on indicators of poor-quality or damaged supplies procedures, see Indicators of Poor -Quality or Damaged Supplies in Annex 6.

- Identify all expired and other poor-quality medicines and related supplies.

- Identify overstocked items and any that are no longer used at your centre.

- Keep a record of the removal of medicines and related supplies.

7.5 HOW TO KEEP RECORDS OF SUPPLIES

Keeping records (a written history of each item's use and movement) serves as the basis for the information needed when ordering new stocks of medicines and other supplies, and also as evidence of transactions. This is especially important for chronic care programmes such as HIV prevention, care and treatment programmes that will continuously enroll new patients. Keeping records on stock cards can save you time and can show that you are not responsible for problems such as theft or misuse because you documented the movement of all items. An example of a Stock Card is provided Annex.

Make a stock card for each item in your store
This includes medicines, vaccines, diagnostic kits and related supplies. More than one card may be needed for the same item depending on the source, form and strength.

■ Write down all the information concerning each item.
This includes name, form (tablet, liquid, ointment), strength, regular pack size (50, 100, 500 tablets in a tin). For example, cotrimoxazole, 400+80 mg, 1000 tablets in bottle.

■ Write down the supply and stock information of each item at your centre
This includes the price or cost per unit cost, minimum and maximum stock levels, regular pack size, and expiry date.

Keep the stock card with the item on the shelf
Attach the card to the front of the shelf near the label of the item, or place it with the containers of the item on the shelf.

Record on the stock card every time you receive or move an item

Use a pen, not a pencil. Record any changes at the time of movement, and NOT at the end of the clinic session, and specify the day, the week, or the month. This information should not change once it has been written down. If you make an error, do not erase or write over, but put a line across it and write a correction above.

- Record the following information on the item's stock card whenever receiving or updating the new balance in stock:

    - date of receipt;

    - where the item was received from;

    - number of units received;

    - requisition number of the order, expiry date and batch number (in the remarks column).

  Add the quantity received to the previous balance in stock and record the new stock. Use a different colour pen to record the items received. These should be marked in a different colour from the items issued.

- Write down when an item is issued out of the store and the new balance in stock. This includes:

    - date of issue

    - where the item was issued to

    - quantity issued in units.

  Subtract the quantity issued from the previous balance in stock and record the new balance.

- Write down any important information about the movement of an item in the remarks column.

Keep an accurate running tally of the number in the balance in stock column and count your stock at regular intervals, i.e. once a month

Counting the number of containers of each item is called a physical count or physical inventory. Make sure that the balance of any item reflected on the stock card is the same as the number of containers in the store.

- Review the information on the top of the stock card.

- Make a physical count of an item.

- Write down the physical count number in the balance in stock column. Draw a double line after the last entry on the card. Record the date of the count, the number you count, and write the words "PHYSICAL COUNT" across the columns. Draw double lines before and after the physical count information.

Discrepancy and investigation

If the physical count and the previous balance are not the same, write "discrepancy" and note how many are missing or in excess, and investigate.

Replace a completed stock card with a new one

Write down the words, "BALANCE BROUGHT FORWARD" in the first line of the new stock card. Keep completed stock cards for two to five years, or for as long as instructed to do so by your supervisor or district coordinator.

7.6   HOW TO DISPENSE MEDICINES

Dispensing (giving or handing out) medicines to a patient consists of the following: checking the prescription, collecting, counting and packaging the medicine, and giving the medicines with clear instructions to the patient. When a medicine is dispensed, it is important that the patient receives: the correct medicine in the correct amount and the correct information on how to take. For a quick reference on dispensing medicines procedures, see the Checklist to Manage and Dispense Medicines and Other Supplies Annex and the Monthly Report and Requisition Form Annex.

Prepare medicines and other supplies to be dispensed from your store

■ Select the supplies needed from the store.
Based on the amount used in the past or the storage space available in the dispensary (an area other than the store set aside to give out medicines and other supplies), estimate the number of units of each item that will be needed for the day or the clinic session. Go to your store and record the movement of each item that you issue out of the store on its stock card.

■ Take the medicines to the dispensing area.
Dispensing (giving out) medicines should NOT be done from the store. Once items are issued to a dispensing area, keep them there and do not return them to the store.

■ Keep supplies in the dispensing area safe and organized.
Make sure that the dispensary is as secure as possible in the same way as the store. Staff should always be present in the dispensing area when it is not locked.

■ Organize supplies in the same way as they are organized in the store.

Dispense a medicine (or another item) to a patient

■ Check that the prescription is appropriate for the patient.
Review the prescription and crosscheck with the dispensing record or card. Find the medicine's generic name and check that the prescription is appropriate for the age, weight, and sex of the patient. Also check that the medicine prescribed is appropriate in form, strength and dosage, and in line with the agreed treatment guideline for this medicine. The dosage includes:

■ when to take the medicine (for example, in the morning);

■ how much of the medicine to take (for example, one tablet);

■ for how long to take the medicine (for example, two days);and

■ how to take the medicine (for example, with food or with plenty of water).

- Collect a container of the item, and check its expiry date.
  Check that it is the correct form, strength, and unit size. Check that the item has not expired yet and will not expire in the next month.

- Prepare the label for the package to be given to the patient
  Print clearly on the label. Include the following information:

  - the patient's name

  - today's date

  - the item's name, strength and form

  - the quantity dispensed

  - instructions that tell the patient how to take the medicine.

  - special instructions for storage.

Use pictures or numbers to record the doseand also; include written instructions. Patients who cannot read may need pictures for instructions and should have someone at home who can read the instructions to them.

- Attach the label.
  After you record the information on a label, attach it to the package before putting the medicines in it. If a complete package(s) of the item will be issued, attach the label directly on each package.

- Check the quality of medicines in the container.
  Open the container. Check the quality of its contents for any signs of deterioration or damage (odd smell, cracked, broken, powdery, or sticky tablets or capsules).

- Count the units needed in a clean and safe manner.
  Count tablets or capsules using a counting tray and a clean spatula. If you do not have a tray, you can make one from a sheet of paper or a used x-ray film, or you can use a clean surface covered with paper and a spoon. Do NOT use your hands and the same tray to count new medicines without cleaning the tray. Count the desired amount of medicine and separate this from the rest.

■ Put the correct amount of the medicine into the package for the patient to take home

■ Place the label directly on the package.

■ Put any extra tablets or capsules back into the appropriate container
Always close one container before you open another one. Prepare all of the prescribed items required before dispensing them to the patient.

■ Give the package to the patient.
If you are dispensing ARVs or other medicines that come in a box containing the quantity needed for a month, give the boxes with the label attached to the patient.

Teach the patient how to take his/her medicine

Carefully follow the steps below to teach the patient how to take the medication. This is especially important if it is the first time the patient is taking the prescribed medicine or ARV. If this is not the first time the patient will take the prescribed medicines or ARVs, you may ask another staff member to take care of the patient following the steps in the Medication Use Counselling Checklist for ART Annex to make sure the patient knows how to take their medicines.

■ Explain the medicines to the patient.
Tell the patient the name of the medicine, its form (tablet, syrup, etc.), the dosage and what it is for.
Remember to counsel the patient on possible side-effects of taking the medicines.
Show the patient how to prepare the dose and ask them to practise measuring the dose.
If you are dispensing syrup, show the patient how to measure the correct amount. Use the cap of the syrup bottle or show the patient that common spoons can be used. Using the medicine that you have already packaged for, ask him or her to read and repeat the instructions. Make sure that the patient understands how to prepare the dose.

■ Tell the patient to take all of the prescribed medicines.
Tell patients that even if they feel better it is important to take all prescribed medicines to stay well, as taught in adherence counselling. Also tell patients

on ART that they need to return for follow-up treatment and to collect ARVs for the next month. Ask them to bring any leftover medicines when they return for their follow-up visit.

- Tell the patient to keep all medicines and related medical supplies in a safe place at home.
  Tell them that medicines are expensive and need to be stored in a cool, dark and dry place safe from pests, and out of reach of children.

- If the patient is a child, go through the above steps with the parent (or caregiver).
  Make sure that the parent or caregiver is the person who is going to give the medicines to the child.

Ask the patient about missed doses and side-effects
If the patient does not bring an accurate record of when he or she took the prescribed medicines or ARV drugs, ask how many doses have been missed during the past month. Record the number of missed doses. Also ask about symptoms of possible side-effects and if necessary refer patients with any symptoms to a member of staff trained to deal with side-effects.

Keep accurate dispensing records
Use a notebook or a card to note the details of a patient's dispensing records of medicines and follow the instructions given by your supervisor or district coordinator. This is useful when you collect information about medicines and related supplies given to patients to treat certain illnesses. See chapter 5, 'Patient Monitoring', for an example of dispensing records.

Dispense a medicine (or other item) to a community carer

Dispense medications for home-based palliative care
If a very sick or dying patient is not able to come to the health centre, the medicines should be dispensed to a family member or caregiver. These should be recorded on the patient's record.

CHAPTER 8
LABORATORY SERVICES

INTRODUCTION

Laboratory (lab) services form an essential component of HIV services. It is important to know how to collect specimens and perform tests correctly in order to obtain correct results. Regular quality management is important. The lab space will need to be large enough for all the equipment and staff required for the services. Patients need to be counselled to help them understand what the tests are for, how they will be performed and the meaning of the results. To do all of this, you will need to make sure that you follow steps provided in this chapter. Lab services must be consistent and dependable to correctly assess and manage patients with various illnesses. Without good quality lab services, test results may be wrong, and if they are not currently accurate, consistent, and dependable, every effort should be made to raise them to an acceptable standard.

Good communication is very important in your health centre and also in your lab. Talk regularly with staff working there to make sure that processes are followed correctly and that results are accourate. For lab tests that are not performed at the health centre, it is important that your staff have good communication with the district hospital lab or other referral lab.

This chapter provides the information you will need to set up a lab in your centre, as well as guidelines and steps on how to use various tests, read different test results and assure quality of services. With guidelines on how to build and run a lab, your centre will be able to provide consistent and dependable lab services for your patients. In addition, job aids and standard operating procedures (SOPs) are provided and can be made available to be easy to see and use.

- A job aid is a simple tool that helps a worker do his or her job (for example, step-by-step instructions on how to do a test, often with pictures). Job aids generally provide quick reference information rather than in-depth training. They are a storage place for information other than your memory that you can use to help you do your job. These should be posted on a wall near where the testing is done.

- An SOP is a prescribed written procedure to be followed routinely in doing a task. In the case of the lab, these describe in detail what a person doing specimen collection, testing, recording of results or other necessary lab tasks.

The chapter assumes that your lab at the health centre forms part of the national laboratory system. This system includes the district hospital lab that provides those tests not available at your centre. It also assists in quality assurance and sends specimens on to higher level labs at the provincial or national level for more complex lab tests.

Please note that this *Operations Manual* assumes your centre has some electricity and refrigeration.

8.1. ESSENTIAL LAB SERVICES

Essential lab services are the minimum lab tests that should be done at your centre to offer comprehensive HIV services they are not available directly at your health centre they should be available at your district hospital lab. You may be able to send the specimens you have collected from your patients or you may need to send the patient to the district hospital lab for these tests. This process and type of tests to be sent to level II should be clearly defined with your district hospital lab before you start.

ESSENTIAL LAB TESTS AVAILABLE AT HEALTH CENTRE	ADDITIONAL ESSENTIAL LAB TESTS THAT CAN BE DONE AT YOUR DISTRICT HOSPITAL
HIV diagnostics • Rapid HIV antibody tests (first and second tests) • Infant diagnosis; preparation of dried blood spot (DBS) out for virological testing Haematology Haemoglobin determination Venous whole blood collection and send-out for CD4 cell absolute count and for percentage Blood sugar (glucose) TB diagnostics: • Sputum send-out for smear microscopy (or on-site acid fast bacilli (AFB) smear microscopy) • Sputum send-out for culture and drug susceptibility testing Malaria diagnostics (if in endemic area): • Peripheral blood smear (PBS) preparation and smear microscopy or • Rapid test to detect and discriminate between *Plasmodium falciparum* and mixed Plasmodium species Syphilis diagnostics: • Rapid syphilis test • Rapid plasma regain if refrigeration (RPR) Pregnancy test: • Rapid test for pregnancy Urine dipstick for sugar and protein	HIV diagnostics • Rapid HIV antibody tests (first, second and third tests) CD4 absolute count and percentage Full blood count with differential TB diagnostics • Acid fast bacilli (AFB) smear microscopy • Sputum send-out for culture and drug susceptibility testing Serum alanine aminotransferase (ALT) Serum creatinine and blood urea nitrogen Gram stain Syphilis - rapid plasma reagin (RPR) and TPHA Basic cerebrospinal fluid (CSF) and urine microscopy Bilirubin determination for neonates Blood and sputum cultures (send out) Cryptococcal antigen and/or India ink Lactic acid Type and cross-match for transfusion Pulse oximetry Chest X-ray

8.2. LAB SAFETY

Your health centre staff will need to know how to safely use lab supplies and collect, test, and transport specimens. See chapter 9 the Human Resources for information on standard lab precautions, injection safety, post-exposure procedures, and TB infection control. See chapter 5 the Infrastructure for information on safe water, sanitation, hygiene, waste management, and power.

Bio-safety guidelines:

■ Treat all specimens (blood, urine, sputum, etc) as potentially infectious.

■ Wear protective gloves and a lab gown while drawing blood and handling specimens.

■ Do not, eat, drink, or smoke in the lab.

■ Do not keep food in the lab refrigerator.

■ Do not wear open toe footwear in the lab.

■ Clean up spills with an appropriate disinfectant, e.g. 1% bleach.

■ Decontaminate all instruments and materials with an appropriate disinfectant.

■ Dispose of all waste, including test kits, in a biohazard container.

Phlebotomy safety
Injuries may occur when drawing blood or using a finger stick or heel stick to obtain a blood specimen, or testing with sharps (blood collection needles, lancets, cutting blades, glass pipettes or slides, broken plastic or glass, etc.). When possible, use single-use vacuum blood collection tubes with safety needles rather than a syringe and needle. This also reduces the amount of biological waste.

Sharps disposal

All sharps should be placed in a puncture-resistant, leak proof, sharps disposal container. Follow the disposal instructions in chapter 5 Infrastructure. The chapter 9 Human Resources also has instructions on safe handling of needles and syringes, and what to do if a needle stick injury occurs.

- If possible, only use vacuum tubes and a needle to draw blood (instead of syringe and needle).

- DO NOT recap, bend, break, or manipulate needles by hand. Throw these items away intact.

- After you use sharps, put them in a puncture-resistant, leak-proof trash container right away. DO NOT place sharps in regular trash containers.

- Report all injuries involving sharps to the (person in charge of safety) at your centre or at the district level.

Post-exposure prophylaxis (PEP)

PEP is the use of ARV drugs to reduce the risk of HIV infection following accidental exposure. PEP should be available for all staff members following exposure of non-intact skin (through percutaneous sharps injury or skin abrasion) or mucous membranes (through sexual exposure or splashes to the eyes, nose or oral cavity) to a potentially infected body fluid from a source that is HIV-positive or has unknown HIV status

PEP includes:

- a staff person trained to provide prompt clinical advice; and

- access to antiretrovirals (drugs to prevent HIV infection) as soon as possible after exposure and within 72 hours.

See chapter 9, the Human Resources for more details.

8.3　LAB TESTING

Specimen testing has three parts:

PART 1: Before performing the test

▪ Specimen collection: Collect the specimen or give clear instructions when the patient is to collect the specimen themselves (urine and sputum).

▪ Record keeping: Review the requisition forms to ensure that all necessary information is recorded. Enter the required information from the requisition form into the lab logbook[1]. Fill out lab worksheets for the tests that will be run that day. If specimens are to be sent to another lab for testing, store the specimens properly until they are sent-out. Pack the specimens properly and fill out and include the requisition forms and specimen shipping inventory.

▪ Equipment set-up: Make sure that any equipment you need to run the test is available and in good condition. Also ensure that regular maintenance is done at the right times.

▪ Test-related preparation: Make sure that you have all the supplies and reagents (substances used for detecting or measuring another substance, such as chemical stains for acid fast bacteria) for doing the test. Make sure that you have a clean area in the lab to do the testing[1].

▪ Perform quality control for tests or reagents. For example, test the chemical stain on a slide with a known positive sputum before doing the test each day.

PART 2: Testing

Test the specimen following SOP for the test. You should have SOPs for each test performed in your lab. These should include all the information needed to correctly perform the test.

For rapid tests, ensure that the control line is present before reporting results.

1　Logbook: to avoid confusion between logbook and report form, it is advised that a logbook is a document which is kept in the lab in which the lab technicians record all information related to specimen including test results. A report form is a form on which test results are filled by the lab technicians and sent to the clinician who requested the test.

PART 3: After performing the test

- Record keeping: Record the test results in the proper lab logbook.

- Reporting results: Fill in the test results on the report form (may be part of the requisition form). If possible, have another person check to make sure that the correct patient's results are put on the right form. If another person is not available, recheck this yourself. Send the report forms to the clinical staff to be put into the patient's medical records. If results are coming to you from testing at another lab, make sure that these results are also sent to the clinical staff who will write them in the patient's medical records.

- Interpreting results: If there are any questions about the test results, be prepared to answer them. If you do not know the answer, consult with lab staff at the district level.

8.4 SPECIMEN LABELLING AND LOGGING

All specimens need to be labelled with the following information using a waterproof pen:

- specimen ID number;

- patient's first and last name (may be excluded in some cases where protecting the patient's privacy is a concern);

- patient's date of birth (if known);

- date and time of collection;

- collector's initials.

Each specimen should have a lab requisition form.
The information on the specimen label should match the information on the lab requisition form. Each time the lab takes a specimen it should be logged into the lab logbook.

8.5   GENERIC QUALITY INSTRUCTIONS FOR ALL TESTS

Lab testing requires supervision and training for quality assurance. Every centre offering lab services will need:

Initial and ongoing staff training in

- specimen collection

- testing techniques

- quality lab management

- quality assessment

- specimen packaging – for send-out tests

- lab recordkeeping

Supervisory visits by district level lab staff

- To observe and review lab processes including:

  - arrangement of workspace

  - preparation for testing

  - collection of specimens

  - testing procedures

  - recordkeeping.

- To provide training as needed.

Quality assessment

- quality control (QC) – insure the use of internal quality control specimens (if on hand);

- monitoring results – proportion of follow-up AFB smears positive;

- external quality assessment (EQA) – participation in a programme (if on hand);

  - testing a coded panel of specimens (also known as proficiency testing); or

  - blinded rechecking; or

  - supervisory visits (see above).

- SOPs and job aids;

- standardized record forms;

  - requisition forms;

  - specimen logbooks;

  - lab worksheets;

  - report forms;

  - forms for reviewing the status of lab equipment;

    - temperature logs for refrigerators (if present);

    - maintenance log (Documenting routine maintenance of microscope (if present);

  - Forms for ordering reagents and supplies;

  - QC logbook for recording QC results (see section - "Quality control" below).

Organization and management

■ Make sure that there is a clear organization of staff involved in the lab in order to ensure that standardized procedures can be implemented and followed by all staff.

■ There should be one person with overall responsibility for the coordination of the lab services at the site.

Purchasing and inventory

■ Have a clear plan for maintaining a supply of test kits and other consumables so that stock-outs do not occur.

■ Use the FEFO principles – see chapter 7 "Supply Management".

Documentation

■ Ensure that documents and records are well-kept and accessible by staff.

■ Have a standardized lab logbook for entering all testing results, batch number and expiry dates of test kits, etc.

Standard operating procedures

■ Have concise, clear SOPs in your local language for those trained to perform the test.

■ Include SOPs for specimen collection procedures, test performance, and interpretation of overall testing results and reporting, etc..

■ See the instructions and job aids throughout this chapter.

Quality control

- Use internal quality control specimens, if included with the test kit, for each testing session or daily–AND, if available use an external quality control specimen (provided by your district hospital lab or national reference lab). These specimens should have known results. This is particularly true for rapid tests.

- Store these controls appropriately. Label the vial with the date when first used, test before expiry date, and take care not to contaminate the control material. Make sure that you have a regular and ongoing supply of controls (as part of your purchasing and inventory system).

- External quality control specimens should be used at the following times:

    - once a week;

    - when you receive a new shipment of control materials and test kits;

    - at the beginning of a new lot number of test kits;

    - whenever you suspect that the test kits may not be in good working order;

    - when a new operator performs testing (a newly trained staff member or a staff member who has not performed testing for a while).

- Your standardized lab logbook should contain space for recording QC results. These results should then be transferred to a QC logbook for quick review of data.

For specifics on rapid tests and malaria and AFB smears, please see section -s...??????

External quality assessment (EQA)

- Proficiency testing

    - Periodically, you will receive a panel of specimens to assess how well you are doing at providing testing results. This panel will come from the district hospital

lab or national reference lab and it measures the performance of the tests and of the operator performing testing. You will test the panel of specimens and report the results back to the panel provider. Your performance on testing this panel will be compared with that of other testing sites. You will receive feedback on how well you are doing at performing the testing.

- Onsite evaluation and monitoring (also called audits, assessments, or supervisory visits);

  - Periodically, your lab will be visited by staff from the district hospital lab. They will observe how you are doing the testing. They will give you feedback on this to ensure testing quality. This is part of every lab quality system.

- EQA may identify problems. If so, corrective actions will be recommended to correct the problem or deficiency.

For specifics on rapid tests and smears, please see the relevant sections

Training and certification
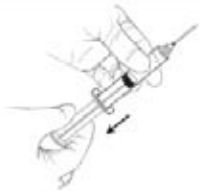
- Ensure that all individuals who will be doing collection and testing, whether lab staff or others, have received appropriate training in:

  - specimen collection, quality assessment and packaging

  - testing techniques and quality lab management

  - lab recordkeeping and communication of results

- Have a programme for training of all new staff and for re-training of staff who have not performed testing in a while.

- Test any new staff who will be performing testing with a proficiency testing panel of at least 10 specimens. This panel can be provided by your district hospital lab or the national reference lab. Make sure that the operator has a proficiency score which is acceptable to your national laboratory programme before they begin to do testing.

8.6 INSTRUCTIONS FOR THE COLLECTION OF BLOOD SAMPLES

Please also use Vacuum which is a generic name instead of Vacutainter + several other specific amendments in the various figures are needed but I cannot access the original.

Instructions for collecting blood by venipuncture (adult)
For use with syringe

1. Choose method:
   A. Syringe and needle

2. Collect supplies.

3. Wash hands.

4. Glove hands.

5. Position patient in a chair with a back.

6. Put tourniquet on client about 4-5 finger widths above venipuncture site

7. Have client form a fist so veins are more prominent.

8. Clean collection site with 70% isopropyl alcohol. Allow to dry.

9. Remove cap from needle and place on table.

10. Move syringe plunger up and down to break seal.

11. Use your thumb to draw skin tight about 2- 3 finger widths below the venipuncture site.
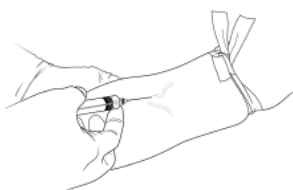
12. Insert the needle, bevel side up, into the vein. Establishment of blood flow is indicated by spurt of blood into the syringe. Have the client open their fist.

13. Pull back on syringe plunger so blood will flow into syringe.

14. Fill the syringe until the desired amount of blood has been collected

15. After the desired amount of blood has been collected, release the tourniquet.

16. Check to make sure client has opened their hand, place dry gauze over the site without applying pressure.

17. Slowly remove the needle and then apply firm pressure to the pad.

18. Have client continue applying mild pressure until bleeding has stopped. Put on an adhesive bandage if necessary.

19. Place the cap on a flat surface.

20. With one hand use the needle to scoop up the cap.
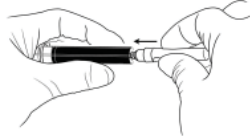
21. Use the other hand to secure the cap.

22. Twist off, carefully remove needle from syringe

23. Discard the capped needle into sharps container

24. Remove rubber stopper from tube.

25. Slowly inject blood into the tube.
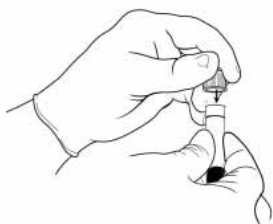
26. Carefully restopper the tube.
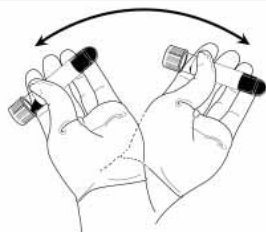
27. Shake by inverting tube back and forth 5-10 times.
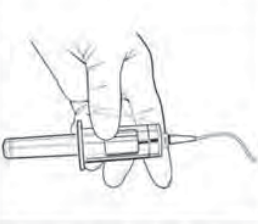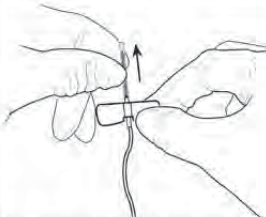
28. Properly dispose of all contaminated supplies.
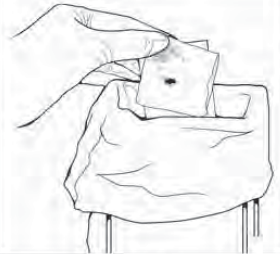
29. Label tube with the client identification number, date and collector's initials.

Instructions for collecting blood by venipuncture (pediatric)

For use with butterfly and vacuum tubes

1. Vacuum tube and butterfly needle.

2. Collect supplies.

3. Wash hands.

4. Glove hands.

5. Restrain the child by either a) lying down or b) having them sit upright on a parent's lap. The parent should wrap their arm around the child and over the arm that is not being used.

7. Put tourniquet on client about 2 finger widths above venipuncture site.

9. Attach the end of the winged infusion set to the end of the vacuum tube.

10. Insert the collection tube into the holder until the tube reaches the needle.

12. Remove plastic sleeve from end of butterfly.

13. Clean collection site with 70% isopropyl alcohol. Allow to dry.

14. Use your thumb to draw skin tight about 2 finger widths below the venipuncture site.

15. Bend the wings and insert the needle, bevel side up, into the vein. Establishment of blood flow is indicated by spurt of blood into the tubing.

16. Push the vacuum tube completely onto the needle. Blood should begin to flow into the tube.

17. Fill the tube until it is full or until vacuum is exhausted. If you are filling multiple tubes, carefully remove the full tube and replace with another tube. Try not to move the needle in the vein. Shake by inverting removed tube back and forth 5-10 times.

18. After the desired amount of blood has been collected, release the tourniquet. (place tube)

19. Release patient's hand, place dry gauze over the venipuncture site and slowly withdraw needle.

20. Have mother continue applying mild pressure.

21. Remove butterfly from vacuum tube holder and dispose in sharps container.

22. Properly dispose of all contaminated supplies.

23.. Label tube with the client identification number, date and

24. Put on an adhesive bandage if necessary.

Instructions for collecting blood by finger prick

1. Collect supplies.

2. Position hand palm-side up. Choose whichever finger is least calloused.

3. Apply intermittent pressure to the finger to help the blood to flow.

4. Clean the fingertip with alcohol. Start in the middle and work outward to prevent contaminating the area. Allow the area to dry.

5. Hold the finger and firmly place a new sterile lancet off-center on the fingertip.

6. Firmly press the lancet to puncture the fingertip.

7. Wipe away the first drop of blood with a sterile gauze pad or cotton ball.

8. Collect the specimen. Blood may flow best if the finger is held lower than the elbow.

9. Apply a gauze pad or cotton ball to the puncture site until the bleeding stops.

10. Properly dispose of all contaminated supplies.

8.7   RAPID TESTS ON BLOOD – COMMON INSTRUCTIONS

Rapid tests are tests that can be done in a short period of time sothat the results can be given to the patient while they are still at the centre. rapid tests can be performed for HIV, syphilis and malaria according to national guidelines.

Test kit preparation (applicable to all test kits)
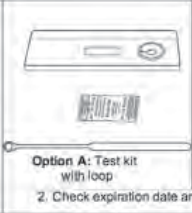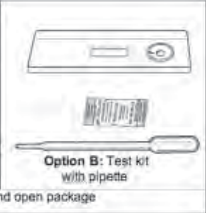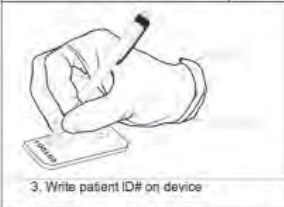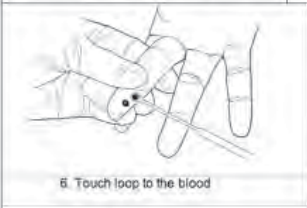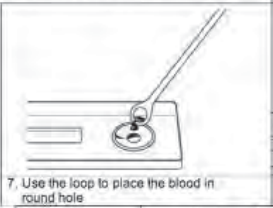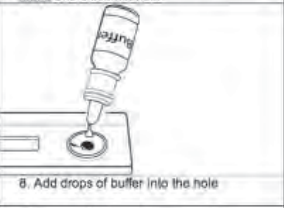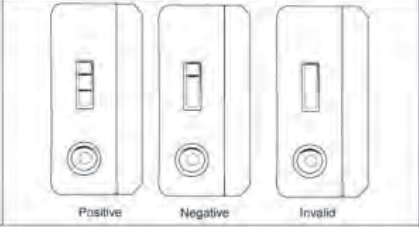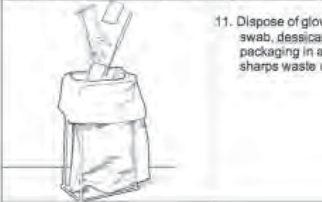
■ Follow all storage procedures. Some kits that do not require refrigeration should still be kept in a cool place. (If you lack refrigeration, make sure that the tests you use do not need it.) If kept in a cool place, remove the number of tests and reagents that you expect to use that day and let them stand for at least 20-30 minutes to reach room temperature (20-25°C). The use of cold test kits may lead to false-negative results. Close the pouch that the test comes in properly before storing.

■ Check expiry date to make sure the kit has not gone bad. Do not use the kit beyond that date.

■ If a desiccant (a chemical that absorbs water to keep the package dry) is included in the package, do not use the kit if it has changed colour.

■ Once opened and brought to room temperature, a test kit should be used immediately.

■ Prepare your lab logbook: write down the test batch number (test kits are made in large quantities by manufacturers and each is labelled with a number) and expiry date; write the name of the person performing the test and date. Clearly write specimen number and record the results right away.

■ Validate the test kit using the manufacturer's directions and the positive and negative controls provided. Controls are used to ensure that a test is working properly; giving positive results for positives and negative results for negatives. This is the process of internal quality control. Preferably, run the controls prior to the beginning of each day's testing, whenever a new kit lot is introduced and whenever you are concerned with storage conditions.

Different lab staff members should alternate running the controls on different days. For kits that do not contain controls, controls may be provided from your district hospital lab. These controls should be stored appropriately. This is in addition to the internal control which is built into the test kit (making sure that a control line is seen to ensure that the specimen was added, and that the test was done properly). Record results of control tests on the lab worksheet and in the QC logbook.

- Write the specimen number on the lab logbook.

- Remove the test device from its protective wrapping.

- Write the specimen number on the test device. Always label specimens and test devices clearly.

- Follow all the manufacturer's instructions, including the full waiting time until the test should be read for results. Do not read tests early, even if the control line is visible. Failure to wait the full waiting time can lead to false negative results, and do not read past the specified end point time.

- Do not use reagents from one kit with another kit.

Job aid for rapid HIV and syphilis tests on whole blood. This is only an illustrative figure

Always follow the manufactures' instructions

Materials:
1. Buffer
2. Alcohol
3. Gloves
4. Lancet
5. Timer
6. Test Kit
7. Swabs
8. Sharps container

1. Put gloves on

Option A: Test kit with loop

Option B: Test kit with pipette

2. Check expiration date and open package

3. Write patient ID# on device

4. Clean patient's finger with alcohol wipe

5. Prick patient's finger to get drop of blood and discard lancet

6. Touch loop to the blood

7. Use the loop to place the blood in round hole

8. Add drops of buffer into the hole

10 minutes

9. Read results 10 minutes after adding buffer

10. Read results

Positive   Negative   Invalid

11. Dispose of gloves, spirit swab, dessicant and packaging in a non-sharps waste container

12. Record the test results in your register. Dispose of the cassette in non-sharps waste container

8.8 RAPID HIV ANTIBODY TESTS

HIV antibody testing is done with rapid HIV tests. Rapid tests give results in less than 30 minutes, allowing you to give the patient results in the same visit. The rapid HIV test kits usually include everything you need to do a test. Some may require a pipette (a narrow, glass or plastic tube into which small amounts of liquid are suctioned for transfer or measurement). Make sure you have all the materials needed for testing before you begin. Testing will be based on the national HIV testing algorithm. All testing should be recorded in the HIV testing logbook (see Annex). The HIV testing logbook can also be used to help prepare periodic reports on test results for higher authorities. This data can also be used for quality assurance purposes.

Below is the WHO recommended HIV rapid testing algorithm. It should be replaced by the national testing algorithm and displayed as a job aid in the lab. It should include testing for both HIV-1 and HIV-2 for countries with HIV-2 prevalence.

High HIV prevalence: > 1% in pregnant women (for country adaptation)	HIV Rapid Testing Algorithm

Do HIV rapid test 1
(all specimens)

Do HIV rapid test 1
result: Positive

Do HIV rapid test 1
result: Negative

Report specimen as
HIV-negative

Do HIV rapid test 2

Do HIV rapid test 2
result: Positive

Do HIV rapid test 2
result: Negative

Report specimen as
HIV-positive

Send for or do
rapid test 3

- All specimens are given rapid test 1. If the first test is negative, report the specimen as HIV-negative.
- If the rapid test 1 result is positive, do rapid test 2. Be aware that rapid test 2 should be a different type of test kit from rapid test 1. Be aware that rapid tests 1 and 2 can be done from a single finger prick; then interpreted using this algorithm.
- If both rapid test 1 and rapid test 2 results are positive, report the specimen as HIV-positive.
- If rapid test 1 is positive and rapid test 2 is negative, send out for or do rapid test 3 (a different test kit from rapid tests 1 and 2).

Specific quality assurance

Quality Control

■ Use internal quality control specimens, if included with the test kit, for each testing session or daily-AND, if available use an external quality control specimen (provided by your district hospital lab or national reference lab). These specimens should have known results - see the quality section at the beginning of the chapter.

External quality assessment (EQA)

■ Note that the number of invalid or discordant results you obtain on testing each month should be recorded. If this number suddenly increases, you should look into the integrity of the test kits and/or how the testing is done. The number of discordant results should also be recorded. A change in this number may also indicate a problem with testing.

8.9   RAPID SYPHILIS TESTS

Many health centres do not have access to a consistent power source required for adequate refrigeration (required for storage of reagents for the Rapid Plasma Reagent (RPR) test). Therefore, a rapid syphilis test that does not require refrigeration of reagents is recommended. Clear guidelines should exist on the clinical use of testing results.

Specific quality assurance

Proficiency testing

■ Currently, there is no proficiency testing programme that includes primary health centres. WHO is working on a guide for countries on how to produce proficiency testing panels for rapid syphilis tests.

8.10 RAPID MALARIA TESTS

Correct and rapid diagnosis of malaria is crucial and needs to be performed in all patients presenting with symptoms indicating suspected of malaria before the patient leaves the health centre. WHO recommends diagnosis with a blood smear when possible, but centres without reliable electricity or a microscope with a suitable light source should use the rapid test.

Rapid malaria tests may not be the best tool at present for malaria parasite species differentiation as most non P. falciparum tests still have challenges of stability that affect their sensitivity and specificity.

Specific quality assurance

External quality assessment.(EQA)

- If possible, prepare a thick and a thin smear from the blood of every 10th patient being tested. Send this for microscopic examination. This should be arranged with your district hospital lab.
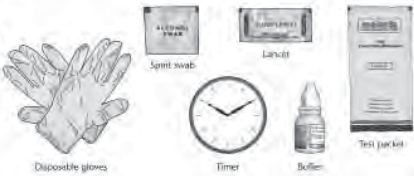
How to do the rapid test for malaria

Collect:

a. **NEW unopened** test packet
b. **NEW unopened** spirit swab
c. **NEW unopened** lancet
d. **NEW** pair of disposable gloves
e. Buffer
f. Timer

Disposable gloves   Timer   Buffer   Spirit swab   Lancet   Test packet

---

READ THESE INSTRUCTIONS CAREFULLY BEFORE YOU BEGIN.

1. Check the expiry date on the test packet.

Expiry date

2. Put on the gloves. Use new gloves for each patient.

3. Open the packet and remove:

a. Test
b. Loop
c. Desiccant sachet

4. Write the patient's name on the test.

Patient Name

5. Open the alcohol swab. Grasp the 4th finger on the patient's left hand. Clean the finger with the spirit swab. Allow the finger to dry before pricking.

6. Open the lancet. Prick patient's finger to get a drop of blood.

7. Discard the lancet in the Sharps Box immediately after pricking finger. **Do not set the lancet down before discarding it.**

8. Use the loop to collect the drop of blood.

9. Use the loop to put the drop of blood into the square hole marked "A."

10. Discard the loop in the Sharps Box.

11. Put six (6) drops of buffer into the round hole marked "B."

6 drops

12. Wait **15 minutes** after adding buffer.

13. Read test results.
(NOTE: **Do Not** read the test sooner than **15 minutes** after adding the buffer. You may get **FALSE** results.)

---

14. How to read the test results:

POSITIVE

One red line in window "**C**" **AND** one red line in window "**T**" means the patient **DOES** have *falciparum* malaria.

The test is **POSITIVE** even if the red line in window "**T**" is faint.

NEGATIVE

One red line in window "**C**" and **NO LINE** in window "**T**" means the patient **DOES NOT** have *falciparum* malaria.

INVALID RESULT

NO LINE in window "**C**" means the test is damaged.

A line in window "**T**" and **NO LINE** in window "**C**" also means the test is damaged. Results are **INVALID**.

If no line appears in window "C," repeat the test using a **NEW unopened** test packet and a **NEW unopened** lancet.

---

15. Dispose of the gloves, spirit swab, desiccant sachet and packaging in a non-sharps waste container.

16. Record the test results in your CHW register. Dispose of cassette in non-sharps waste container.

NOTE: Each test can be used **ONLY ONE TIME**. Do not try to use the test more than once.

8.11 INFANT HIV DIAGNOSIS

Virological testing for infant HIV diagnosis is usually done in a national or regional reference lab. It is extremely important to follow infants from PMTCT programmes and to test them as early as possible.

The specimen collected from the infant is capillary blood from a heel, big toe, or finger prick that is put onto a filter paper (dried blood spot (DBS)).

Instructions for collecting dried blood spots (DBS) from infants for virological Testing:

1. gather necessary supplies
   gloves
   blood collection card (filler paper)
   lancet (2mm)
   70% isopropyl alcohol
   gauze or cotton wool
   pen.

2. complete all necessary paperwork.
   infant diagnosis registration form
   clinic register
   laboratory request/report form

3. Wash hands.
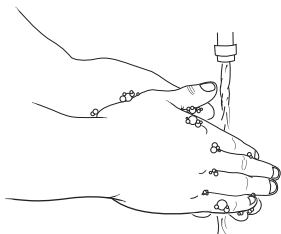
4. Glove hands.

6. Ask the mother to warm this area.

7. Position the baby with the foot or hand down, then clean the spot to be pricked with 70% isopropyl alcohol, and allow to dry for 30 seconds

8. Gently squeeze and release the area to be pricked until it is ready to bleed, and then prick the infant in the selected spot with the 2mm lancet.

9. Wipe away the first spot of blood, and then allow a large drop of blood to collect.

10. Touch the filter paper gently against the large drop and allow it to completely fill the circle. Collect at least three good drops.

11. Clean area; no bandage is needed.

12. Fill out DBS card.

13. Dispose of lancet.

Two examples of valid DBS specimens
3 good specimens

Invalid DBS specimen
A. May have been soaked with syringe
B. Drops too small
C. "spots" that are streaky
D. Clotted/layered
E. Yellow serum rings around blood drops.

Diagnosis of HIV Infection in Sick Infants and Children Under 18 Months Where Viral Testing is Not Available

Sick infant <18 months of age

with unknown HIV exposure and signs and symptoms suggestive of HIV infection

↓

Confirm exposure: Check mother's HIV status → Mother HIV-negative → Treat infant's medical conditions

↓

- Mother HIV-positive
- Maternal testing not possible

↓

Negative ← Recommend HIV antibody testing for infant → **Positive**

Negative branch:

Assume infant is uninfected and/or unexposed

↓

Treat infant's medical conditions

↓

Regular and periodic clinical monitoring

↓

Repeat HIV testing for infant
- known to be exposed
  OR
- continuing to breastfeed

Positive branch:

Infant is exposed and may be infected

AND

Infant has symptoms that meet clinical criteria for presumptive severe HIV infection

NO / **YES**

NO:
- Monitor infant's clinical condition frequently and confirm HIV status at 18 months of age or if viral testing is available

YES:
- Manage as if infant is HIV infected.
- Seek CD4 testing.
- Consider starting ART
- Confirm HIV status at 18 months of age or if viral testing is available

Establishing Presence of HIV Infection in HIV-exposed Children, Aged Under 18 Months, In Resource-limited Setting to Facilitate ART and HIV Care

HIV Exposed infant

Conduct diagnostic virological test at 4-6 weeks of age

Virological test not available

Positive test result

Negative test result

Regular and periodic clinical monitoring

Infant is infected

Never breastfed

Ever breastfed **OR** currently breastfeeding

Start ART and repeat test

Infant is not infected

Infant remains at risk of acquiring HIV infection until complete cessation of breastfeeding

Infant develops sign or symptoms suggestive of HIV

Infant remains well and reaches 9 months of age

Conduct HIV antibody test

Infant is HIV antibody positive

Infant is HIV antibody negative

Confirm with viral test

Positive test result

Negative test result

HIV unlikely unless still breastfeeding*

Infant is infected

Whichever comes first:
- Repeat antibody test 6 weeks after complete cessation of breastfeeding

  OR
- Repeat antibody test at 18 months of age

Start ART and repeat test

*The risk of HIV transmission remains as long as breastfeeding continues

See drying and packing instructions for DBS (Section 8-19).

■ See Annex for an example of an infant virological test lab requisition form and a logbook for DBS testing.

External quality assessment (EQA)

On-site evaluation and monitoring

■ Periodically, your lab will be visited by staff from the district hospital lab. They will observe how you are collecting and processing DBS specimens. They will give you feedback to ensure quality collection, processing, and shipping.

8.12   ESTIMATING HAEMOGLOBIN

The WHO Haemoglobin Colour Scale is an inexpensive, rapid, and simple to use tool that can be used to screen for anaemia. It gives an estimate of the amount of haemoglobin in a blood sample. Good training is essential to do this test. If a low haemoglobin < 10g/dl is obtained on the Colour Scale, more accuracy can be obtained with a second test, for example, using a haemoglobinometer. If your centre has a second test available, test the patient again so that you can more accurate results.

Haemoglobin colour scale: instructions for use

Preparation

1. Find a well-lit place, inside, under a veranda or under a tree

2. Lay the colour scale flat on a table in front of you

3. Put the colour scale at an angle with light passing over your shoulder.

4. Avoid direct light

How to use colour scale

5. Put a drop of blood on a test strip (about 8 mm in diameter).

6. Allow to dry for 30 seconds. DO NOT LEAVE FOR MORE THAN 2 MINUTES

7. Match test strip to colour on the scale.

How to match the colours

8. Always start at the bottom of the scale. Move the test strip up the scale until the blood spot is the same or slightly darker than the colour on the scale.
If the blood spot is lighter than the colour on the scale move the test strip down the scale. Record the closest match.

9. If the blood spot is between two colours on the scale, if possible record the intermediate value, for example 11 g/dl. If not record the lower value.

Maintenance

10. Clean back of scale with a damp cloth and dry. Store scale in cover. Keep strips dry and clean.

8.13 URINE DIPSTICK FOR SUGAR AND PROTEIN
Specimen collection

You should have a space with privacy for the patient to collect a urine specimen for testing. Give the patient clear instructions (see below) on how to collect a good urine specimen.

Instructions for collecting urine - for women

■ Label a clean container with the patient name, DOB, and date and time of collection.

- Give the woman the clean container and tell her where she can urinate.
- Teach her how to collect a clean-catch urine sample. Ask her to:

  - spread labia with fingers;

  - clean vulva with water, going from front to back;

  - urinate while keeping labia spread (urine should not touch the vulva. If urine touches the vulva, the specimen may be contaminated);

  - catch middle part of the stream in the cup;

  - remove container before urine stops.

Instructions for collecting urine - for men

- Label a clean container with the patient's name, DOB, date and time of collection.
- Give the man the clean container and explain where he can urinate.
- Teach the man how to collect a clean-catch urine sample. Ask him to:

  - Pull back foreskin with fingers (if uncircumcised);

  - Clean head of penis with water;

  - Urinate while keeping foreskin pulled back (urine should not touch foreskin because the sample may become contaminated);

  - Catch middle part of the stream in the cup;

  - Remove container before urine stops.

Analyse urine using dipstick method

- Dip coated end of paper dipstick in urine sample, and shake off excess by tapping against side of container.
- Wait the recommended amount of time (see dipstick package instructions).

■ Compare with colour chart on label - be sure to compare the correct row where multiple tests are shown.
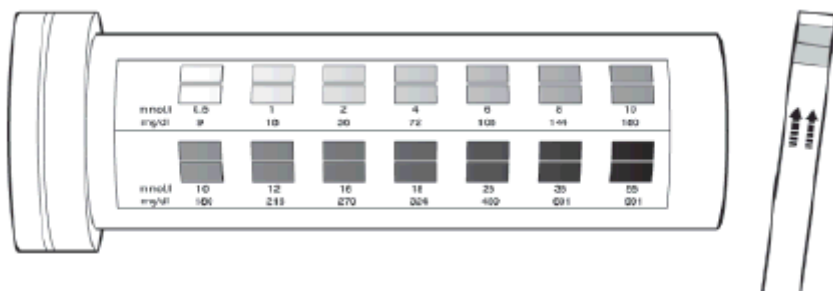
8.14   PREGNANCY TESTS

Pregnancy testing is included in the essential lab tests at your centre because of the importance of excluding pregnancy before starting a woman on efavirenz.
(Insert instructions/job aid for rapid pregnancy test used locally in the adaptation process)
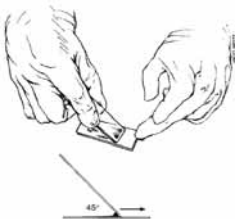
■ See the sample pregnancy testing logbook in Annex 8.6.

8.15   MALARIA SMEAR AND MICROSCOPY

Malaria smear microscopy

Malaria smear microscopy is the preferred test for diagnosing malaria. The rapid malaria test should be used if this is not available (see above section 8.10).

Preparing Blood Smears: Blood for testing is usually collected by finger prick directly onto a clean glass slide. If you are using venous blood, blood smears should be prepared as soon as possible after collection (delay can result in changes in the malaria parasite's shape and staining characteristics).

	Thick smears	**Thin smears**
Characteristics	• Thick smears allow a more efficient detection of parasites (increased sensitivity). However, they are often not good enough to identify the species of malaria parasites as they do not permit an optimal review of parasite shape. If the thick smear is positive for malaria parasites, the thin smear should be used to identify the species.	• Thin smears consist of blood spread in a layer so that the thickness decreases progressively towards the feathered edge. In the feathered edge, the cells should be in a monolayer, not touching one another.

Slide preparation
Prepare at least two smears per patient!

• Note: If slides are scarce, prepare both a thick and a thin smear on the same slide. This can work well if you make sure that of the two smears; only the thin smear is fixed.

STEP 1:	Place a small drop of blood in the centre of the pre-cleaned, labelled slide. Be careful of using anticoagulated blood.	Place a small drop of blood on the pre-cleaned, labelled slide, near its frosted end.
STEP 2:	Using the corner of another slide or an applicator stick, spread the drop in a circular pattern until it is the size of a fingernail (1.9 cm across). 	Bring another slide at a 30-45° angle up to the drop, allowing the drop to spread along the contact line of the two slides. Quickly push the upper (spreader) slide towards the unfrosted end of the lower slide.

STEP 3:	A thick smear of proper density is one which, if placed (wet) over newsprint, allows you to barely read the words.	Make sure that the smears have a good feathered edge (A thin, sharp edge with the cells not touching one another). You can do this by using the correct amount of blood and spreading method.
STEP 4:	Lay the slides flat and allow the smears to dry thoroughly (protect from dust and insects). Insufficiently dried smears (and/or smears that are too thick) can detach from the slides during staining. At room temperature, drying can take several hours; 30 minutes is the minimum; in the latter case, handle the smear very delicately during staining. Protect thick smears from hot temperatures to prevent heat-fixing them. Heat fixing can prevent the breakdown of the red blood cells.	Allow the thin smears to air dry. They dry much faster than the thick smears, and are less likely to come off the slide because they will be fixed
STEP 5:	Do not fix thick smears with methanol or heat. If there will be a delay in staining smears, dip the thick smear briefly in water to haemolyse (break down) the red blood cells.	Fix the smears by dipping in absolute methanol.

Giemsa staining
Giemsa stain (a mixture of eosin and methylene blue) is often used for staining blood films.

STEP 1:	Use prepared Giemsa stain or prepare a 3% solution by adding 3 ml of Giemsa stock solution to 97 ml of buffered water.
STEP 2:	Pour the stain gently into the trough until the slides are totally covered. Do not pour the stain directly on the thick films.
STEP 3:	Leave the slides in the stain for 30-45 minutes.
STEP 4:	Pour clean water gently into the trough to float off the scum on the surface of the stain. While pouring water, do not disturb the thick films.
STEP 5:	Pour off the remaining stain gently and rinse again in clean water for a few seconds. Pour off the water.
STEP 6:	Remove the slides one by one and place them, film side downwards, in a drying rack to drain and dry, making sure that the thick film does not touch the edge of the rack.

Microscopic examination of the film

Microscopic examination
Since it takes almost 10 times as long to examine a thin film as it does to examine a thick film, examine the thick film first. The thin film is examined only when the thick film becomes autofixed (by being exposed to heat), or when it is necessary to confirm the identification of a species (the type of malaria parasite).

STEP 1:	Using the 40x objective, select a part of the film that is well stained, free of staining debris, and is well populated with white blood cells.	Place the slide on the mechanical stage and position the 100x oil immersion objective over the edge of the middle of the film.
STEP 2:	Place a drop of immersion oil on the thick film.	Place a drop of immersion oil on the edge of the middle of the film.
STEP 3:	Lower the 100x oil immersion objective over the selected portion of the blood film, so that it touches the immersion oil.	Lower the oil immersion objective until it touches the immersion oil.
STEP 4:	Confirm that the portion of the film is acceptable and examine the slide for 100 oil immersion fields by moving along its width.	Examine the blood film by moving along the edge of the thin film, then moving the slide inwards by one field, returning in a lateral movement, and so on.
STEP 5:	Examine at least 100 good fields before a slide pronouncing negative for malaria.	
STEP 6:	Record your findings on the proper form.	

Quantifying parasites GRADING (parasites per field) on thick smear only

Parasite count: Grade: 1 to 9 malaria parasites per 100 fields .... + 10 to 99 malaria parasites per 100 fields .... ++ 1 to 9 parasites per field .... +++ 10 to 100 parasites per field .... ++++	Not done

Specifics of Quality Assurance

Internal quality assurance: Checking quality of the stain	• Check the quality of your stain by staining one thin and one thick blood smear and assessing the quality of red cell staining to control buffer quality, stain white cells and parasite chromatin for nuclear staining, and stain white blood cell granules and parasite inclusions. • Do this on each day that you do the test or weekly, if larger volume lab. • Prepare extra positive slides periodically to use for this purpose.

Quality control	• Use external quality control specimens (thick and thin smears from both positives and negatives).
	• Store these controls appropriately.
	• Your standardized lab change with logbook should contain space for recording QC results, These results should then be transferred to a QC logbook for quick review of data.
External quality assessment. (EQA)	• Proficiency testing:
	• Periodically, you will receive a panel of slides to assess how well you are doing the test. This consists of a minimum slide set including 20 slides, including negative slides and positive slides with different malaria species, and different counts. A combination of stained and unstained slides will allow the testing of staining capability. This will come from the district hospital lab or the national reference lab. You will test the panel of slides and report the results. Your performance on testing this panel will be compared to that of other testing sites. You will receive feedback on how well you are doing the test.
	• Slide validation at a higher level by random rechecking:
	• If your national malaria programme uses this quality assessment method, save your positive slides and some of your negative slides as instructed.
	• Store these in secure slide boxes protected from excess heat and/or humidity.
	• Send these, when asked, to be blindly rechecked by a higher level lab.

The bench aid for the diagnosis of malaria infections, 2nd ed. Geneva, World Health Organization, 2000 should be available in the centre's lab for staff to use if smear microscopy is being performed.

8.16   TB SMEAR AND MICROSCOPY

This section covers TB sputum collection and transport for smear microscopy or culture and drug susceptibility testing elsewhere or for on site smear microscopy.

Tuberculosis (TB) is diagnosed by detecting the TB acid fast bacillus in the sputum. Rapid identification and treatment of people who are becoming infected is important to reduce the risk of death or severe illness associated with the disease, as well to protect health workers, community members and other patients from becoming infected.

All health centres should be able to handle sputum for AFB microscopy. Some may be able to do AFB smear microscopy onsite, but if not, sputum sample collection can be done onsite and the sample sent to the district hospital lab for testing. TB is highly infectious and thus proper training in specimen collection is important to protect the staff and patients. Specimens also need to be correctly packaged for shipment to prevent any leakage that would be dangerous during transport and might also compromise results. Post clear instructions (text and pictures) for centre staff, lab staff and patients about safe methods for specimen collection, the number of specimens to collect and when to collect them.

In addition to AFB smear microscopy, sputum specimens may also need to be referred to the district or higher level lab for TB culture and drug susceptibility testing (DST). TB culture and sensitivity testing done at a higher level lab will help detect whether the TB is resistant to first-line anti-TB drugs.

Culture and sensitivity of TB is particularly important:

- in HIV-infected persons who may have AFB smear-negative TB; and

- when a patient's clinical course may suggest resistance to the first-line TB drug regimen. Decisions on when a patient's sputum specimen should be referred for culture and DST are usually made by the district TB clinician.

INSTRUCTIONS FOR SPUTUM COLLECTION

STEP 1: Be sure to list the TB suspect's name and address in the register of TB suspects (see Annex).

Suitable specimen containers

Use clean, wide-mouthed, leak-proof specimen containers. Single-use disposable plastic containers (50 ml capacity) are best. One type of preferred container is a rigid, wide-mouthed screw-capped container made of unbreakable transparent plastic that is weasy to dispose of by burning. Its screw cap can be tightly sealed to prevent leakage and drying of the sample. Another type of container is a screw-capped, heavy glass container, such as a Universal bottle. This type of container can be used again after it is disinfected in an autoclave for 30 minutes at 121°C and cleaned carefully. On the side of the container write your centre identification number or code, the TB suspect or patient's name or identification number. Do not write this information on the lid, but on the side of the container.

The number and timing of sputum specimen collection

To ensure the best detection of the TB germ in sputum, collect and process **at least two** sputum specimens. *Insert the country's national tuberculosis programme's specific guidelines here.*

- For outpatients, collect one sample when the person first visits your centre with signs or symptoms of illness. This is known as the "spot" specimen.

- Give the patient a second sputum container for collection the next morning at home. This "early morning" specimen should be collected by the patient as soon as they wake up. Tell the patient to bring the morning specimen to the lab the same day they collect it. Early morning specimens have the highest yield of AFB. If the patient cannot return the next day, collect the second specimen during the patient first visit.

- If a third specimen is to be collected, it should be done as a spot specimen when the patient delivers their early morning specimen.

Explain to each TB patient:

- the importance of checking sputum to diagnose TB or to follow-up on treatment;

- how to open and close the containers;

- how to produce good sputum: breathing in deeply and breathing out, followed by cough from as deep inside the chest as possible - it is important to collect sputum and not saliva;

- how to keep the outside of the container clean: carefully spitting sputum in the container and then closing it;

- the importance of collecting the sputum sample outside in the open air or in a well-ventilated, private place;

- how to collect and safely deliver the morning sputum to the centre lab;

- the need to collect at least two samples to obtain a correct diagnosis.

When the TB suspect returns with the sputum sample, take a good look at it. A good specimen should be about 3–5 ml. If there is not enough sputum, ask the TB suspect to add some more. It is usually thick and mucoid (like mucus). It may be fluid and contain pieces of purulent (pus) material. Colour varies from opaque white to green. Bloody specimens will appear reddish or brown. Clear saliva or nasal discharge is not a good TB specimen.

- When the second (or third) sample is collected, inform the patient when to come back for results.

- Check that the lid is tight, put each sputum container in its own plastic bag or wrap it in newspaper.

- Store the sample in a cool place.

- Wash your hands.

- Complete the Request for Sputum Smear Microscopy Examination form (see Annex).

Sputum collection for follow-up of treatment

For patients on treatment, collect follow-up specimens at intervals specified by the national tuberculosis programme (NTP). This usually includes one sputum collection at the end of the intensive phase of treatment, one during the continuation phase, and one at the end of treatment. Early morning sputum is the best specimen.

Safety precautions during sputum specimen collection

TB suspects should be identified early in triage and then sent directly for sputum collection in a well ventilated area. Lab staff are at particularly high risk of contracting TB.

■ Never collect sputum in the lab, waiting area, toilets, or reception area.

■ All lab staff should be trained in TB infection control – see chapter 5 Infrastructure chapter.

You can take some simple steps to lower TB risk at your centre:

STEP 1: You and other centre staff must tell patients to cover their mouths when coughing before teaching them how to produce sputum.

STEP 2: Have them collect a sputum specimen outside to allow aerosols to be diluted and exposed to the ultraviolet radiation of direct sunlight. Sputum collection involves the greatest risk of infection to lab staff as well as other patients, and must be done in the open air and away from other people.

Storage and transport of sputum specimens

After specimen collection, make sure that the container lid is closed tight and store all the sputum specimens in a cool, dry place. If your centre does not offer sputum smear microscopy, all the sputum specimens should be sent to the district hospital lab as soon as is possible depending on your shipping arrangements. Each sputum specimen should be kept in a separate plastic bag or wrapped in newspaper. You should include a Request for Sputum Smear Microscopy Examination form (see Annex 8.3) for each specimen and a list of all the specimens contained in the transport box.

Before you deliver the specimens to the district hospital lab, make sure that:
- The total number of sputum containers in the box corresponds to your list and the Request for Sputum Smear Microscopy Examination forms.

- The identification number on each sputum container corresponds to that on the accompanying list and to the Request for Sputum Smear Microscopy Examination forms.

- The accompanying Request for Sputum Smear Microscopy Examination forms contain the requested information for each of the TB suspects.

- Date the list of specimens.

- Put the list and Request for Sputum Smear Microscopy Examination forms in an envelope which will be attached to the outside of the transport box.

- If screw-capped heavy glass containers are used for sputum collection, use custom-made boxes made of metal, wood, or styrofoam to send them. These are built to keep the containers from breaking when you send them.

- Sputum specimens should be delivered to the district hospital lab within three-four days of collection. If possible specimens should be refrigerated, before you deliver them. Contaminating bacteria do not affect the acid-fastness of mycobacteria, but may make the sputum more liquid, making smear preparation difficult and reading of slides unreliable.

Sputum collection for culture and drug susceptibility testing

Sputum that is sent to a district hospital lab for culture and drug susceptibility testing should be packed correctly, refrigerated if possible, and sent to the lab immediately. Be careful and follow the safety tips when packing and delivering specimens to the district hospital lab as they may contain drug-resistant TB.

SMEAR PREPARATION AND STAINING

The quality of work in AFB diagnostic microscopy depends on a number of factors. These include specimen collection, the quality of reagents, the staining technique, the reading of the smear, the reporting and recording of results, and the training of the technician. However, collecting a good quality specimen and obtaining a good smear are critical, since the quality of the rest of the procedure depends upon these two factors. Smear preparation must be done carefully and with attention to detail.

Preparing sputum smears

- Numbering the slides

    - Select new, clean, grease-free, unscratched slides that have no fingerprints on them.

    - Using a pencil, record the patient identification number in the lab register and order number of the sputum specimen on the frosted end of the slide. If plain unfrosted slides need to be used, labelling is best done using a diamond pencil.

    - Ensure that the number on each slide corresponds to the number on the specimen container.

- Sputum smearing

STEP 1: Using the end of an applicator stick or wire loop, select and pick up sputum.

STEP 2: Prepare the smear in an oval shape in the centre of the slide. The smear size should be 2–3 cm in length and 1–2 cm wide, which will allow 100–150 fields to be counted in one smear length.

STEP 3: For good spreading of sputum, firmly press the stick perpendicular to the slide, and move in small concentric circles or coil-like patterns.

STEP 4: Throw away the used stick in a trash container with a disinfectant. Also be sure to:

- Use a new stick for each specimen.

- If a wire loop is used instead of a broken stick, dip the wire loop in a sand-alcohol bottle. Remove the excess sputum from the wire loop by moving it up and down. After each smear is completed, heat the wire loop in a flame until red-hot.

- Thorough spreading of the sputum is very important; it should be not too thick or too thin. Prior to staining, hold the smear about 4-5 cm over a piece of printed paper. If letters cannot be read, it is too thick.

- Air drying of smear

  - Allow the smear to air dry completely at room temperature, and do not dry smears in direct sunlight or over a flame.

- Heat fix smear

  - After the slide is completely dry, use forceps to hold the slide upwards and pass it over the flame two–three times for about two–three seconds each time. Do not heat the slide for too long or keep it stationary over the flame, or else the slide will be scorched. Allow the smear to air dry completely at room temperature, and do not dry smears

Staining with Ziehl-Neelsen carbol fuchsin solution - on AFB smear training (see the job aid below)

STEP 1: Arrange the slides in serial order on the staining bridge, with the smear side up.

STEP 2: Flood the slides completely with filtered carbol fuchsin stain (consider substituting 1% basic fuchsin stain).

STEP 3: Gently heat for five to 10 minutes or more (as long as the stain does not dry on the smear).

STEP 4: Rinse with water (preferable distilled water since tap water may contain environmental mycobacteria) and drain.

STEP 5: Put on decolourizing solution for three minutes (25% sulphuric acid or acid alcohol (more costly)).

STEP 6: Rinse with water and drain.

STEP 7: Put on 0.1% methylene blue counter stain for NOT MORE THAN one minute

STEP 8: Rinse slides with water and drain (rinsing water must be clean, and, if re-staining is required for quality assessment the water must be as free of environmental mycobacteria as possible). Use clean water from a beaker that can be thoroughly cleaned.

STEP 9: Air dry the slides on a slide rack.

Evaluating smears

Spend time looking at good and bad smears. Bad smears can lead to false results. A good stained smear using ZN shows strong red AFB against a weak blue background.

See the bench aid for quality issues of AFB smear preparation and staining techniques

Report qualitative and semi-quantitative results

The information on the number of bacilli found is very important because it relates to how infected the patient is, as well as to the severity of the infection. For this reason, the report of the results of sputum smear microscopy must be not only qualitative (whether AFB are present or not), but also semi-quantitative (give some indication of the number of AFB present). You should take at least five minutes to read 100 fields (10 minutes is optimal).

International Union Against Tuberculosis and Lung Disease (IUATLD - recommended grading (AFB per field)

AFB count:	Recording/reporting:
No AFB in at least 100 fields*	0/negative
1 to 9 AFB per 100 fields†	Specify the actual number of AFB per 100 fields†
10 to 99 AFB per 100 fields‡	+
1 to 10 AFB per field in at least 50 fields†	++
>10 AFB per field in at least 20 fields‡	+++

* A finding of 1 to 3 bacilli in 100 fields does not correlate well with culture positivity. The interpretation of the significance of this result should be left to the NTP and not to the microscopist. It is recommended that a new smear be prepared from the same sputum specimen and be re-examined.
† The reporting of actual AFB counts is recommended to allow a competent authority to determine whether the number fits the TB case definition of the NTP.
‡ In practise most microscopists read a few fields and confirm the finding by a quick visual scan of the remaining fields.

Specific quality assurance issues

Internal quality assurance: checking quality of the stain

■ Check the quality of your stain by staining one positive sputum smear and assessing the quality of slide.

- Do this on each day that you do the test.

- Prepare extra slides of positive slides periodically to use for this purpose.

Quality control

- Use external quality control specimen (smears from both positives and negatives).

- Store these controls appropriately.

- Your standardized lab logbook should contain space for recording QC results, These should then be transferred to a QC logbook for quick review of data.

External quality assessment. (EQA)

- Proficiency testing

  - Periodically, you will receive a panel of slides to assess how well you are reading and counting. This will usually be a minimum of 20 slides, including negative slides, positive slides, and slides with different counts. A combination of stained and unstained slides will allow the testing of staining capability. The panel of slides will come from the district hospital lab or national reference lab. You will test the panel of specimens and report the results. Your performance on testing this panel will be compared to that of other testing sites, and you will receive feedback on how well you are doing the test.

- Slide validation at a higher level by random rechecking

  - If your national TB programme uses this quality assessment method, save your positive slides and some of your negative slides as instructed.

  - Store these in secure slide boxes protected from excess heat and/or humidity.

  - When asked send these to be blindly rechecked by a higher level lab.

AFB SMEAR STAINING

1

$120 - 1$

Always use new, grease free, and clean slides. Correctly label slides with stylus or lead pencil.

2

Fish out yellowish portion from sputum container and place on slide with the rough end of the stick.

3

Spread material evenly in an approximate area of 2cm X 1cm so that news print is readable on drying.

4

Air dry smear completely and then heat fix smear in a flame.

5

Place slides on the staining rack without touching each other. Always add Positive and Negative control slides.

6

Cover slides with freshly filtered carbol fuchsin.

7

Heat gently with a torch until steam rises from the slides. Stain for five minutes.

8

Wash gently with water.

9

Drain the water.

10

Cover slides with decolorizing solution for three minutes.

11

Wash throughly with water. If slide is not decolorized properly repeat step 10 for additional 1-3 minutes. Rinse throughly with water.

12

Drain the water.

13

Cover with counter stain Methylene blue for one minute.

14

Drain the counter stain.

15

Wash with water. Wipe the back side of slides with tissue paper.

16

Air dry the slides in a rack.

17

View the smear under oil immersion. AFB: Fine, red rods against blue background.

18

AFB Counts	Recording/Reporting
No AFB in at least 100 fields	0/negative
1 to 9 AFB in 100 fields	Actual AFB count
10 to 99 AFB in 100 fields	+
1 to 10 AFB per field in at least 50 fields	+ +
>10 AFB per field in at least 20 fields	+ + +

Report the findings as per WHO and IUATLD recommendations.

Joint effort of: IUATLD; WHO; CDC; RIT.

8.17   CD4: BLOOD COLLECTION AND SEND-OUT

Blood Collection

- Label the tube correctly with the date of birth (DOB).

- Collect in a vacuum tube containing spray coated K2 ethylenediamine tetraacetic acid (EDTA–an anticoagulant and preservative plastic) or K3 EDTA (glass) or a CD4 stabilization tube (if the time to testing will be >72 hours).

- Draw this specimen last if drawing multiple tubes. Fill the tube until no additional blood can be drawn in.

- Use paediatric tubes for collecting specimens from infants and young children.

- Mix the tube well right after collection to stop blood clots from forming.

- Keep the tube at room temperature (20-25°C) until it is transported to the testing lab.

Shipment
Set up a schedule with the district lab staff on how and when you can send these specimens to the district hospital lab. Remember that testing should be done within 48 hours (preferred), but no later than 72 hours after drawing. Transport the specimen to the testing lab at room temperature (20-25ºC).

- See Annex for CD4 Request Form and CD4 logbook

Specific quality assurance issues

Standard operating procedures

- Have concise, clear standard operating procedures (SOPs) in your local language or for those trained to collect and ship CD4 specimens, and interpretation of overall testing results and reporting, etc.

8.18 FULL BLOOD COUNT AND DIFFERENTIAL: BLOOD COLLECTION AND SEND-OUT

See section - on CD4 above.
Testing should be done within 48 hours of collection.

8.19 SPECIMEN TRANSPORT

How to pack and send specimens
Specimens tested at a higher level lab need to be sent in a way that protects them from high or low temperatures and/or humidity. They should be packed to protect both the specimens and the people transporting them. (See SOP, and instructions for specimen transport below.)

Specimen collection and referral for testing off-site
The dried blood spots (DBS) for infant diagnosis, whole blood CD4 counts, full blood counts and differentials, and TB sputum specimens usually need to be sent out for testing.

Specimens should be collected and sent to the district hospital lab on certain days of the week; post a list of dates at your centre. Some specimens can be collected daily and then sent together to the district hospital lab days later. Other specimens need to be collected and brought to the lab on the same day. For specimens that need to be taken to the lab immediately patients should be scheduled to give specimens on the same day of the week that specimens are delivered to the district hospital lab. Scheduling specimen shipments helps reduce the costs and prevents the district hospital lab from receiving too many specimens on any given day.

Complete the table on p.220 with your centre's information on "Days for collection" and "Days to send and how." Remember that, in some cases, patients may need to be sent to the district hospital lab for testing.

MANAGEMENT OF SPECIMENS FOR CD4 AND HAEMATOLOGY – REFERRAL TESTING

Purpose
To provide steps to ensure that samples for transport are packaged appropriately to maintain specimen identification, integrity, and biosafety standards.

General

▪ Special care must be taken to protect samples from the effects of extreme temperatures and fluctuations.

▪ Packaging of specimens for shipment must be designed to minimize breakage.

▪ Rough handling of blood specimens may cause haemolysis and compromise test results.

▪ Transfer of specimens to the laboratory should occur within as short a time period as possible.

Biosafety

▪ Wear gloves and lab coat when handling specimens.

Specimen identification and labelling

▪ All specimens sent to a laboratory should be identified with the following:

▪ Patient's first and last name (may be excluded in some cases where protecting the patient's privacy is a concern)

▪ Patient's medical record or other identification number

▪ Patient's date of birth if known

▪ Date and time of collection

▪ Collector's initials

Requisition forms (see samples in Annex 8

- Information that is identical to that on the sample tube should be on the requisition form. In addition, other information should be included on the form, such as:

    - Requesting physician or other clinical staff's name

    - Centre name

    - Type of specimen

    - Specific tests being requested.

Keep shipping documents separate from the inner box containing the specimens in case of leaks from breakage or spills

Primary containers

- EDTA anticoagulated specimens drawn for haematology and CD4 testing should never be centrifuged.

- If smears are to be included as part of the requested testing, two unstained whole blood smears should be prepared within one hour of sample collection.

Requirements for specimens to be shipped to another lab						
			Optimal time to be tested		Health centre to fill in	
Test	Specimen	Optimal temperature		Packing requirements	Collection days	Sending days /procedures
CD4 count and/or percentage	1 mL EDTA whole blood or CD4 stabilization tube, minimum of 250µL-500µL (paediatric sample)	20-25°C	0-48-72 hours (using flow cytometry	Maintain a temperature of 20-25°C		
TB sputum		4°C	0-4 days			
DBS for infant diagnosis	Dried whole blood spots	Dried whole blood spots	0-4 weeks	Pack in an airtight ziplock bag with desiccant (silica sachet) and humidity indicator card		
Full blood count and differential	1 mL EDTA whole blood, minimum of 250µL-500µL (paediatric sample)	20-25°C	0-24-48 hours*			
Full blood count and differential	1 mL EDTA whole blood, minimum of 250µL-500µL (paediatric sample)	20-25°C	0-24-48 hours*			

*Dependent on the haematology instrument used.

Outer Shipping Container

Materials

1. **Figure- 1: Transport Container Option A**
   - Recycled Styrofoam or molded foam lined corrugated cardboard box

2. **Figure- 2: Transport Container Option B**
   - Plastic picnic type cooler

3. **Figure- 3: Transport Container Option C**
   - In-house made insulated transport container
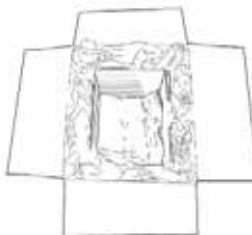
The foam lined outer shipping container used for option A above can be obtained by recycling various transport boxes used by commercial suppliers to ship refrigerated or frozen items. These containers generally provide a high degree of insulating capability and are usually the best choice of the three listed options

4. **Figure-4:**
   - Hard plastic containers filled with water and frozen ("ice packs"), or 8-10 lbs cubed melting wet ice in plastic bags to cover the bottom of the box.

5. **Figure- 5:**
   - Styrofoam sheets, soft foam, or newspapers.

6. **Figure- 6:**
   - Thick gauge sealed plastic bags (e.g., 6 mil polypropylene bags) approx 8 X 8" filled with water

The thick gauge sealed plastic bags, or unused blood collection bags from blood banks are examples of other items that can be filled with water and frozen and used as ice packs in place of the hard plastic containers. Likewise, these can be filled with room temperature water and used for room temperature transport of specimens as described below. These bags can be used repeatedly once they are made.

7. Thin gauge (e.g., 0.5 mil or thicker) plastic garbage type bags
8. Absorbant material such as paper towels.
9. **Figure- 7:**
   - Perforated cardboard tray
10. **Figure- 8:**
    - Internal bin box
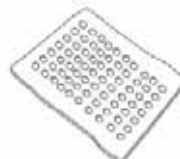
Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure8

Assembly of In-house
Made Shipping Container

1. Obtain a medium sized sturdy corrugated
   cardboard box (e.g., approximately 16"L X 14"W X
   13" D or 41cm X 36cm X 33cm)

2. **Figure- 9:**
   - Find or make an appropriately sized inner
     box, or "bin" box (e.g., approximately 12"L
     X 10"W X 11" D or 31cm X 25cm X 28cm).
     Insert the bin box inside the outer
     cardboard box, so that a rectangular
     channel approximately 1.5 " (4cm) wide or
     wider is formed between the two boxes.
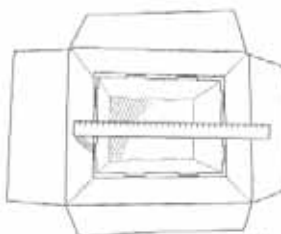
Figure 9

3. **Fill the channel between the boxes with:**
   a) Styrofoam sheets cut to fit (preferred choice)
   b) Soft foam (second choice)
   c) Crumpled newspaper. (third choice)

4. **Figure-10:**
   - If using newspaper, ensure that the
     crumpled paper completely fills the channel,
     but is not packed too tightly. The idea is to
     pack the newspaper firmly but to allow air cavities
     within the channel to allow for better insulation
     capabilities.
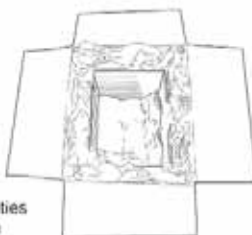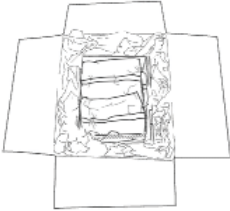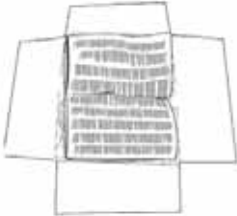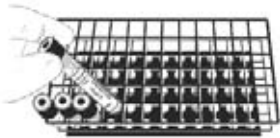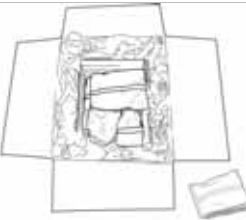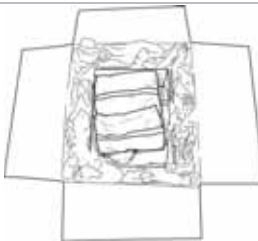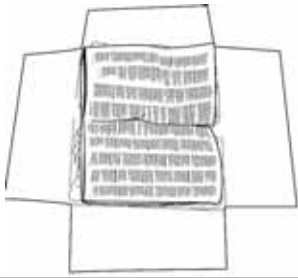
Figure 10

5. **Figure- 10:**
   - Cover the bottom of the bin box with approximately
     2" (5cm) of newspaper.

Packing CD4 and haematology specimens for room temperature (20-25°C) transport

Obtain transport container Option A, Option B, or Option C	
Figure 21 Place 4-6 thick gauge sealed plastic bags, or unused blood collection bags filled with water that has been allowed to stabilize to 20-25°C inside the bottom of the container. The water-filled bags will serve as a heat sink to help stabilize the interior temperature of the container to the desired 20-25°C	Figure 21
If the ambient temperature is > 25°C, then it is desirable to have the temperature of the water filled bags closer to 20°C; if the ambient temperature is below 20°C, then it is desirable that they closer to 25°C.	
Figure 22 If an insulated cover is available, use this to close off the interior of the container; alternatively, insert a large foam plug, or lay newspaper on top of the interior of the box to form an insulating barrier.	Figure 22
Allow the interior of the container to cool for approximately 30 minutes	
Place the rack in two plastic bags; one inside the other. Lay sufficient paper towels over the top of the tubes to absorb potential spills. Secure the double bags around the rack and tie securely. Figures 23 & 24	Figure 23
	Figure 24

Figures 25 & 26: Open lid of transport container, and remove the insulated cover (if available), foam plug or newspaper. Remove half of the water-filled bags from the interior of the container Insert bagged samples into container on top of the water-filled bags.	Figure 25 Figure 26
Figures 27 & 28: Replace the remaining water-filled bags in a way that ensures that they surround the bagged samples. This insulates the specimens and keeps them in the interior of the container to secure them for transport. Place requisition slips and any other shipping documents in a sealed plastic bag, and place this into the container.	Figure 27 Figures 28
Figure 29: Insert the foam plug or enough newspapers to form an insulating barrier. Top off interior of box with an insulated cover (if available), or additional newspapers for added insulation. Close the outer container.	Figures 29

Packing CD4 and Hematology Specimens for Room Temperature (20-25°C) Transport

1. Obtain transport container Option A, Option B, or Option C

2. Figure- 20:

   - Place 4-6 thick gauge sealed plastic bags, or unused blood collection bags filled with water that has been allowed to stabilize to 20-25°C inside the bottom of the container. The water filled bags will serve as a heat sink to help stabilize the interior temperature of the container to the desired 20-25°C
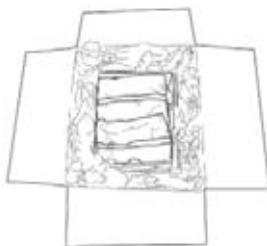
Figure 20

3. If the ambient temperature is > 25°C, then it is desirable to have the temperature of the water filled bags closer to 20°C; If the ambient temperature is below 20°C, then it is desirable that they are closer to 25°C.

4. Figure- 13:

   - If an insulated cover is available, use this to close off the interior of the container; alternatively, insert a large foam plug or lay newspaper on top of the interior of the box to form an insulating barrier.
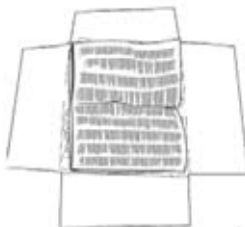
Figure 13

5. Allow the interior of the container to cool for approximately 30 minutes

6. Figures 21 & 16:

   - Place sample tubes to be shipped in a test tube rack. Double bag the rack containing the test tubes with plastic garbage type bags, and lay sufficient paper towels over the top of the tubes to absorb potential spills. Secure the double bags around the rack containing the specimens, and tie off.
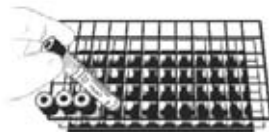
Figure 21

Figure 16

8. **Figure- 16-18:**

- Insert bagged samples into container on top of cardboard tray. Wedge firmly with soft foam, bubble plastic, or newspapers to secure contents during transport.

Figure 16

Figure 17

9. Place requisition slips and any other shipping documents in a sealed plastic bag, and place into the container.

Figure 18

10. **Figure- 13 and 19:**

Insert foam plug or enough newspapers to form an insulating barrier. Top off interior of box with insulated cover (if available), or additional newspapers for added insulation. Close outer container.

Figure 13
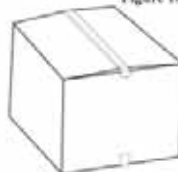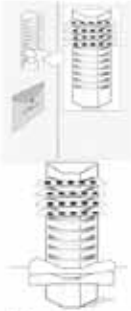
Figure 19

Drying and Packaging Dried Blood Spot (DBS) Samples

1. Leave DBS on a drying rack in a clean, dry, protected area for at least 4 hours or overnight. Keep lab request forms with DBS cards.

2. Wrap the individual DBS card with a glassine paper so that DBS cards will not have direct contact with each other. Insert up to 10 wrapped cards into a special sealable plastic bag.

3. Add 10 desiccant packets to each bag.

4. Add at least one humidity card per bag. Gently press the bag to remove most of the air before sealing.

5. Use the specimen delivery checklist to check if you have a lab form for each DBS.
   - Place the bag of DBS, all the DBS DNA PCR lab forms and the specimen delivery checklist into a large envelope.
   - Label the envelope with:
     - Name of collection site (clinic)
     - Name of person delivering specimen
     - Date you are sending samples
   - Place the envelope in designated area to be picked up for the laboratory.

8.20 HOW TO SET UP A LAB

Any lab that does clinical testing needs a certain amount of space. Your lab space should be at least three meters by three meters (nine square meters). This does not include space for urine collection and TB sputum collection (both should be located outside of the lab). See the table below to create a lab space.

Minimum amount of lab space required			
Function of area	**Technique**	**Space and other requirements**	**Suggested minimum Size**
Blood collection	Phlebotomy	Chair for patient; chair/stool for phlebotomist; table for phlebotomy supplies and sharps container	2 m x 2 m (best if outside the lab area)
	Finger or heel prick	Chair for patient and parent (if applicable) and small table for supplies and sharps container	2 m x 2 m (best if outside the lab area)
Urine collection	Self collection	Private area with: toilet and hand-washing facilities, supply of collection cups, pictorial instructions	2 m x 2 m
Sputum collection for TB	Self collection	Ideally, to be done in the open air away from other individuals; Supply of sputum cups with labels; pictorial instructions on procedures. Another option: a private area with good ventilation away from other people (never in a toilet or other enclosed area).	1 ½ m x 1 ½ m
Specimen labelling, preparation, results		Space and materials for labelling blood collection tubes and filter papers for dried blood spots (DBS); space to pack specimens and make shipping lists; space for registers to log specimens sent and to report results (should be kept locked for privacy).	1 ½ m x 1 ½ m

Analysis of specimens process onsite		A sink or a system to throw away waste water; clean water supply; a place to wash hands; good lighting at all times (including cloudy weather). If you have a microscope, you need electricity for the light source (can be from a battery).	A minimum of 1 meter of stable working surface for: -each staff person working in the lab - for each item of equipment (microscope, haemoglobinometer) - for staining (this can be a sink area).
Store (storage area)		Storage of reagents and supplies should be kept locked for security.	2 m x 1m x ½ m (may be part of pharmacy stores)

SAMPLE PLAN OF LAB SPACE
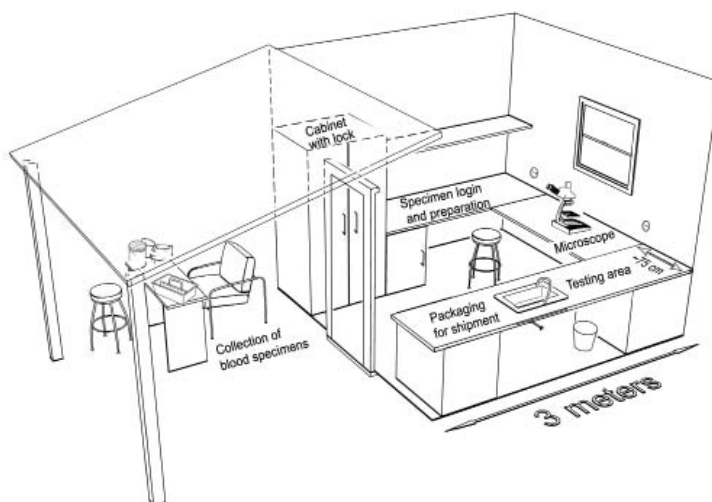
8.21 HUMAN RESOURCES

Your centre staff will do their own lab testing and also prepare specimens to send out to the district hospital lab for testing.

Lab testing done by lab staff (centre staff who are trained to do lab work, testing, and specimen collection) requires supervision and training in quality assurance. Lab staff will need training in how to do all of the tests correctly, while monitoring the testing results and direct observation by a knowledgeable person is also necessary. Lab staff from a larger centre lab or a district hospital lab may be a source for this supervision. Supervision should be done in a supportive manner, and viewed as an opportunity to promote good lab practises.

Lab testing at your centre using simple tests can be done by a nurse, a staff person, by a person living with HIV (PLHIV) who is also a centre staff member, or other person trained to do tests. Some tests that are more complex or require more experience to be done correctly (such as TB or malaria smear microscopy), may need staff with special training. In a large centre, it is best to assign specific staff to work in the lab and to do all the testing.

You also need to make sure that you have plans for initial training and certification of centre staff, ongoing training, supervision, job progression, and incentives for retention. – (see also Chapter 9).

8.22 EQUIPMENT MAINTENANCE

Microscope

A microscope that functions very well is necessary for quality TB smear or malaria microscopy. Proper handling and maintenance of the microscope is essential to prolong its useful life. The following points should be observed:

- Use a high-quality microscope with an electric light source (if electricity is available). Microscope mirrors for use with daylight to provide lighting may still be needed, even if electricity is available part of the time.

- Binocular microscopes (with two ocular lenses) are best, but monocular microscopes (with only one ocular lens) will work fine if you have very few smears to read.

- Store the microscope in a dry, dust free place where it will not be shaken or moved when you are not using it. Ensure that all openings meant to hold objective lenses or eyepieces are closed (with a lens cap, a plastic plug, or a piece of tape). In dry countries, store the microscope under a dust cover or in its special carrying box when you are not using it.

- If theft is a problem, keep the microscope in a strong cupboard with a lock.

- In humid climates, dry the lenses daily. You can do this at night by mounting a 20-40 Watt bulb in the cupboard or compartment where the microscope is kept. You should put a few small holes near the bottom of the compartment and put others diagonally opposite at the top to allow air to circulate. Do not use the dust cover in this case. If you do not have electricity at night, you will need to use silica gel or some other drying agent. You should keep the microscope in as small and enclosed space as possible. This can be its box or under a well-sealed cover. Put a small amount of the gel in an open container on the stage of the microscope before putting it away. Usually the silica gel will be saturated after only one night. You have to replace the silica gel daily. You can regenerate the gel by heating it in an oven or pan.

- Avoid exposing the microscope to direct sunlight, moisture, and humidity.

- Clean the microscope with lens paper before and after use. Gently wipe the objective at the end of each reading session with soft tissue paper or lens

cleaning paper to remove excess oil. For a more thorough cleaning, use manufacturer-recommended fluids or a mixture of ethyl ether and alcohol (80/20). Never use xylene to clean any part of the microscope.

- Wipe the surface of the oil immersion lens with a piece of clean cotton before and after use. Do not use alcohol for cleaning lenses.

- For oil immersion lens, use a non-drying synthetic oil of medium viscosity (refractive index > 1.5) to ensure long life for the objective lens. Do not use cedar wood or xylene-diluted oils.

- Never touch the oil immersion lens to the smear.

- Use the fine focusing knob only while using the oil immersion lens.

- Keep at least one spare bulb at your centre. Other spare parts are kept at the higher level lab.

- Keep a record of any maintenance that you do on your microscope in a maintenance log.

- Microscope troubleshooting: If you have a loose stage or stage-clamp, follow manufacturer's directions to fix it or contact higher level lab staff for advice.

If the view is dark or unclear: A clear view can be obtained while the light is good and all parts are properly adjusted. Inspect the eyepiece tube(s) for dirt and/or fungus. Take the 100X objective and the eyepieces off. Align the empty objective opening over the lighted field. Look down the tube and check the prisms inside the tube for fungal masses or filaments or other dirt. If these are absolutely clean, inspect the objective and eyepieces by holding them reversed and against the light. If nothing is obvious, reinsert the objective and look down the tube again. This may show more clearly any dirt in it. Clean away any external dirt with a microscope cleaning solution.

8.23. TRAINING MATERIALS

This listing is primarily of WHO developed or adapted training materials. Additional materials will also be available.

- World Health Organization. HIV RAPID TESTING: training package. World Health Organization, 2005. Contact: Dr. G. Vercauteren, Essential Health Technologies – WHO – 20, Avenue Appia – 1211 Geneva 27 – Switzerland.

- World Health Organization, Acid-Fast Direct Smear Microscopy: training package. Geneva, World Health Organization, 2006.

- How to use a malaria rapid diagnostic test (RDT): A guide for training CHWs and other health workers. 2006. The Quality Assurance Project (QAP) and the World Health Organization (WHO), Bethesda, MD, and Geneva.

- World Health Organization. Basic Malaria Microscopy. Part 1: learner's guide; Part 2: tutor's guide. Geneva, World Health Organization, 1991.

- World Health Organization. Guidelines for Assuring Accuracy and Reliability of Rapid HIV testing. Applying a Quality System Approach. WHO 2005.

CHAPTER 9
HUMAN RESOURCES

INTRODUCTION

This chapter discusses key requirements for planning and managing human resources at a primary health centre. Human resources are the essential ingredient for all care delivery. Whether you are delivering basic primary care or HIV prevention, care, and treatment services; your health centre needs an adequate supply of trained and motivated staff to provide quality services.

Managing human resources is a complex task that requires national level policy and planning for long-term sustainable impact. This chapter will outline steps that staff of a primary health centre can take to help:

■ ensure an adequate number of staff

■ make task-shifting effective

■ make sure staff have appropriate training

■ ensure supportive supervision and mentorship

■ improve staff motivation and retention

■ establish a safe workplace

The chapter targets the "in-charge" provider. This person can be the head HIV clinical provider, the nurse in-charge, or another person on the health centre team who is responsible for overseeing and managing the centre. This person will be responsible for most of the human resource activities described in this chapter. In most primary health centres, this person is the senior nurse. However, the chapter is designed to be helpful to all levels of staff.

9.1. HOW TO HELP ENSURE AN ADEQUATE NUMBER OF STAFF

Generally, recruitment and hiring are carried out by the district health office, not the health centre. However, there are steps you as the in-charge provider can take to improve your chances of receiving the number of staff you need at your health centre. These include:

1. Contact your district health office to learn the positions (number and cadre) assigned to your health centre
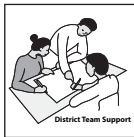
■ How does the number and cadre of positions actually assigned compare with recommended staffing (see next page)?

■ Are any assigned positions unfilled at your health centre? If so, how many?

■ Which positions are vacant, and for how long have they been vacant?

The chart below presents the "basic" staffing recommended by your ministry of health.

"Basic" staffing refers to staff required to provide primary care services not including chronic HIV care for PLHIV, and is based on the population served. Fill any vacant "basic staffing" positions first.

Recommended "basic" staffing for primary health centres (1)		
Small health centre (catchment population of 3,000-7,000 people)	Clinical staff • One clinical assistant • Two nurses; one nurse/midwife (N/M) and one emergency nurse • One nurse assistant	Support staff • One cleaner • One watchman
Large health centre (catchment population of 7,000-20,000)	Clinical staff • One clinical officer • One clinical assistant • Five nurses - one registered N/M, two EN/M, two EN • Two nurse assistants • One pharmacy technician/assistant • One laboratory technician/assistant	Support staff • Two cleaners • One watchman

Adapt these staffing recommendations to your local situation. If you have a larger catchment population, add more staff. If you have an additional number of patients during some periods of the year, such as during malaria or harvest seasons, add more staff during these seasons, or make sure your staff does not take leave during these peak periods.

The chart below presents the "additional" staffing recommended by your ministry of health to provide HIV prevention, care, and treatment services at your health centre.

If you provide HIV services, you should add the "additional" staff below to your "basic" staffing above.

Recommended "additional" staff needed for HIV care and treatment (2)			
Small or large health centre	Number of HIV-positive patients per year	Clinical staff to be added	Support staff to be added
	One to 100 patients	• Zero to one	• One to two lay providers
	101-250 patients	• One additional clinical provider	• One clerk/triage officer • Two lay providers
	251-500 patients	• One to two additional clinical providers	• One clerk/triage officer • Three lay providers
	500-750 patients	• Two additional clinical providers	• One clerk/triage officer • Four lay providers

2. Locate job descriptions for each position assigned to your health centre

Job descriptions will help you determine the qualifications and positions for staff you wish to recruit to your health centre. These job descriptions are usually standardized across health facilities, and should be on file at your health centre or at your district health office. Once staff are hired, job descriptions can be used to help assess employee performance.

3. Learn how the local hiring process works

Hiring is usually carried out by the district health office, but you can increase your odds of obtaining the staff you need by: being informed about the hiring procedures that apply to your health centre, advocating for your team, and pursuing alternative hiring procedures when needed. For example, you may need to send an official request to the head of your district health services, who will approach the district personnel office to create a position or fill the vacancy. In some cases, the recruitment has to go via district authorities to the ministry of health and ministry of public service. Once the position and its budget have been approved, the district service commission or an equivalent body can advertise it, form a selection committee, and recruit candidates.

4. Try to ensure that you are on the selection committee

Being on the selection committee gives you a chance to help choose who will be hired at your health centre. Contact your district health office to make this request.

5. Communicate regularly with the local recruiting authorities

Keep in contact with people in the personnel office at your district health office so that you know of upcoming changes that could affect staffing of positions at your health centre. Keep these people informed of your staffing needs, using the information you gathered, and citing the vacancies that exist and the recommended staffing tables above to justify your need for additional staff.

6. Be persistent!

If budget ceilings or other limitations prevent you from hiring staff:

■ Ask to hire staff on temporary contracts.

■ Try alternative procedures. Contact local NGOs and donors to ask if they can hire and pay the salaries for new staff at your health centre.

■ Recruit volunteers. Make sure you develop good relations with local communities and community groups so you can recruit volunteers in times of high workload (see below).

7. Recruit lay providers for your health centre team, including PLHIV

Recruiting lay providers can help increase the number of staff at your health centre. Lay providers are non-professional workers who can serve as counsellors, triage officers, data clerks, community health workers, nursing, laboratory and pharmacy assistants, and more. Depending on their training and experience, lay providers can work in non-clinical and clinical roles as paid staff or volunteers. See examples of how to include lay providers in the health centre team at the end of this section.

You should encourage people living with HIV (PLHIV) to apply for lay provider positions because they bring unique skills to your team. PLHIV have personal experience with the disease, and can help other patients to understand and use the health system, address personal and family issues (such as stigma and HIV disclosure), and manage treatment and its side-effects. Indeed, PLHIV are valued members who can occupy all levels in the health centre team, from medical officer to lay provider.

In order to encourage the participation of lay providers, including PLHIV, at health centres you can:

Reach out to community groups in your catchment area

Talk with community leaders and associations – such as PLHIV support groups – to identify the roles and positions at your health centre that could be filled by lay providers, including PLHIV.

Identify the tasks that could be performed by lay providers

Lay providers can perform a range of tasks including helping with triage, taking patients' vital signs and pulling their charts, data keeping, treatment adherence counselling, treatment literacy and education. They can also do pill counting and stock management, track patients who are lost to follow-up, community outreach, home-based care and follow-up, manage PLHIV support groups, handle counselling (such as for people who are HIV-positive and their partners), basic laboratory testing, and more.

Decide how you will recruit and retain lay providers

You can recruit lay providers to your health centre team as full- or part-time staff. Whenever possible, they should be paid. If payment is not possible, provide other incentives such meals, gifts, waived medical fees for them and their children, or invitations to training and events. Paying for costs associated with the lay providers' work is also important. This can include paying their bus fares or buying/lending them a bicycle.

Providing opportunities for promotion can also help retain lay providers. An easy approach is to create "junior" and "senior" positions (such as junior and senior community outreach worker) with some difference in compensation and assigned tasks. If you do not provide incentives to your volunteers, they will likely leave in search of better opportunities. NGOs and FBOs can be approached for help in hiring lay providers.

Consider the qualifications and/or training needed for lay providers

Once you identify the tasks you wish the lay providers to perform, identify the training or qualifications they need to perform their roles. Contact your district health office or donors in your area to see the training available for lay providers (also see 'recommended training' in this chapter).

Hiring and orientation

Once you hire the lay provider, introduce him/her to the health centre team and provide an orientation to centre rules, procedures, physical layout and services. If possible, have the lay provider accompany another health worker to learn their tasks by watching first. Particularly in the first few weeks, you

should also follow-up closely with the lay provider to help answer any questions and resolve any problems.

Remember to involve lay providers in all activities of your health centre team!
Lay providers, including PLHIV, should be considered "part of the team"; they should attend the same staff meetings, be invited to staff get-togethers and activities, and have the same medical or other benefits whenever possible. Also, when you are conducting quality management activities, such as evaluations, be sure to include the feedback of lay providers, especially PLHIV. They have a unique and valuable perspective on how to improve the delivery of health services to HIV-positive patients.

Examples of including lay providers in the health centre team

- In Kenya, PLHIV are asked to visit the clinics and facilities where patients are referred for follow-up care. During these visits, the PLHIV gather information on the services provided (how, by whom and during which hours), in order to assess whether the services at these sites match what is described in the referral. In this way, lay providers help ensure that HIV-positive patients are receiving the quality referral care they need. These visits also allow lay providers to become familiar with the services provided so they are able to better advise HIV-positive patients on what to expect and how to best manage their treatment experience at clinics and other facilities.

- In some parts of South Africa, lay providers are recruited by the district health office to work as data-capturers and as lay counsellors at hospitals and health centres providing antiretroviral therapy. These lay providers are paid to work full-time. Data-capturers conduct tasks such as pulling charts, entering data into computer records, and producing reports on patient results for the district and provincial health offices. The lay counsellors perform HIV testing and counselling as well as valuable adherence counselling. The lay providers extend the capacity of the clinical team and free up the time of nurses who can then focus on seeing more patients.

- In many countries (including Rwanda and Senegal), "community case managers (CCMs)" travel to remote villages to provide home-based care to respond to early cases of pneumonia malaria, diarrhoea, and malnutrition among children. CCMs are trained and supervised by the health centre team. They provide assessment and classification of the child's condition, and use of oral rehydration solution, zinc, antibiotics, and antimalarials, as well as providing counselling. CCMs save lives by identifying and addressing potentially fatal conditions early, and by referring complicated cases to the health centre.

9.2. HOW TO HELP MAKE TASK SHIFTING EFFECTIVE

"Task shifting" is the reassignment of clinical and non-clinical tasks from one level or type of health worker to another so that health services can be provided more efficiently or effectively. For example, when medical officers are in short supply, many HIV-related services can be effectively shifted to non-physicians such as clinical officers and nurses, while maintaining quality. This increases accessibility of health services to the community. The diagram on pages 242-243 demonstrates the HIV-related clinic-based tasks that can be provided by clinical and non-clinical staff. Task shifting also can apply to laboratory functions, supply management, and pharmacy services.

HIV counselling and testing

In many countries, only nurses are permitted to carry out HIV counselling and testing. However, health centre nurses are generally very busy with clinical duties, and this limits the number of patients offered counselling and testing. This is very serious in high sero-prevalence settings when all patients should be offered HIV counselling and testing. If lay counsellors work under the supervision of a health centre nurse and with periodic mentoring from an experienced HIV district level counsellor, they can provide an inexpensive and effective solution to this human resource problem.

"Task shifting" is not new; historically many countries have created substitute cadres to take up the tasks of existing professionals when they have been in short supply. Task-shifting initiatives have increased in recent years, particularly in countries with high HIV prevalence rates. It is likely you will experience it at your health centre with expansion of the clinical team. Decisions on task-shifting policy are usually made nationally, but there are steps you can take to help ensure successful implementation at your health centre.

Make sure that lay providers taking on new tasks are closely supervised, mentored and supported by experienced health centre staff

For example, if lay providers are performing HIV counselling and testing, the health centre nurse needs to establish regular meeting times with them so she/he can observe, supervise, and act as a mentor to that person.

Identify the health centre provider's 'clinical back-up' at district level and make sure they have regular communications with this back-up staff

Health centre providers need district counterparts who will supervise and act as their mentors, and who will ensure that patients are being adequately referred to the district and are returning to the health centre for services. For example, nurses handling ART and follow-up need to have regular communications with the district medical officer or head clinician. This will ensure that referrals are made correctly for patients with complications and that consultations take place on challenging cases. "Back-up" at district level is also needed for laboratory, pharmacy, and supply management staff.

Establish a clinical "team-based approach" through regular clinical team meetings and good communications between staff

Conduct a weekly meeting of all staff at which you can openly discuss patient cases and issues that arise, and work together to solve problems. Encourage regular dialogue between staff about how to improve tasks to increase service efficiency and quality.

Establish regular performance measurements to assure adherence to clinical and other standards (see Quality Improvement chapter)

Implement strategies to motivate your staff and to prevent 'burnout'

When staff are required to take on new tasks in an already heavy workload, they can suffer increased anxiety, stress and burnout. Work together as a team to determine how you can keep each other motivated. Section 9.6 on 'employee motivation' provides some tips.

Task shifting can be a real asset to your health centre, but it takes teamwork, supervision and constant communication!

Sequence of care after positive HIV test

2 Education and support

- Give post-test, ongoing support.
- Discuss disclosure and partner testing.
- Explain treatment, follow-up care.
- Support chronic HIV care.
- Assess and support adherence to care, prophylaxis, ARV therapy

Education & Support Guidelines
(See Annex A)

1 Triage

- Patient returns for follow-up.
- Register.
- Interval history.

Patient continues with home-based care and treatment support.

Family and friends, peer support, community health workers, other community-based caregivers, traditional practitioners, CBOs/NGOs/FBOs, OVC projects.

11 Prevention for PLHIV's

- Prevention of HIV transmission:
  - Safer sex, condoms
  - Disclosure support
  - Partner testing
  - Risk reduction plan
  - Counsel discordant couples
  - Household and caregiver precautions
  - Reproductive choice, PMTCT, family planning
- Positive living.
- For IDU, harm reduction interventions.

Caregiver Booklet

Patient Self-management Booklet

Palliative Care: Symptom managment and end-of-life care

10 Arrange

- Dispense and record medications.
- Schedule follow-up.
- Link with community services.
- Record data on card.

From IMAI Chronic Care

3 Assess

- Do clinical review of symptoms and signs, medication use, side effects.
- Determine HIV clinical stage and functional status.
- Assess adherence to medications. (Use counsellor's assessment and your own.)

If health worker visit needed:

4 Assess family status including pregnancy, family planning, and HIV status of children

If pregnant

post partum

Antenatal, postpartum and newborn care with integrated PMTCT interventions

5 Review TB Status in all patients on each visit

TB Care with TB-HIV Co-management

Acute Care

6 Provide acute care using:

- IMAI *Acute Care* guideline module.
- IMCI Char*t Booklet for High HIV Settings* if age below 5 years.

For all, manage symptoms

7 Give prophylaxis if indicated

8 ARV therapy:

- Decide if eligible and where to initiate.
- Consult/refer to district clinician per guidelines.
- Do clinical monitoring of ARV therapy.
- Support adherence.

If severe illness

Consult or send to District Clinician if indicated

9 Manage chronic problems

9.3. HOW TO HELP MAKE SURE STAFF HAVE APPROPRIATE TRAINING

As the in-charge at a health facility, you play an important role in planning and tracking the training your staff receive. You should ensure that health centre staff have the right training at the right time to provide the quality basic services outlined in this manual. You also should ensure that training opportunities are provided fairly and do not interfere with service delivery. By helping your staff gain access to training opportunities in an equitable way, you also help promote their career development and improve motivation and morale.

Keep a training log
The in-charge should make sure a training log is created and updated for every training session that an employee receives. A log can take any form, but should include the **name and position of the staff** who received the training (e.g. nurse, pharmacist, etc.), name of the training course, the **provider of the training** (organization or government office) and the **date the course occurred**. A data clerk can be responsible for filling out the log, but a supervisor will need to make sure this is done on a regular basis and that the log is up to date. Annex 9.2 of this manual includes training log samples you can use.

Steps needed to manage training at your health centre

Identify training needs
Review your training logs (provided in Annex 9.2) to identify the required and optional training courses that each staff member currently needs. See charts below for recommended training for your clinical and non-clinical staff.

Identify available training:
Contact the district health office, regional hospitals and donors in your area to identify available training that matches your needs. Does the training take place on-the-job or off-site? Is any follow-up support provided? Is training accredited? Determine how training will be paid for, including fees, travel and meals.

Determine how you will maintain service delivery while your staff is away at training
Ask the following questions:

- Will fewer patients be served?

- Do remaining staff have the skills and training to cover for the staff away at training?

- Will the remaining staff work longer hours?

- Is this training essential to providing quality services at the health centre? The in-charge needs to help balance a staff person's need for training with the workload of remaining staff.

- Will the district health office provide staff who can fill in at your health centre while your employees are at training?

When training is completed, keep a record of it in a training log
This log can be completed by a clerk, but as supervisor you should ensure that this record-keeping happens on a regular basis. See the annex for a training log you can use.

Training debriefing
Ask staff who received the training to share key lessons learned and training 'likes and dislikes' with other health centre team members. This can take place during a team lunch or meeting.

Do not be afraid to ask
If the district health office or area donors do not provide the training your staff needs, tell them what you need. They may be able to help. They may be able to lend you staff from the district level to fill in for your staff while they are on training.

RECOMMENDED TRAINING

To provide basic primary care services, the following training is recommended:

Recommended training for staff to provide basic primary care services – SMALL health centre (catchment population of 3000-7000)	
This staff….	Should be trained in…..
• One clinical assistant • Two nurses	• IMCI, IMAI Acute Care, and IMPAC or equivalent • Laboratory • Supply management • Leadership and management • Quality management • Patient monitoring
• One nurse assistant	• Patient monitoring • Laboratory functions • Supply management • Quality management

Recommended training for staff to provide basic primary care services – SMALL health centre (catchment population of 3000-7000)	
This staff….	Should be trained in…..
• One clinical officer • One clinical assistant	• IMCI, IMAI Acute Care, and IMPAC or equivalent • Good management • Leadership and management
• Five nurses	• Two trained in IMCI • Two trained in IMAI Acute Care • One trained in IMPAC • Good management
• One pharmacy technician/assistant	• Supply management • Good management • Toxicity management and adherence counselling
• One laboratory technician/assistant	• Laboratory • Lab quality management • Quality Laboratory Practise
• Two nurse assistants	• Patient monitoring • Laboratory functions • Supply management • Good management

To provide **HIV prevention, care, and treatment,** the following *additional* training is recommended

Recommended training for staff to provide HIV prevention, care, and treatment services		
Estimated number of HIV-positive patients at your facility	This staff...	Should be trained in…..
• One to 100 patients	• At least two clinical providers, both in the outpatient clinic and ANC/PMTCT	• Clinical HIV • Good management
	• At least one lay provider (PLHIV)	• Counselling • Patient monitoring
	• Lab technician/assistant	• HIV-related laboratory services
• 101-250 patients	• At least three clinical providers; two in the outpatient clinic, and one in the ANC/PMTCT	• Clinical HIV • Good management
	• At least two lay providers	• Counselling • Patient monitoring
	• Lab technician/assistant	• HIV-related laboratory services
• 250-500 patients	• At least three to four clinical providers; two in the HIV clinic and one to two in the ANC/PMTCT	• Clinical HIV • Good management
	• At least three lay providers	• Counselling • Patient monitoring
	• Lab technician/assistant	• HIV-related laboratory services
• 500-750 patients	• At least four clinical providers; two in the HIV clinic and two in the ANC/PMTCT	• Clinical HIV • Good management
	• At least four lay providers	• Counselling training • Patient monitoring
	• Lab technician/assistant	• HIV-related laboratory services

Data clerk training

In addition to clinical and counselling staff, community members employed as "clerks" or data keepers in the health centre should also receive training. This is typically carried out "on-the-job", but there are training courses for many of the following skills:

- triage

- HIV patient monitoring (cards, registers, reports)

- data recording

Components of HIV-related training:

The charts on the next page describe the components of the recommended HIV-related training listed above. "Basic" training lists the essential and required training components that your staff should receive to provide HIV services (based on the recommendations above) "Follow-on" training is more advanced and lists the specialized courses that should be added based on your staff's current duties and interests within the health center. Considering your staff's interests when selecting training improves morale and helps retain employees. Keep in mind whether the clinical team as a whole has the ability to provide the HIV services you have planned!

Clinical training for integrated HIV prevention, care and treatment:

Each clinical staff person on the team should receive all of the basic clinical training courses. Follow-on training can be combined with basic training in the second week, or taken later as a separate course. In all clinical training, at least one of the clinical providers trained should be the head HIV clinical provider. In addition, all staff of the health centre including this head HIV clinical provider should be trained in universal precautions and workplace safety issues see section - 9.5. of this chapter.

Basic clinical training	Follow-on clinical training
Chronic HIV care, ART, prevention with PLHIV (includes clinical staging, cotrimoxazole and INH prophylaxis, how to fill out the patient HIV care/ART card, intensified TB case finding [1])	IMCI-HIV complementary course (HIV testing, diagnosis and management of OI in children, follow-up)[2]
	Adolescents in HIV care
Acute care (when to suspect HIV and TB, OI diagnosis and management)[3]	PMTCT integrated with improved antenatal and postpartum care[4]
Provider-initiated testing and counselling for clinicians - basic course	PMTCT integrated with improved labour and delivery care[4]
TB infection control[5]	Reproductive choice and family planning for PLHIV[6]
Universal precautions, PEP and other workplace safety issues	TB-HIV co-management[7]
	Syndromic STI management
	Palliative care: symptom management and end-of-life care
	Mental health/neurology
	Brief interventions for hazardous and harmful alcohol use

Counselling training for integrated HIV prevention, care and treatment:
All staff who provide counselling services – including clinical providers, counsellors, lay counsellors or community health workers – should receive at least basic counselling training. Further follow-on courses prepare the counsellor to manage other content areas building on the basic training course.

[1]   Based on IMAI-IMCI basic Chronic HIV Care with ART and Prevention Course or its equivalent
[2]   In some regions, HIV training is integrated into the regular IMCI course on case management of common illnesses of children. Patients who have taken this training course would not need to take the IMCI-HIV complementary course.
[3]   IMAI Acute Care/OI Training Course or equivalent.
[4]   Based on IMAI/IMPAC Clinical Course for integrated PMTCT Services
[5]   Based on IMAI-STB TB Infection Control Training for Health Care Settings or its equivalent
[6]   Based on Reproductive Choice and Family Planning for PLHIV training course or its equivalent
[7]   Based on IMAI-STB TB-HIV Co-management Training Course or its equivalent

Basic clinical training	Follow-on clinical training
Lay counsellor training course (PITC, prevention with PLHIV, post-test support, patient education, adherence counselling, psychosocial support)[8]	Advanced post-test counselling
	Infant feeding counselling and support
	Psychosocial support for children
	Post-rape care
	Working with vulnerable groups (e.g. orphans)
	Brief alcohol interventions

Patient monitoring training for integrated HIV prevention, care and treatment:
Clinical providers normally receive training on how to fill out the patient card during their basic IMAI chronic HIV care training. If they did not receive it they will need it. In addition, a data clerk needs to be trained to manage the records and registers (see chapter 6 Monitoring). The in-charge or another staff with interest or skills in analysis should receive further training so they can play a lead role in using the data.

Basic patient monitoring training includes the following skills:
How to fill out the patient card
Transferring data to registers and completing quarterly report and cohort analysis forms (can be done by data clerk)
Advanced patient monitoring (how to oversee registers and reports, calculate indicators, and use data for clinical decision-making)

Supply management training for integrated HIV prevention, care, and treatment:
Someone needs to manage the store. If there is no pharmacy assistant, a nurse

[8] Based on IMAI Lay Counsellor Training Course or its equivalent.

or another staff member needs to be trained in managing the drug supply at the health center. A WHO in training course "drug supply management at the first-level facility" that covers the necessary components as described below. Also see chapter 7 Supply Management, in this manual as a resource.

Basic supply management training includes the following skills	
How the drug store is prepared	How supplies are ordered
How supplies are organized	How supplies are received
How records are kept	

Laboratory training for integrated HIV prevention, care, and treatment:
All staff performing laboratory services– including, lab technicians, lab assistants, and clinical providers– should receive training in each essential lab service which they will provide.

Basic HIV-related laboratory services training to be performed and quality assurance tests	
Malaria smear	Haemoglobin estimate using WHO Colour Scale
Rapid Malaria test	Haemoglobin using haemoglobinometer (if used)
Sending TB sputums	Haematocrit
Prepare and read TB sputums	Urine dipstick for protein and glucose
Rapid HIV test	CD4: collect blood, hold, and prepare for transport
Rapid syphilis test	DBS: collect blood, hold, and prepare for transport
Rapid pregnancy test	

Leadership and management training:
In most resource-constrained health centres, a clinical provider is also responsible for overseeing the daily operations. So in addition to clinical training, the staff in charge of the health centre (large or small) should receive training in leadership and management skills.

Leadership and management training can include the following skills:	
Programme planning	Monitoring and evaluation
Financial management	Supply management
Mentoring, supervision, staff appraisal	Facility management, including workplace safety

Quality management training:

Quality management training is ideal for all staff of the health centre, so that your whole team can work together to improve day-to-day operations. This training is best performed as part of employees' orientation to assure quality management from the start. The head HIV clinical provider or in-charge of the health centre could also benefit from more comprehensive follow-on quality management training that is provided by your district health office, regional hospital, or area donors.

Basic quality management training	Follow-on quality management training
Performance measurement	Comprehensive quality management training
Quality improvement	Facilitating quality improvement at your health centre
5 Ss at the health centre	Leading 5 Ss activities

Cross training of staff

Cross training means you train staff to develop overlapping skills, so that if one staff member is unable to perform a task, another staff member can perform it in his/her place. This limits any interruptions in service delivery and expands the skill set of the health centre team. An example of cross training is to train your ANC nurse to provide laboratory services. The ANC nurse is then available to fill in for the laboratory technician if s/he is not available due to staff turnover, illness or move to another position elsewhere.

Cross training can happen 'on-the-job' by having the staff to be trained 'shadow' or observe experienced staff, or through formal training. As in-charge of the health facility, you should be responsible for arranging cross-training.

Best practises in training
Experience has shown that the best forms of training integrate on-the-job training and ongoing training and/or provide support to trainees over time. "Once-off" training sessions that are only classroom-based do not provide the same lasting improvement in skills and expertise, and require health workers to spend time away from delivering services at the health centre.

Refresher training and continuing education

In many countries, health and education ministries are collaborating to integrate many of the above areas of study into pre-service education. Staff who have already received the above training during medical, nursing, pharmacy, or other degree programmes can focus on taking **refresher courses or more advanced training in the form of continuing education** after joining the workforce.

Refresher training and continuing education helps keep staff aware of new developments and policies, helps promote career development, and improves motivation and morale. You should monitor training logs to determine when a staff member could benefit from refresher training and continuing education. However, make sure you balance this need for training with the need for the staff member to provide services.

Other learning opportunities

Your staff can also learn through many opportunities that occur outside of formal training. These 'ongoing learning opportunities' can take place in or out of the health centre, and can be managed by you or other members of the centre team, and by non-governmental organizations, district or national health offices or other external groups.

Example of ongoing learning opportunities provided at the health centre	Example of ongoing learning opportunities provided away from the health centre
Review of patient cases	Educational presentations
Staff/local experience-sharing	Conferences
Review of latest information, and journal 'clubs'	Regional experience-sharing
Clinical mentoring	Cross-site visits

9.4 HOW TO SUPPORT CLINICAL MENTORING AND SUPPORTIVE SUPERVISION

Clinical mentoring

A clinical mentor is a clinician with experience and expertise who provides ongoing training and advice to clinical providers with less experience or expertise. The goal is to help the less experienced provider develop skills and experience, grow professionally, and provide higher quality care. Mentors meet regularly with the providers they are helping to review clinical cases, answer questions, problem-solve, and provide feedback and assist with case management. Mentors can be formally assigned to a staff member or they can volunteer based on their personal interest.

A clinical mentor is different from a supervisor, who has formal authority over a staff member and is responsible for evaluating performance. Mentors are instead more like a 'coach', who focuses on improving staff expertise, motivation and confidence. Clinical mentors should be supportive of the staff person and their growth as a person and a professional.

In a network model of care, clinical mentoring at the heath centre will be conducted through visits by clinical providers from the district hospital, and through ongoing phone and e-mail correspondence where available.

Clinical mentor job description: a clinical mentor helps a provider with[1]:

1. building relationships;
2. identifying areas for improvement;
3. responsive coaching and modelling of best practises;
4. advocating for work environments that improve patient care and provider development; and
5. data collection and reporting.

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[1] University of Washington - ITECH.

What you should know about clinical mentoring visits

When a primary health centre begins providing chronic HIV care and treatment, it will require one mentoring visit from a district hospital clinical provider every month for the first six months. After six months, the health centre will require only one visit every two to three months. If you are not receiving this level of mentoring, contact your district health office.

Each mentoring visit takes at least one day, but frequently may take three to four days.

Clinical mentoring visits usually include:

- observation of case management and reinforcement of a staff member's skills;

- review of patient monitoring cards and Pre-ART and ART registers;

- clinical case review;

- clinical team meeting;

- documentation of each visit (including recommendations).

- your health centre clinical team should prepare for these visits by reserving the dates and selecting patient cases for review (such as cases of people recently initiated into antiretroviral therapy, as well as routine, challenging or difficult cases, or deaths). In some instances, inviting the patient back to the clinic when the clinical mentor is scheduled to be there can facilitate consultation and avoid referral.

- integrate the recommendations of your mentor into quality management/ improvement activities at your health centre.

Supervision

Supervision is a formal relationship of authority between a more senior ranking health worker and his or her subordinates. Supervisors can be located at the primary health centre or at a higher level facility such as the district hospital. A health centre supervisor is responsible for helping ensure that each staff member is providing adequate service delivery and is following health centre rules and policies. The following chart outlines recommended supervision at your primary health centre:

Recommended supervision at large and small primary health centres	
Level	**Supervisor**
Lay counsellors	Nurse/ midwife/clinical officer/clinical assistant
Laboratory personnel/laboratory assistants	In-charge; district or sub-district laboratory personnel
Pharmacy assistants	In-charge; district or sub-district pharmacy personnel
Nurse/midwife	In-charge; district or sub-district nursing officer or clinical officer
Clinical officer	In-charge; district or sub-district medical officer

Effective supervision is especially important to provide quality HIV services. Chronic HIV care and treatment requires health workers to undertake continuous learning and to be able to solve problems. Those demand regular consultations with an engaged and supportive supervisor.

Supportive Supervision

Supervision does not mean finding 'fault' with your staff's work. Instead, supportive supervisors focus on making sure their staff has the training, mentoring, guidelines and tools, equipment and supplies and working conditions they need to perform the job effectively. It means assisting your junior staff to achieve goals, identify problems and challenges and together find solutions to problems. The supervisory relationship should be compassionate, supportive and helpful. Good supervisors learn from their subordinates, adapt to their needs and should be open to suggestions.

A supervisory checklist – is an easy way to prepare for your supervisory meeting with staff, because it identifies the issues you need to address during the session, and reminds supervisors during the session of issues that might be overlooked.

9.5 HOW TO ENSURE A SAFE WORK ENVIRONMENT

You have a critical responsibility to ensure a safe working environment for your staff. The following section provides important guidelines to prevent the spread of tuberculosis and HIV in the health centre.

The small, but real risk of contracting a disease or illness in the workplace – particularly HIV and TB – can cause anxiety, fear, and low morale among your staff. By following standard workplace safety precautions, you can improve the health and well-being of your staff and patients.

Prevent and manage workplace exposure to HIV
During employee training, workplace procedures that deal with exposure to HIV should be included with other workplace safety guidelines, and be monitored regularly to assure they are implemented. Even after you take measures to prevent workplace exposure to HIV, you should be prepared for it to occur. Below are some steps you should take to minimize HIV exposure in the workplace:

1. Identify a contact person to deal with workplace HIV exposure.

Choose someone who is:	Responsibilities:
• responsible • trained • trusted and agreed on by health centre staff • available during all working hours (or assign more than one contact person).	• explaining procedures and PEP • coordinating blood results • arranging confidential HIV testing and post-test counselling for the health worker • remind the health worker when follow-up blood tests are due • completing the necessary forms and reports • ensuring confidential storage of all documentation • completing the incident report (for occupational health and safety review and for possible compensation) and include in health centre log book

2. Set up a system to urgently respond to workplace HIV exposure and make HIV-PEP available 24 hours a day/seven days a week.

3. On the wall of your clinic, post the PEP procedures – available as a wall poster in Annex 9.3 of this manual – and make PEP clinical guidelines easy to obtain at all times.

4. Keep starter packs – or initial doses of PEP – in the health centre emergency cupboard and ensure that they are accessible 24 hours a day, including during holidays and weekends. Workers should have the option to obtain services away from the worksite in order to increase privacy and confidentiality.

5. Encourage staff to report incidents of exposure to HIV in the workplace. Use the HIV-PEP procedures for ALL staff exposed to HIV in the workplace (this means all categories of health personnel, including public and private employees).

6. Routinely inform health personnel about HIV-PEP. This includes how and where to obtain advice, and reporting procedures during working hours.

7. Support health worker access to confidential HIV counselling and testing services.

Facilitate health worker HIV testing, counselling, HIV care and ART:

■ Encourage every member of your staff – including auxiliary staff and volunteers – to be tested.

■ Place information in staff rooms about local locations of confidential HIV counselling and testing and care and treatment services.

■ Make sure health workers understand that unprotected sex remains the most common route of HIV transmission; emphasize that safer sex practises are very important.

■ Health workers should understand the importance of starting ART early.

■ Support the formation of HIV-positive health-worker support groups.

■ Ensure health workers have access to confidential and low-or no-cost HIV care and treatment.

Combat workplace stigma about HIV and TB

- Staff are often afraid to be tested or receive treatment for fear of being rejected by others at work.

- Develop an HIV and TB workplace policy/plan (your district health office can help you).

- Hang posters with messages that combat stigma.

- Communicate with your staff regularly about having positive attitudes towards people living with HIV.

- Invite a PLHIV community group to visit your health centre during a regular staff meeting to discuss their experiences with HIV-related stigma and how being HIV-positive affects a person's life.

Protect health workers from TB

- Ensure TB infection control throughout the health centre. This protects both health workers and patients. See chapter 5, infection control guidelines in Infrastructure.

In addition, all health workers should

- know the signs and symptoms of TB disease;

- be supported to know their HIV status. Those with HIV infection should be given the opportunity to minimize their exposure to people who have TB disease;

- be offered INH prophylaxis if they have a positive tuberculin test or are HIV-infected after excluding TB disease (see clinical guidelines).

Protecting health workers against stress and burnout

- Recognize burnout! Symptoms include irritability, anger, poor sleep patterns, inadequate concentration, avoidance of patients and problems, withdrawal

from others, fatigue, emotional numbing including lack of pleasure; resorting to alcohol or drugs; and (in survivors of multiple loss) fear of grieving.

- Be confident that you have the skills and resources to care for the patient and their family.

- Define for yourself what is meaningful and valued in caregiving.

- Encourage staff to discuss problems with someone. Share problems with your colleagues; consider forming a staff support group.

- Include in your week a time to discuss patients with other staff (at staff meetings, case reviews).

- Be aware of what causes stress and avoid it.

- Use strategies that focus on problems rather than emotions.

- Change your approach to caregiving: divide tasks into manageable parts (small acts of care); learn how to adjust the pace of caregiving; ask others to help; encourage self-care by the patient.

- Use relaxation techniques.

- Take care of your life outside of your caregiving (ensure you have other interests, family, friends).

- Develop your own psychosocial support network (such as care-giver support groups).

- Take care of your own health.

- Take time off on a regular basis.

- Be aware that you cannot do everything and that you need assistance.

- Organize or participate in social events (staff birthdays, marriages or graduations, etc.).

Promote safe injections (protect against HIV and hepatitis transmission):

▪ Do not give injections unless they are necessary. Use oral medications in cases where they are recommended.

▪ Give injections with single-use or adequately sterilized equipment.

▪ Do not recap needles.

▪ Discard used needles and syringes immediately in sharps container.

▪ Close, seal and send sharps containers for incineration before they are completely full (follow your facility protocol carefully) – see chapter 5, Infrastructure.

Supplies and procedures to support other standard precautions[1]

Summary of standard precautions	Requitred available supplies to support standard precautions
Use for all patients When drawing blood: • Use gloves • No recapping of needles • Dispose in sharps container (puncture resistant) Safe disposal of waste contaminated with blood or body fluids Proper handling of soiled linen Proper disinfection of instruments and other contaminated equipment Use protective barriers (gloves, aprons, masks, plastic bags) to avoid direct contact with blood or body fluids	Gloves Personal protective equipment (such as safety syringes and needles) Sharps container Procedures to support standard precautions: • Waste management system (see chapter 5, Infrastructure)

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1   IMAI Chronic HIV Care with ART and Prevention, p.118

9.6 HOW TO IMPROVE EMPLOYEE MOTIVATION AND RETENTION[1]

Employee satisfaction is directly linked to employee motivation, performance and quality of care. If you do not pay attention to employee satisfaction, your staff will be disgruntled and perform poorly. Unhappy employees can lead to unhappy and dissatisfied patients. The following aspects need to be considered.

How can I grow while on my job?

Each staff member needs opportunities to grow and develop, such as participating in training, mentorship, new tasks, and chances to be promoted to a more senior level.

- Achievement is important. Help your staff achieve success in their position through giving them positive feedback, ideas, and advice on how to improve their performance.

- Do not micro-manage! Your staff is more motivated to work when they are involved in decision-making and have responsibility. Allow your staff to make more decisions and handle additional responsibilities over time. If they make a mistake, help them learn from it and improve.

- Advancement is a form of recognition. Encourage people to learn and increase their knowledge and skills for self-advancement and promotion. Ensure that your staff knows about and pursues existing continuing education, on-the-job training and in-service education opportunities.

- Support new ideas and creative initiatives in the workplace. These opportunities help your staff to develop personally and professionally.

Am I being treated fairly?

Every employee needs to feel a sense of fairness in how praise or criticism is delivered, and how training, salaries, promotions, and other opportunities are provided.

- Make sure the policies for providing training, promotions, salaries and other rewards are fair and are clear to all staff.

- Avoid rewards that make some staff 'winners' and others 'losers'– look for ways to reward and appreciate all of your staff.

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1   Selection drawn from MSH Human Resource Management Seminar

What am I supposed to be doing in my job?

Each staff member needs a clear description of tasks and responsibilities, and appropriate tools to complete the tasks.

- Make sure each of your staff has access to their job description.

- Make sure you spend time explaining what you want your staff to do. Identify their high- and low-priority tasks. Before ending the conversation, ask "Is that clear?" "Do you have any questions?" Make yourself available if your staff have questions or concerns.

- Help your staff think through what tools, equipment or guidance s/he will need to accomplish the task. Do your best to meet these needs.

How well am I doing?

Every employee needs regular feedback on his/her performance, including both praise and constructive recommendations on how to improve.

- Give praise when it is due! Praise your staff often and sincerely. Positive reinforcement is a far more effective motivation than fear or criticism.

- Recognize staff efforts and show gratitude. Lack of recognition for hard work or a job well done can be discouraging and cause resentment among staff.

- Do not give criticism; give advice. When you need to give negative feedback, be respectful and do not dwell on the past. Remember that staff may take criticism personally and become upset or confused. Discuss with the staff member why what s/he did was not the best method, and explain clearly what you want them to do differently in the future.

Who cares?

Each staff member needs to know that his/her work is appreciated and why it matters. Share with your staff at all levels (including auxiliary staff) how their work contributes to the team and to the health of patients. One example is to inform staff of how many patients their work helps the health centre to serve, or how many children are enrolled in treatment. Remind your staff of how their work helps reach these individuals when workloads and stress are high.

Chapter 10
LEADERSHIP AND MANAGEMENT

10.1 INTRODUCTION TO GOOD MANAGEMENT

The aim of good management is to provide services to the community in an appropriate, efficient, equitable, and sustainable manner. This can only be achieved if key resources for service provision, including human resources, finances, hardware and process aspects of care delivery are brought together at the point of service delivery and are carefully synchronized. Critical management considerations for assessment and planning, managing the care process, human resources, interacting with the community, and managing information are covered in the Planning, Human Resources, Integration and Monitoring chapters. This chapter first discusses good management and leadership in general, then outlines relevant considerations for managing relations with patients and the district team, as well as finances and hardware and management schedules.

10.2 MANAGERS AND LEADERS

Management and leadership are important for the delivery of good health services. Although the two are similar in some respects, they may involve different types of outlook, skills, and behaviours. Good managers should strive to be good leaders and good leaders, need management skills to be effective.

Leaders will have a vision of what can be achieved and then communicate this to others and evolve strategies for realizing the vision. They motivate people and are able to negotiate for resources and other support to achieve their goals.

Managers ensure that the available resources are well organized and applied to produce the best results. In the resource constrained and difficult environments of many low – to middle-income countries, a manager must also be a leader to achieve optimum results.

What are the attributes of a good leader? Leaders often (but not necessarily always):

- have a sense of mission;

- are charismatic;

- are able to influence people to work together for a common cause;

- are decisive;

- use creative problem solving to promote better care and a positive working environment.

Leadership is creating a vision

Managers who have these leadership qualities are a credit to the services they manage. However managers must ensure that day-to-day processes run well to produce the desired results. Certain attributes are required for a manager to be effective, including:

- clarity of purpose and tasks;

- good organizational skills;

- ability to communicate tasks and expected results effectively;

- ability to negotiate various administrative and regulatory processes;

- good delegation skills.

Management is getting things done

10.3 CONDITIONS FOR GOOD MANAGEMENT

Certain conditions are important for creating good management, including:

■ managers and team members need to be selected on merit;

■ managers need to earn the respect of their staff, patients, and supervisors;

■ managers need to have the knowledge, skills and understanding of the role, tasks and purpose of the services they deliver;

■ basic support systems function well; clear staff administration rules and regulations; well planned and timely delivered supplies, equipment and drugs; clear and transparent financial processes; and well planned and monitored activities.

Management is getting things done through balanced involvement of people

As a health facility manager there are important questions to discuss with the district management team and to ask yourself:

■ What exactly am I supposed to do as a manager?

■ Will the resources needed be here and be on time?

■ How free am I to take decisions, e.g. to move staff around?

■ How can I balance my managerial and clinical duties?

■ How can I reduce the time spent on the many routine reports I need to write?

■ What and where are the tools and techniques to help me do the job well?

Conditions for being an effective manager are best when these questions have clear and positive answers so that tasks are clear, the delegation of authority is known and managers know where and when to seek support for their decisions. Management also flourishes when the manager and the staff agree about the objectives of the work that they are doing, and can make decisions easily and with minimal risks.

10.4 HOW TO LEARN AS A MANAGER

Health care delivery and patient circumstances are constantly changing, and managers have to continue to learn new abilities and skills to keep up. A significant portion of management involves skills and competencies such as motivating staff, communicating and negotiating with stakeholders, and maintaining certain attitudes and behaviours that maximize staff discipline and performance. Managers also need to understand the basic technical aspects of the services delivered. For most of these competencies, training courses, while effective, are often not sufficient to provide all the necessary skills.

How can managers create and foster an environment in which they, and the people they manage, are constantly learning? One way is to clearly and regularly identify challenges that the service faces, and the skills and knowledge that the team needs to overcome these challenges. The ways to acquire the necessary skills and competencies may include:

- continuous education and learning (including self-learning programmes)

- structured "academic" courses; the most common form of management training;

- Secondments, attachments, shadowing/observation and study tours provide practical learning and examples of how others handle situations you will likely face;

- Mentoring and coaching relationships – experienced mentors provide insights into managing partnerships and relationships, opportunities to seek advice and explore options when managers are faced with difficult situations;

- Peer to peer learning – an opportunity to meet other managers at regular intervals, share experiences, challenges and solutions, build a common understanding of processes, and to support each other.

Other peer learning techniques include:

- Learning cycles/groups - groups of team members who meet regularly to discuss issues and help develop or improve management systems;

- Networks – managers from within and outside your health centre with a common interest in understanding and improving their situation;

- Reflection sessions – managers and their teams set aside a regular time to review their work, identify areas that need improvement, and ways to improve the service;

These methods can be used by the managers as part of their planned self-development, and should be linked to challenges they face in delivering services. Every manager needs clear learning objectives and plans and available time for these activities (e.g. put aside a half day every two weeks for team or personal learning).

10.5 OVERVIEW: A MANAGER'S ROLE AND TASKS

Certain roles and responsibilities all general managers need to manage, include:

- type and coverage of services to be delivered;

- resources (staff, budgets, drugs and supplies, equipment, buildings and other infrastructure and information) available for use;

- people, including patients, partners, suppliers and staff that are important for delivering functional quality services.

The specific functions carried out by health facility managers are discussed here and in other chapters, However, no matter what type of service is offered, managers need to devise and implement strategies, make plans and budgets, seek resources, implement, monitor and evaluate the plans, learn lessons, and then design new plans.

A manager delegates some tasks to other staff members and supports and coaches them to achieve desired results. Managers use team and staff meetings and other forms of communication to communicate the appropriate messages to staff about what is to be achieved and how.

A major management task is reviewing the important information and data concerning service delivery and using this data to make decisions about how services can be modified and improved. Managers are responsible for the finances available to the service, ensuring that these are used to produce the maximum possible benefits for patients and staff. Keeping a firm focus on the overall goal of the service and reminding staff, partners and clients of this goal is a major task for managers. Management involves developing staff/ skills mentoring persons with high potential, and resolving conflicts while maintaining ethics and discipline

Managers must also develop "management improvement/action plans" that target:

■ difficulties in management systems

■ bottlenecks/barriers to service delivery

■ tasks that need to be delegated, and

■ expected results of the management functions.

Management is about making decisions

10.6 HOW TO MANAGE RELATIONS WITH THE DISTRICT TEAM/ SUPERVISOR

In most health systems, health facilities are linked to the national health system through the district and threfore are accountable to district management teams. All operational health system activities are implemented via the district including drugs and commodities procurement, human resources, infrastructure, and technical support. Local facility

District Team Support

managers and district managers must have clear lines of communication, and ensure optimal off-site support and supervision, and that reporting to districts is accurate.

Facility managers must communicate all challenges to the district level to make sure there is continued service delivery at facility level. District managers should communicate new policies and management tools to local managers to ensure compliance. A strong relationship between the two levels is key to sustained service delivery at the facility level.

10.7 HOW TO MANAGE PATIENT RELATIONS AND ACHIEVE PATIENT SATISFACTION

Health facilities exist for the sole purpose of providing health services to patients in communities. Therefore managers need to ensure that client satisfaction is of utmost importance. This is why all staff must be trained to understand patients' rights.

Community

Staff should not be judgmental and must provide information to patients so they can make informed decisions regarding treatment options, as well as lifestyle and behaviour modifications that may be required to improve their health status. Staff must also be able to assist patients to understand their responsibilities, including:

- to live a healthy lifestyle;

- not to participate in risky behaviour;

- to participate in their care by attending appointments, asking questions, and playing a part in their own health improvement;

- to be open and honest about the problems they face;

- to have the best health outcome by adhering to treatment regimes.

The attitude of staff towards patients influences patients' willingness to obtain access to and continue care, to treatments, and to accept and follow health promotion messages. Negative staff attitudes reduce patients' self esteem and motivation, reducing their will to seek services.

Assessing patient satisfaction

Appropriate tools should be used by the health centre and district supervisors to assess patient satisfaction, or to assess how patients perceive the health establishment in general. These include:

- client satisfaction surveys

- suggestion boxes

- community consultation committees.

These concrete measures ensure patients' voices are heard. Anonymous mechanisms for eliciting suggestions should be encouraged, such as a "suggestion box" placed in the waiting area (with paper and pen), in which patients can put anonymous messages. The box should be emptied regularly and comments discussed with the staff.

10.8 PATIENTS' RIGHTS

Patients' rights, include the right to:
1. health information
2. full range of accessible and affordable health services
3. privacy when they are receiving health care
4. be treated with dignity and respect when they are receiving health care
5. be assured that personal information will remain confidential
6. be given an explanation of the processes that they go through when they are receiving health care
7. be treated by people who are trained and knowledgeable about what they do
8. continuity of services
9. be treated by a named provider
10. express the views on the services provided and to complain about unsatisfactory health services
11. gender equality
12. a healthy and safe environment
13. make free informed choices

10.9   HOW TO MANAGE FINANCES

The degree to which health centres are involved in managing funds and financial resources varies with the nature of the health centre, its size, and the structure of the national health services. Yet, all health services have to manage two types of funds:

- "Invisible funds", or budgetary allocation. These are not physically handled, but represent a "credit" that is provided by the district management team or other entity that will handle how they are spent;

- "Visible money" or cash: This money is seen and handled in the centre. Money can be kept for spending (usually small in amounts, called "petty cash"[1]), or be received for services or sales of goods.

Managing money and finances in a health centre is complex and responsible work. Ultimately, the facility manager bears responsibility for the correct handling of all financial aspects. Good financial management is the core of good service delivery. The facility manager needs to ensure that financial resources are committed to those activities that contribute to organizational goals. Regular use of the good financial management checklist below can help ensure that the financial procedures in place conform to good financial practises.

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1   Petty cash – the financial term for this is imprested fund

> **A good financial management checklist ensures that:**
> - All accounting registers, journals and ledgers are up to date.
> - All financial reports are prepared and submitted in a timely manner.
> - Procedures for the use of petty cash are properly developed.
> - All expenses other than petty cash are paid by cheque.
> - Financial activities are separated in such a way that one person alone never registers, reviews and authorizes any complete transaction.
> - Procedures for authorizing purchases are being followed.
> - Security measures are in place to protect the assets, books and registers from tampering or theft.
> - A physical inventory of fixed assets and supplies is conducted at least once a year.
> - The bank statement is reconciled monthly.
> - There is a financial plan and/or a financial strategy leading to improved cost recovery.
> - Financial administration staff is involved in both programme and financial planning processes.
> - A realistic annual budget is developed from the work plan.
> - The organization has a unified budget, as well as sub-budgets for different programmes and/or donors. The accounting system adequately allocates expenses to different programmes and/or donors.
> - The line items in the chart of accounts, the budget and management financial reports correspond with each other.
> - Cash flow is adequately monitored and is projected for the year so there are no periods of cash shortage.
> - Actual expenditures are compared quarterly with the budget and corrective action is taken as a result of these comparisons.

Often, health centres have no dedicated financial officers to handle budgets and financial control is exerted by the overall facility manager. A minimum set of financial management tasks includes:

- budget preparation and cash flow projection

- budget allotments and expenditures

- management of cash income and expenses

- financial monitoring and reporting

- the use of financial information to make decisions.

How to prepare a budget and cash flow projection

A health centre budget outlines how financial resources will be used over a defined period of time, usually one year. Two main steps in budget preparation include projecting all expenses that will be incurred at the health centre, and matching them with expected revenues and budget allocations. Additional cash flow projections help to ensure that income and expenditure match throughout the year, and the health centre is able to meet costs as they incur. Budget development is an essential part of the planning process.

Determining resource needs and associated costs

The starting point for budgeting is a list of the resources needed to carry out all activities throughout the year required to maintain the health centre and to provide its services. It is useful to also list resources that are directly provided to the centre and that are financed from other budgets (e.g. staff or medication paid directly by the district authorities). Leaving out these in-kind contributions hides the real cost of services delivery, and makes it hard to determine how to make the service sustainable in the future. The budget includes two types of resource needs and costs:

- Fixed costs: remain constant and are independent from the exact level of activity within the capacity of the centre. Such costs include most salaries, equipment leases or payments, rent and utilities. Some fixed costs also change with the level of activity – such as the number of staff needed.

- Variable costs: depend on the level of activity such as the number of patients treated. Such costs include care consumables, drug costs and transportation costs for home visits etc. Variable costs are usually specified "per unit" of delivery (e.g. drug needs and costs for one patient on first-line ART) and multiplied by an estimated "number of units" (e.g. the number of patients expected to be on first-line ART in the facility).

It is recommended to use a budgeting sheet (see Annex 10.1: Budget Sheet) and to sub-divide the list of resources into various categories. For each resource (e.g. staff), you need to specify the type of costs associated (e.g. salary) and time period, (usually 12 months), and at what cost per unit (e.g. US 300 Dollars (USD) per month). Standard categories are recommended

by district authorities and ideally the same categories are used for budgeting, accounting and reporting. Those categories may include:

- staff;

- physical infrastructure and building operating costs;

- medical supplies, equipment and consumables;

- communication;

- transportation including vehicle operating costs and travel;

- replacement costs (depreciation) – This is a provision for long-term assets (such as vehicles/machinery/computers/lab equipment) that deteriorate over time and have to be replaced at the end of their usefulness. Some money needs to be set aside every year for future purchases to replace these assets (see section - 10.10 - Managing Hardware).

Determining funding sources

For many public programmes there will be only one source of funding, i.e. the district health service, or the provincial or national health department. However, some public facilities – and usually all private facilities – might also receive private funding or charge fees to generate income.

The "unified budget" prepared in the previous step will be of great help in managing incoming funds. This is because the same listing of activities and resource needs can be used to demonstrate which funds are used towards what purpose. This is a process of "earmarking" that will ensure that the use of funds remains within the originally intended purpose. It will also facilitate donor reporting. Assigning incoming funds to expenditures is best achieved by appending specific "donor columns" to the budgeting sheet. (Annex 10.1 -Budget Sheet)

Projecting cash flow

Cash flow projections are needed to ensure that each month enough money is available (in cash or in the allotment) to cover all anticipated financial

obligations. Cash flow projections are done on the basis of the health centre's budget, detailing the amount of expenditures, and when they occur. (See Annex 10.2 Cash Flow Projection Sheet).

Cash flow projections are best made for each month of the budget year, and should outline:

■ how much money is available a the beginning of the month;

■ what funds will be received during the month; and

■ How much money is expected to be spent during the month.

The remaining balance should be zero or a positive amount and should be carried forward to the next month. Prudent financial management requires that as part of cash flow processes, management fixed management costs be prioritized over other expenses; otherwise operations could be brought to a halt.

How to manage allotments

"Invisible money" is allocated to a health centre based on a budget (see previous sub-section) that defines certain expenditure categories. To keep track of expenditures against such allotments, a logbook of all expenditures should be kept that will allow the manager to track how much money has been spent, and how much money is still available. This logbook is usually called "allotment ledger" (see Annex 10.3 – Allotment Ledger).

In the ledger, the manager registers all fund allocations (credits) and all expenditures (debits). For each transaction, the date is registered, as well as a reference to further documentation on the transaction (see below). At any point in time, the amount debited can be totalled and deducted from the amount credited. The ledger can combine all expenditure categories, or break them down according to main categories. Usually, the district office will provide a specific format for such a ledger.

Expenditures against allotments are made in the form of "purchase orders" or "vouchers", that will allow the allotment holder (e.g. the district health administration) to make the payment. Each purchase order needs to be duly signed at the health centre and by the health district administration. Purchase

orders and payment vouchers are usually pre-printed and serially numbered (see Annex 10.4 – Purchase order / Voucher).

Managers who have the responsibility of authorizing expenditures and purchases need to ensure that; 1) the purchase is justified and within the scope of planned activities; 2) the cost is competitive; 3) the transaction is properly documented, and; 4) sufficient funds are available to make the purchase.

How to manage cash

Most health centres need to have some reserves to cover small cash expenses ("petty cash"). This cash is advanced to the manager based on the budget, and subtracted from the allotment. The provision of a cash advance for specific purposes is called a "petty cash fund". The types of expenses that can be covered by the petty cash fund vary from place to place but may include:

■ transportation such as bus fares, petrol;

■ communication such as stamps and phone calls;

■ cleaning needs such as soap, detergent;

■ stationary such as paper, envelopes.

■ sundries such as matches, candles, tea, emergency supplies.

A petty cash fund is a fixed amount of cash (e.g. $US 50) from disbursements that are made for the purchase of goods or services. The cash is kept in a safe place to which only the manager has access. It is important that each time cash is taken out, the transaction is documented in a logbook ("petty cash book"), and supported by evidence for its use ("voucher" and "receipt"). When the petty cash fund is nearing its exhaustion (e.g. after having spent $US 40) the manager will total all expenditures. The remaining balance will be "brought forward (B/F)" and the petty cash fund will be replenished to the original level (e.g. by adding $US 40 to reach the original level of $US 50).

Petty cash books are usually standardized to list - (in table form) each transaction, the date, the purpose, the number of a referring voucher/purchase order, and the amount paid or received. It is possible to add additional columns to break down expenses by certain categories (see Annex 10.5 - Petty Cash

Book). The voucher documenting each transaction is filled out when funds are given out and signed by both the authorizing officer and the receiving staff (e.g. the driver). It is important to attach the original receipt for expenditures to all purchase orders and vouchers if possible (e.g. a receipt from a petrol station - see Annex 10.6 - Cash Voucher). Certain health centres may also receive cash, usually in form of service fees or from sales of drugs or other commodities. For each transaction, a receipt is issued in three duplicates: one for the client, one to accompany the cash, and one that stays in the receipt book. Such receipts are usually provided in the form of books of numbered receipts see Annex 10.7 - Cash Receipt).

Just as with expenditures, all cash revenues are kept in a safe place and are recorded in a "revenue book" (see Annex 10.8 - Revenue Book), indicating clearly for each transaction the date, amount, and purpose. Periodically, the manager will turn over funds to the district financial officer, together with copies of used and unused receipts.

How to report on the use of funds

The manager is expected to show the appropriate use of finances and to demonstrate how their use relates to expenses set out in the work plan and budget. One's ability to do so depends on the availability of a well developed budget and well kept up to date allotment records. In some cases, the facility manager will be able to complement records held at the health centre with official records and financial statements from the allotment holder (usually the district administration). Implementation progress reports and financial reports are normally required to comply with specific formats and to cover defined time periods see Annex 10.9 - Financial Reporting Form).

Financial controls

Financial control procedures are essential for effective resource management. Even for a facility that employs accountants and other financial personnel, the facility manager bears the ultimate responsibility for ensuring all resources entrusted to him or her are fully accounted for. It is important that the facility puts in place guidelines, policies and rules and an effective financial control system that ensures financial accountability see the good financial management checklist). Finally, it is advisable that at least once a year, the financial transactions of the facility are audited.

10.10 HOW TO MANAGE HARDWARE

A number of tangible goods and structures are needed to successfully provide services at the health centre, including:

- physical infrastructure and buildings

- equipment and machinery, including vehicles

- drugs, commodities and supplies.

Various chapters in this manual describe how to design appropriate space distribution and use, how to choose and maintain laboratory equipment, and how to plan for effective procurement of drugs and commodities. However, as a manager, you are expected to ensure that all of this hardware remains functional all the time. To this end, you will need to make plans and reserve budget for:

- regular maintenance of all hardware, including machinery, vehicles, and buildings;

- supplies to use hardware, such as test kits for lab equipment and petrol for vehicles;

- repair of failing hardware;

- replacement of hardware once it has reached a predefined period of use or fails beyond repair.

From a practical point of view it is recommended that all maintenance and replacement actions be marked in the yearly facility planner to avoid a lack of critical hardware in the centre (see below; How to design Management Schedules). In addition, if replacement hardware needs to be purchased by the health centre, a budget allocation for "depreciation" of the hardware needs to be made.

10.11 HOW TO DESIGN MANAGEMENT SCHEDULES

The facility manager is challenged to juggle a range of important management responsibilities and tasks, and at the same time to ensure the smooth running of the health centre. The key challenge for any manager is the limited availability of time. A first step to managing your time as efficiently as possible is to examine how your working time is actually spent. Normally, managers will spend significant portions of their time on:

■ management and administrative tasks, including development of work plans, budgets and reports;

■ meeting with health workers help them work better together as a team;

■ meeting with patients, the community and other external partners;

■ interacting with the district level authorities;

■ travelling and attending of workshops;

■ learning and continued education;

■ clinical work.

The challenge is to reduce time spent on lower priorities and to free time for priority tasks that would otherwise be neglected. Some proven "time savers" and "time managers" are:

■ learn to say "no"

■ rationally delegate and distribute work within the team

■ use meetings wisely; run meetings effectively

■ have a strategy for dealing with interruptions

■ be aware of time wasters.

An important tool to use time effectively is to structure the work routine so that important tasks receive specific, regular time slots. Recommended fixed time slots include:

- health care team meetings

- supervisor briefings

- community meetings

- time for budget review

- time for report preparations.

Successful managers use calendars and to-do lists to structure time demands and to ensure that no important tasks are forgotten. Important tasks and events are best kept on a yearly wall calendar, on which each line represents one month, with each day having one field. As a manager, you should include the following information on this planner:

- important dates on which action on contractual issues is needed; absences of team members (participation in training, vacation); a time slot for a yearly patient satisfaction survey, time for supervisory visits, and community health committee meetings;

- managing information: time slots for preparation of routine patient monitoring reports, due dates for progress reports, dates of important meetings with partners;

- managing finances: budget preparation and reporting deadlines, financial monitoring visits;

- managing hardware: hardware inspection dates, maintenance dates, ordering deadlines for supplies and hardware;

- managing care: review and revision of current care and prevention routine, time slots for checks on adherence to patient and staff safety policies.

Planning is a critical tool for time management, but there should always be enough time set aside to anticipate unplanned events and to listen to staff, patients and community members.

Chapter 11
QUALITY IMPROVEMENT (QI)

11.1 INTRODUCTION TO QUALITY IMPROVEMENT

The quality of care delivered in your health centre is determined by many factors, including how its services are organized, leadership, monitoring systems, adequate infrastructure and available resources, both human and material. Quality management includes: staff who are adequately trained and mentored (see chapter 9, Human Resources); using the 5 Ss to improve the physical work environment (see chapter 5, Infrastructure); special quality procedures for lab tests (see chapter 8, Laboratory); and well functioning patient monitoring systems (see chapter 6, Monitoring). This chapter addresses how health centre staff can use the tools and methods of quality improvement to focus on the system of care in which they practise.

> QI is an approach to improvement of service systems and processes through the routine use of health and programme data to meet patient and programme needs.

Methods of improving the quality of care described in this chapter focus on common key processes and functions in the clinic, and how they link together to achieve desired outcomes. HIV care systems that are planned in a methodical manner will result in care that better meets patient needs and follows national guidelines. Therefore, it is sometimes necessary to update or change current

systems in order to improve care and obtain the desired results. The key principles for improving HIV care summarized in this chapter include:

■ focusing on the needs of the patient;

■ implementing an improvement model that includes measuring- testing change- re-measuring, and applying change;
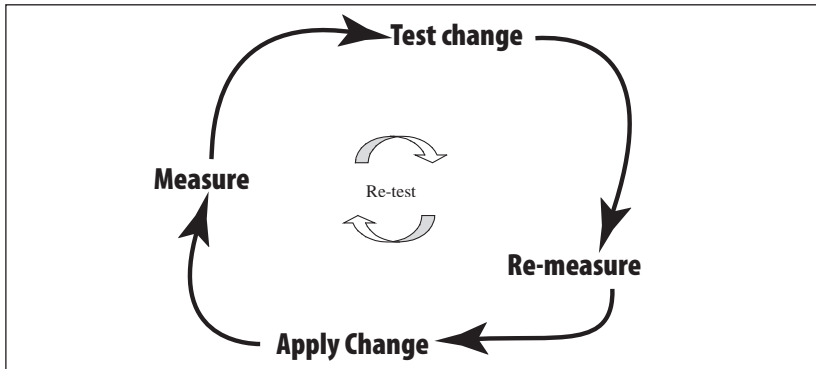
■ providing leadership support to improve the system of care;

■ identifing and including knowledgeable staff who will participate in improvement activities

Regardless of size, any health centre can improve the core it provides. HIV care may be provided in a separate area of your facility or it may be integrated into the main clinic. Either way, activities to improve the work you undertake at your health centre can be integrated into your routine flow of existing work. When this is not the case, improvement work may be seen as separate and additional to everyday work.

Also, you may be concerned that you cannot take extra time to work on quality, whether to track data or discuss the care system in your team. However, simple and practical methods can be adapted to help you get started. Once improvements begin, systems may function more efficiently and effectively, actually simplifying work. Most often, the staff care deeply about whether patients receive good care. When they see that quality improvement can help the clinic produce better and more effective outcomes, they will likely want to become involved to identify and implement methods to help it improve the services delivered.

11.2 WHEN CAN YOU START WORK TO IMPROVE QUALITY?

There is no reason to wait to start to improve quality. Work to measure and improve quality should be planned to start as soon as service delivery begins. If HIV care has already started, you can include quality improvement in your existing clinical systems. You can learn how to use basic tools that will help you examine clinic processes, use existing data already being collected to measure quality, and add discussions about quality to regular meetings.

Key steps:

■ Make sure that the HIV clinic has the minimum functioning systems and infrastructure.

■ Provide staff the training and tools they need to measure and improve care. If no one at the centre is knowledgeable, many resources are available to help (see chapter 9, Human Resources).

■ Use a team-based approach to prioritize improvements and implement them. Each staff person can participate in some way. At a small health centre, the team may likely be the entire staff.

■ Develop and agree on a plan on how the improvement activities will be implemented at the centre, who will lead them, and how they will be started.

■ Involve patients since they bring valuable ideas based on their experiences in receiving services at your health centre.

Quality improvement methods apply to any aspect of care being provided in your health centre. For example, if an approach is found to decrease the number of visits missed by HIV patients, it can be applied to other patients as well.

11.3 ORGANIZATIONAL CULTURE FOR IMPROVING QUALITY

Making quality improvement part of the job can raise morale because staff and patients see that the barriers to care they face each day are being addressed, and they realize they can participate in the work to remove them. When activities such as routine clinical management meetings are already in place, discussions about quality can simply be added to the meeting agenda. The results from quality improvement activities can help increase teamwork at your clinic, and identify gaps in human and material capacity. Documenting these gaps can help prove that you need more resources for your facility.

Leadership is essential for quality improvement activities to succeed. Health centre leaders play a key role by creating a culture of quality improvement. This culture will foster a common understanding that performance data will be used to improve care for patients, and will not 'blame' or punish'.

Leaders can support quality improvement activities in the following ways:

- **Create a vision for quality** by setting shared goals for performance.

- **Build staff capacity for quality improvement** by making sure that staff understand what QI is about and how to do it. Training opportunities about QI should be available for all staff and it should be included as part of their routine job expectations.

- **Build motivation for quality improvement** by communicating to staff that improvements are possible and welcomed, and encouraging them to set time aside to talk about quality and make it part of their jobs.

- **Establish a quality improvement team** to manage this process at the centre. Involve all staff who work in HIV care including physicians, nurses, clinic officers, data clerks, pharmacists, logistics staff, and outreach workers.

- **Dedicate time to measure clinic performance** and stress the importance of complete documentation to help determine whether or not patients are getting the care they deserve.

- **Provide time to openly discuss** both successes and failures.

- **Make sure that the 'voice' of the patient is heard and acted on** through surveys, exit interviews, suggestion boxes or other means.

- **Involve staff and patients** in understanding data and making decisions based on it.
- **Use available existing resources** to strengthen quality improvement activities.

- **Include a budget** for QI that provides for training in this discipline.

Tips for promoting a culture of quality improvement
- Educate staff about QI and provide them with the skills to participate in QI processes.
- Set a routine schedule for monitoring and reviewing data.
- Communicate results from improvement projects throughout the clinic and the community.
- Display data where patients can see them.
- Celebrate successes.
- Articulate the values of QI in meetings.
- Provide opportunities for all staff to participate in QI teams.
- Reward staff members by mentioning their QI contributions in their performance evaluations.

11.4 IMPLEMENTING QUALITY IMPROVEMENT AT YOUR HEALTH CENTRE

The steps of the improvement cycle are:

1. Set priorities to identify specific areas for improvement.
2. Define a performance measurement method for your improvement project and use existing data, or collect data that you will use to monitor your successes.
3. Establish an improvement team.
4. Understand the processes of the underlying system of care so that improvements can be implemented to effectively address problems.
5. Make changes to improve care, and continually measure whether those changes actually produce the improvements in service delivery that you wish to achieve.

Step 1: Set improvement priorities (Annex 11.1)

An example of a *decision matrix* is provided as a simple tool which can be adapted for use when working to set priorities. Other factors can be added to this table that are important for the clinic to use when considering priorities. The purpose of this tool is to help sort the choices using specific criteria that can help decide which areas are most important to select for improvement.

Identify an opportunity for improvement

Implementation steps:
- Use available data to help identify current gaps that need to be addressed.
- Ask staff and patients for ideas about what needs to be improved.
- Prioritize key opportunities for improvement.
- Select one specific improvement at a time on which to focus your work.

The first step to improving HIV care is to identify the health centre process that needs improvement. Given that your health centre likely has limited time and resources, you should focus on areas that are most important to HIV patient care in your community. Your choices should be influenced by your staff, and especially by your patients. Your ministry of health has already adopted a set of national HIV indicators (see chapter 6, monitoring); many of these can also be used as quality indicators (see examples below) so you should start with that list as you set priorities for the quality indicators to measure. If necessary, you may recommend additional specific quality indicators.

You are already collecting a great deal of information about your patients for regular patient monitoring, whether on a chart, a card or a health passport.

Information is being put into registers and logs, and is being reported to health officials at district and national levels. You may be reporting information to different donors as well. Often, this information is not seen by clinic staff and not used in the clinic. Using this information to examine the quality of care you are providing to patients is a powerful opportunity to assess where there are gaps that need to be addressed in your care system, and to begin to talk about how to improve them.

Examples of using existing data to set priorities

- Use the pre-ART register to determine if the patients in your health centre who are eligible for ART are being started on it. You may confirm a start on ART by checking the ART register.

- Examine the appointment log and determine the number of patients who were supposed to return to clinic in a specified time frame, and see whether they did or not.

- Examine pharmacy registers to see whether patients who were prescribed ART picked it up.

- Check patient charts, cards and laboratory registers to see if they are obtaining necessary laboratory tests.

Examples of obtaining ideas from staff

- Ask staff, "What is the most important area of your work that requires improving?"

- Ask staff to join the process of selecting priorities for clinic improvement projects. These will ultimately be selected by health centre leaders who will balance available resources with achievable improvement goals. Staff will be more empowered in their work if their voices are heard during this process, and will likely demonstrate increasing motivation to perform in their jobs.

Examples of obtaining ideas from patients and the community

- Ask patients, "Based on your experience, what area of the clinic's work needs improvement the most?"

- Encourage the development of routine group discussions to pinpoint issues that need improvement.

- Consider formal exit interviews with patients or satisfaction surveys to identify problems and priorities for improvement.

Example from the field: one health centre experience

The leader, a clinical officer, worked with staff to see what information was available to examine the health centre's quality of care. Since the health centre did not have a data clerk, the pharmacy workers and nurses reviewed their existing documents and registers. During a regular patient education group that week, the nurses asked the patients, 'what can we do to improve your care at our health centre?' The staff then met to discuss the data findings and the patient feedback. The team then contributed their ideas. When the various options were reviewed, the group decided to focus on making sure that patients were prescribed and receiving cotrimoxazole. The team also decided it was important that both adults and children received the drug.

Comment: Cotrimoxazole prophylaxis is an important choice for all patients in the clinic because it can save lives by preventing infections that are often fatal. Not only will it prevent Pneumocystis pneumonia (PCP), but it also prevents serious bacterial infections and malaria, common among adults and children with HIV infection. Focusing on ensuring patients received cotrimoxazole is important because problems with supply and stock depletions can be identified and responded to quickly (see chapter 7, Supply Management) to assure a continuous supply of this essential medication. However, the staff realized that patients must first be prescribed cotrimoxazole before they could receive it. Staff welcomed the opportunity to focus on this indicator since it required their coordinated efforts to make sure patients received the necessary medications.

- Use support groups that already exist and meet at your centre.

- Create or use a suggestion box, open it regularly and make sure that the ideas found there are included in the decision-making process of your improvement work. If you do not have a suggestion box, creating one is an easy first step to encouraging your patients to offer ideas.

Keep in mind that the priorities ultimately chosen should: be important and relate to national guidelines; represent key community and clinic staff concerns; be measurable; and include areas that the team will realistically be able to improve. For example, you can determine that equipment is broken, but you cannot use improvement projects to fix it. However, if patients are not receiving necessary laboratory tests, you can improve the process by redesigning systems such as clinic flow patterns, and then test these changes to see if they work.

When you are starting quality improvement processes, select one priority as you learn how to do the work. The selection of one priority in no way suggests that other identified areas are not important, merely it indicates that they can be addressed later.

Examples of indicators that have been used for quality improvement elsewhere

Many are often already collected routinely using the national patient monitoring system. See the list of indicators in the chapter 6, Monitoring. These include:

- Were patients assessed for active TB at the last clinical encounter?
- Did HIV-exposed infants receive cotrimoxazole prophylaxis within two months of birth?
- Did HIV-exposed infants receive a virologic test for HIV within two months of birth, or an antibody test prior to their first birthday?
- Did patients who are eligible for cotrimoxazole prophylaxis receive it?
- Are all eligible patients on ART identified based on national guidelines criteria?
- If available, did HIV-positive pregnant women have a CD4 test sent on the same visit day of their positive HIV test result?
- Did HIV-positive pregnant women receive ARVs (ART or ARV prophylaxis) to prevent mother-to-child transmission (MTCT) of HIV based on national guidelines?
- Did all active patients see their clinical provider in the last three months?
- Was every patient's ART adherence assessed during the last clinical visit?

Others may require data collection separate from the national patient monitoring system:

- Were children under five years of age provided with an insecticide-treated bednet?
- Did the patients receive any kind of education or counselling in the past three months?
- Did female patients between 15-49 years of age receive family planning counselling during their most recent clinical visit?

> **Using an existing national indicator to improve TB case finding among PLHIV**
> Five to 15% of HIV-positive patients will develop TB. Therefore, 100% of patients should be assessed for TB at every visit, even if to record the patient has no signs or symptoms. Anything less than 100% may point to a lack of quality of care. Therefore, the national indicator, *proportion of adults and children enrolled in HIV care who had TB status recorded and assessed at last visit* is also a quality indicator. In addition to reporting this indicator to the national level, the facility should also be using it to measure its own quality of care, and may follow Steps 3 to 5 outlined below. This may include discussing possible problems in and solutions to filling out TB status in the patient's medical record, and reasons why these problems exist.

Step 2: Define a measure and collect data

Performance measurement tells you what is really happening, as opposed to what you think is happening. It tells you what is being documented in the clinic records and is available to help with the decision-making of providers who see the patient. It tells you whether tasks that are supposed to be done are being done, and done well. Even in small centres where the team knows their patients well, measuring performance will often result in surprising findings when the data are compiled.

Some indicators are required for district or national reporting. However, your facility may choose to measure additional indicators based on what you learned during Step 1 (setting priorities). In order to start measurement, you need to make sure that the indicator is clear, and you need to develop a uniform process for data collection.

Specific steps include:

- Define the time period to include in your measure.

- Define the eligible population to be measured.

- Decide how many patients to include in the review: should you measure only a sample of all patients?

- Define a clear and specific measure.

- **Define the time period:** Performance is measured over a specific time frame. The patients who were actively seen during this time are the only subjects included in the measured group, and are chosen from the case list or register. In the cotrimoxazole prophylaxis example, only patients who had been seen in the health centre during the past 12 months were included. This information could be obtained from the patient cards (or an electronic database if the centre has one).

- Define which of the active patients are eligible for the care service. Depending on what you wish to examine, only certain groups of patients may be eligible to be included in your review. For example, the indicator may apply to both men and women, and to children, or to the latter only in certain clinical conditions. Another criteria for inclusion could be whether the patient is new or has already been in treatment. The list of eligible patients may also need to be sorted by age or gender, depending on whether the indicator applies only to children, men or women.

Some indicators may apply only to pregnant women, such as those receiving ART to prevent mother-to-child HIV transmission. Some indicators may apply only to patients receiving ART, such as whether adherence assessments are performed (see figure 11.1). For some indicators, such as monitoring cotrimoxazole, you may need to use both the pre-ART and ART registers for sampling or use a sample of patient cards or an electronic list. To measure whether ART adherence assessments are performed and whether rates of adherence change over time, would require sampling only patients on ART.

Figure 11.1: assessment of adherence

Numerator
Patients assessed
for adherence)

Denominator
(Patients on ART)

Eligible patients/samples
(adults and children seen in
the clinic in the last 12 months)

■ **Define how many patients to include in the review**. It would be ideal to include all of your patients when you measure the indicator (100% sample). But the burden of doing this could be overwhelming if you have a large patient population unless you already have an electronic tracking system that can produce data. If you do have such a system, you should use it. Most health centres will not have one, and therefore you need to either look at all patient charts (if the number involved is small) or use a sampling methodology. The table below is an example of a 'look-up' sample size chart that tells you how many charts to include in your sample depending on how many patients you have in your eligible population defined above. It is based on a desired level of statistical precision*. In many settings, it may be simpler to look at all charts if your patient population is up to 200 patients.

Population Size up to 20	Sample size/All
30	26
40	32
50	38
60	43
70	48
80	53
90	57
100	61
101–119	67
120–139	73
140–159	78
160–179	82
180–199	86
200–249	94
250–299	101
300–349	106
350–399	110
400–449	113
450–499	116
500–749	127
750–999	131
1000–4999	146
5000 or more	150

*Sample size calculated for a 95% confidence interval with width of 0.16, based on apredicted score of 50%.

If you are unable to easily generate a random list of charts to review by patient or enrolment number, there is a simple way to identify the patients to be included in your sample. You do so by dividing the total number of eligible patients you have identified in your register(s) or active case list, by the number of patients you need to review, based on the table above. You will use this number to create the sequence of your sample. For example, if you have 750 eligible patients for the cotrimoxazole indicator, the look-up table tells you that your sample should be 146. If you divide 750 by 146, the result is five. You will now need to take your ordered list (or patient cards arranged in order of enrolment) and select every fifth patient. Remember that the list you use has to be one that records each patient no more than one time!

What to do when if there are two different case lists or registers: one for patients on ART and one for HIV patients not on ART?
You have two choices. You can combine your two lists into one unduplicated list. If you do not have the time to do this, you can treat each list as separate and then apply the same procedures. For example, if you have 300 patients on ART and 450 not on ART from your patient list of 750, you would need a sample of 106 from your ART register or list, and 131 from your pre-ART register or list. If you divide 750 by 131 the result is 5.7. Rounding the numbers, you would select every third patient from your ART list and every fifth from your pre-ART list.

- **Define a clear and specific measure**. It is important that your indicator be well-defined. To define a sound indicator you will need to:

- ❑ Set the denominator: which patients should receive the service on which you are focusing? In this case, it will be the sample of patients you have identified from your active case list, register(s) or sample of patient cards.

- ❑ Set the numerator: which patients received the service? For example, the number of patients from your denominator group who were prescribed cotrimoxazole.

You are now ready to collect your data!

Collecting data

Start by developing a data collection plan.

If the data are not already collected as part of the standard national patient monitoring system (or are not contained in an electronic database which can produce the information), you will need to do the following:

■ Define how the data will be recorded

■ Decide who will record the data

■ Determine when the data will be collected

■ Decide how the sample will be selected.

The sources of information should be identified in the plan. Some indicators will require more detail than others. For example, agreement about how to define whether a patient has received family planning counselling may involve discussion about how that information should be documented to show that it was actually provided. If a field is not present in your existing record, database or register, other sources may be considered such as log books. Whenever possible, to make data collection easier you should plan to include columns or spaces for tick marks in your record or register for the services captured in your quality measures.

Once your plan is complete, you are ready to collect data. Be sure to allow enough time for collection, and recognize that it may require staff to have time set aside to review the records or other data sources. Ensure that staff is adequately trained to collect data. You may wish to seek outside help from the district or a coaching team for this type of training.

If your database does not produce reports automatically, you should be prepared by having a form for capturing the data that you collect. This form will then be used to calculate your clinic performance score when the results are added. Depending on your sample size, the time required for data collection varies. Most often, if several hours each day are set aside to review the charts, the process takes several days to one week. When more than one person gathers the information, less time will be required.

When data collection is complete, calculate your rate (score). Divide the numerator by the denominator and multiply by 100 to obtain the rate which is expressed as a percentage. For example, if 65 of 100 eligible patients were prescribed cotrimoxazole in the past 12 months, you would multiply the result (0.65) x 100 to obtain 65% as your rate or score. You now have a baseline rate of performance for your indicator. This is the first point on your tracking chart. The example below shows rates of performance each month, specifically how many eligible patients were prescribed cotrimoxazole.

Cotrimoxazole Run Chart
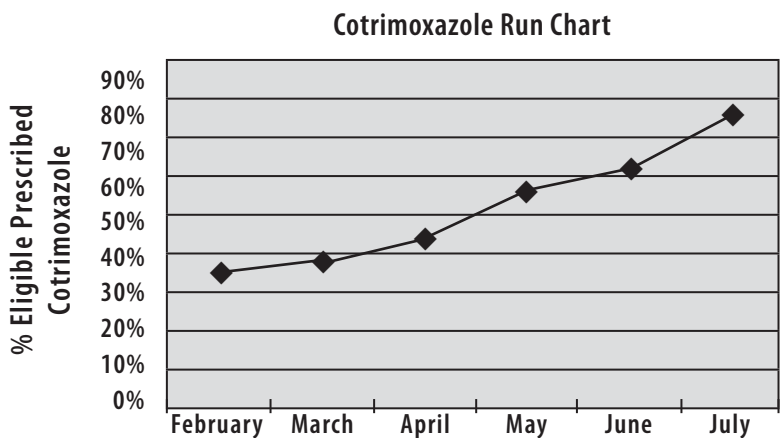
In the best case scenario, these data should be displayed on walls in the clinic where everyone can quickly see how the system is working, whether improvements are occurring, or whether they are needed.

Step 3: Establish an improvement team

Implementation steps:

- Identify staff who have the most knowledge of the selected area for improvement.

- Form an improvement team to work on the improvement area.

- Assign a team leader who will take responsibility for the team.

Improving your system of care is best done by a team that involves all staff whose work is part of the process being improved. Each team member provides a unique perspective on the common improvement goal. Clinical providers, data managers and records clerks are routinely included on the team. When CD4 count monitoring for pregnant women is selected as your improvement measure, your laboratory technician should be included. When clinic visit rates are the focus, outreach workers and peer counsellors should be consulted. Improvement teams bring together the skills, experiences and insights of different viewpoints. In a small centre with fewer than 10 staff, nearly all will participate. To obtain the best results, the team should consider involving patients, staff and community leaders as participating members.

In small centres, quality improvement team discussions can occur during meetings that focus on patient management on clinic business. Separate QI meetings are not needed. In larger clinics, a separate committee might be formed that does meet away from regularly scheduled meetings. In smaller health centres this is not often practical. A leader should be designated to take responsibility for moving the work forward.

Team responsibilities involve:

- reviewing results;

- understanding the process you are trying to improve: use simple tools such as flow charts;

- work with facility leaders to set aims for improvement.

- developing ideas for testing changes that you believe will result in improvement.

- routinely measuring and reviewing project-specific indicator data;

- testing changes that you believe will result in an improvement;

- implementing changes that work throughout the clinic.

Your entire team should review the results to determine if your QI aim is realistic. If this is not your first set of measurements, these results will determine how much more you wish to improve. Your aim should include a specific measurable goal that is clear to all staff, and will result in establishing a common purpose among them. Your team will more likely succeed if it is supported by leadership, has a set time to meet, is fully trained and communicates its work to all staff.

Improvement project template:

A template for recording the details of the improvement project is included in Annex 10.2. This simple form can be used to include all of the information needed to capture the important elements of the project, define its purpose and to keep a record of the improvement activities in the clinic.

Example from the field: the cotrimoxazole example

In this exercise, team members were selected after the baseline data were collected. The team included:
- one clinical provider (who sees children and adults for clinical staging)
- one data clerk (who collects data from the patient records and fills in registers)
- one community health worker (who provides community education and supports treatment adherence)
- one pharmacy technician (who manages cotrimoxazole stock).

The score results showed that in June, only 65% of eligible patients had been prescribed cotrimoxazole. This surprised the staff and resulted in many discussions about the problem. The group developed an aim statement to set a common goal for its work ''We will conduct an improvement project to increase the number of eligible patients who are prescribed cotrimoxazole prophylaxis to 90%.''

Step 4: Understand the underlying process or system

Implementation steps:

▪ Develop a flowchart of the existing processes;

▪ Exchange ideas about potential barriers to QI.

Your data show where gaps in performance exist, but do not explain why they exist. To develop an understanding of where improvements might be most successful, you need to understand the process of how the service being measured is actually delivered in the clinic. To do so, your team can draw a simple flowchart of the current processes. To clarify a process, they may need to obtain additional information from other staff or from patients.

Flowcharts are an easy way to visualize the process so that it is easier to both understand and improve. A flowchart shows the steps of any process in sequential order and can be used to illustrate a sequence of events, activities or tasks for processes ranging from simple to complex. An example can be found in Figure 11.2.

A fishbone diagram is another tool to help investigate the process (see Annex 11.3). It is often used with the flowchart to help sort out the categories of factors that are involved in a given process. It will also help differentiate factors that can be improved by the team, such as delays in registration or inadequate documentation, from those which require help from outside, such as with stockouts, inadequate staffing and broken equipment.

Figure 11.2: PMTCT Programme

PMTCT Programme

Pregnant woman HIV+

WHO Clinical staging — Register in HIV care — Haemoglobin +CD4 requested

Eligible Yes No

+CD4 available Yes No

Eligible Yes No

ART adherence counselling

AZT prophylaxis

Start ART

Maternity ward make follow-up appointments

Mother in care & treatment
Child monitoring — test, prophylaxis
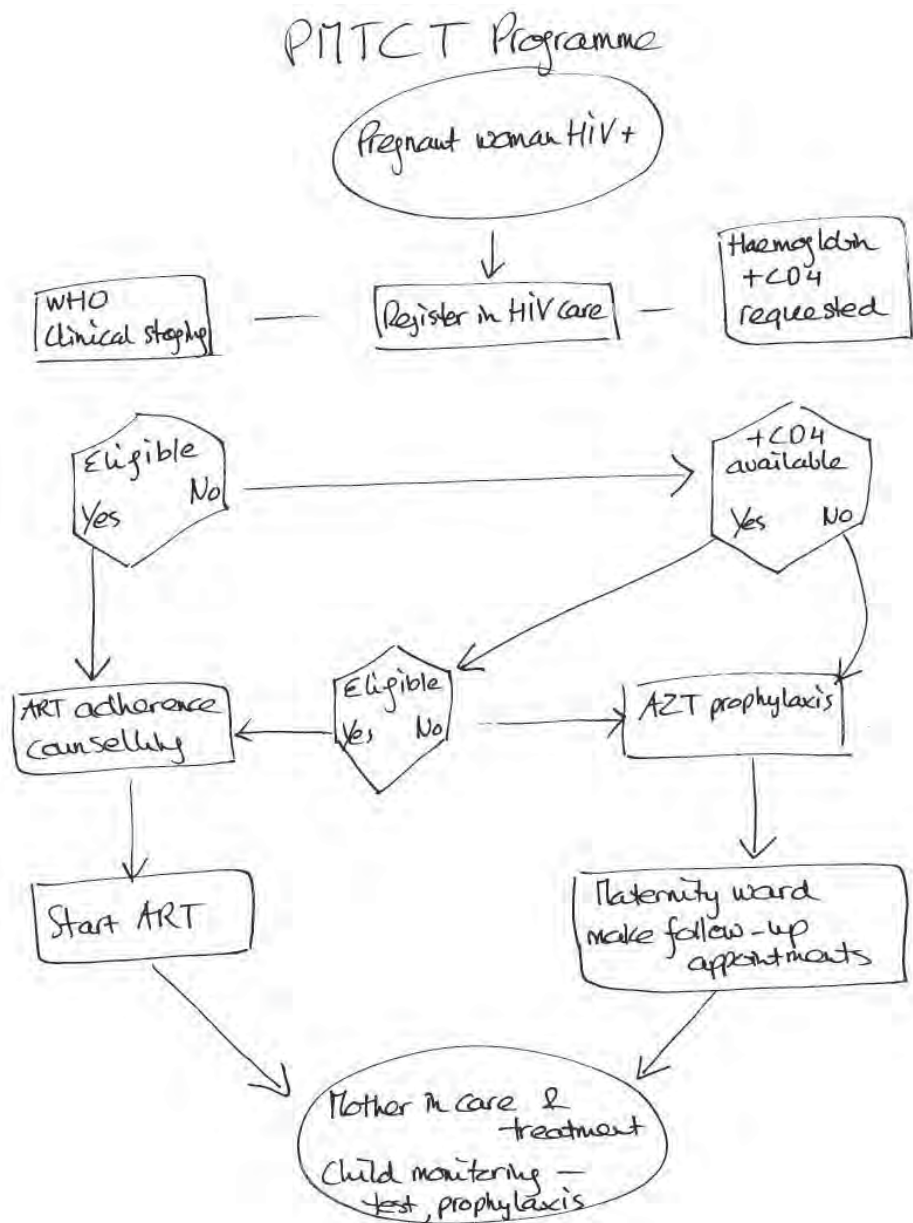
Example from the field: cotrimoxazole example

The improvement team met weekly. Its members intensely discussed all the potential reasons why cotrimoxazole was not prescribed to eligible patients. Possible oversights included failure to note which patients were eligible, failure to document that medications were ordered or picked up (at every visit), forgetting to check it patients were receiving and taking cotrimoxazole, lack of patient understanding about the benefits of taking it, confusion by providers about who should be checking to see if patients were receiving their medication, and not filling in the appropriate place on the patient record to document at each visit whether patients were receiving cotrimoxazole. The outreach worker met with several patients to learn if they understood why they needed to take cotrimoxazole. Most patients did not understand why the drug was important. They said they did not know that it could prevent diseases that can strike if a person already has HIV; diseases that can also result in death or very serious illness. At the next meeting, the team developed a flowchart of the current process from the time a patient arrives for an appointment, to the point when cotrimoxazole should be given. The flowchart was then discussed at the next staff meeting.

The flowchart in figure 11.2 demonstrates the use of flowcharting to visualize the process of pregnant HIV-positive women receiving ART at this particular health centre. In order for pregnant women to receive ART, they must first be identified as HIV-positive, then register at the clinic, be assigned a clinical stage, have CD4 counts assessed, and then determined to be eligible according to national guidelines. Once determined to be eligible, they then receive ART.

If they are not eligible for ART, they receive ARV prophylaxis to prevent mother-to-child HIV transmission (PMTCT). These steps allow staff to see where bottlenecks can occur.

Step 5: Make changes to improve HIV care

Implementation steps;

- Test changes;

- Routinely re-measure to analyze the impact on HIV care;

- Conduct tests of changes and measure them to see if they result in improvement;

■ Plot results over time;

■ Scale up changes shown to result in improvements.
You will not know whether your change works until you test it and then measure again to see if it worked. Your team may identify a variety of ideas for changes, and can test each idea to see if it results in improvement. This approach is repeated in a cycle of "measure- test change- re-measure" that forms a fundamental part of improvement work.

The key lessons learned from successful health centres include:

■ Test a variety of changes;

■ Start a change on a small scale: for example, implement it on one day or with one provider, and then expand;

■ Learn from successful best practises in your own clinic or elsewhere.

Several models for improvement have been adopted by health centres. These focus on cycles of measuring, testing changing and then re-measuring. The models may have different names, such as the Plan, Do, Study, Act (PDSA) cycle, but their similarities are greater than their differences.

Some categories of successful changes developed from QI studies at health centres, (remember that the specific change is unique to each clinic); including:

■ Reminders: put 'prompts' or reminders at the point of care to remind a provider (either verbally or in writing) to implement a specific process. These processes could include the provider asking about whether the patient needs cotrimoxazole, or if they have TB symptoms including cough or fever. They could also remind the provider to offer counselling about behaviour, or order a CD4 blood test. Reminders could include wall charts, job aids, or a field in a register or medical chart.

■ Make laboratory data available to providers: provide up-to-date laboratory data at the point of care so a provider can make a well-informed decision about whether to start treatment or prophylaxis.

■ Share performance data with providers ("audit and feedback"): show providers that their performance rates can be improved. Providers are encouraged when they see data which show their results have improved. Visible improvement is

a powerful motivating factor for staff to improve care, since the results show that improved care benefits a patient's health.

- Provider education: train the entire staff on how to improve care, including both specific aspects and improvement methods. This can involve formal training, mentoring sessions or distribution of materials (see chapter 9, Human Resources on mentoring and supportive supervision).

- Patient education: provide individual training sessions or group education to patients so that they better understand their role in optimal care. Expert patients or peer-educators can play a particularly effective role in improving patient visit rates and treatment adherence.

- Patient reminders: use telephone calls or home visits to remind patients to return to clinic, or follow recommendations for renewing medications, or having blood tests. Peer workers may be particularly effective in these cases.

- Organizational changes: reorganize the steps in a process of care delivery such as eliminating unnecessary steps, bottlenecks, loops, rework, etc. and streamlining the flow of processes. Convene regular team meetings to discuss patient management, reassigning staff roles and responsibilities or adding new staff. During the early part of a patient's visit, identify those who need a specific test. If possible, send patients to the laboratory before their visit in order to reduce waiting time.

- Information system strengthening: establish and/or implement standard monitoring systems (see chapter 6, Monitoring), and improve documentation forms by adding clinical summary sheets. In addition, if feasible, use a computer programme for these activities.

The improvement team meets weekly and starts to see improvements in the number of eligible patients who are prescribed cotrimoxazole. Based on flowcharting findings, the team decides to initially focus on patients who have come to a recent appointment, but either did not get checked to see if they needed cotrimoxazole, or did not get refills if they were already on it. Over two days, a new reminder system is tested in which notations are entered on clinic patient records used to record the patient's visit. The two-day test is successful and the number of patients given cotrimoxazole increases. As a result, this reminder is being expanded to include all patients; the record clerks are then trained to routinely put reminders on records. It is important to remember that sometimes the rate may not increase because the drug is not available. This finding is important because it shows health officers and donors that supply problems need urgent attention.

The patient representative provides two educational sessions a day to patients in the waiting area to increase awareness about the importance of taking cotrimoxazole, and that they have a right to treatment. Patients need to know that other serious infections can occur if a person is HIV-infected. The initial sessions are well-accepted by patients. But the two trainers quickly realize the limitations of their interventions, since more training sessions are needed on a daily basis than they can deliver. In response, the patient representative trains 20 patients to conduct these training sessions in the health centre and the community. It turns out that this training is extremely successful, spreads the understanding that use of cotrimoxazole is an important health measure, and provides patients with an opportunity to advocate for the best possible health care. These training sessions are expanded to include all patients.

Re-measuring to assess the impact on care:

Suppose that your baseline data results have initially identified an area for improvement. At that point, your improvement team needs to establish routine measurement cycles to assess progress over time. A simple run chart plotting the measurement data over time is created. This chart helps the team to track the project results, ideally showing when certain test cycles were conducted. See below for a simple run chart. The cycle is repeated and put into a graph format to display the results. Run charts will help your team to work on more than one improvement project at a time.

Figure 11.3: Example of a run chart

Eligible patients who are prescribed cotrimoxazole

Chart showing "Patients eligible and prescribed cotrimoxazole" (y-axis, 0% to 35%) across months January through May. Two lines: "No. Recieving" (black) and "No. Eligible" (grey). An arrow at March points to the note "began placing reminders in patient records".
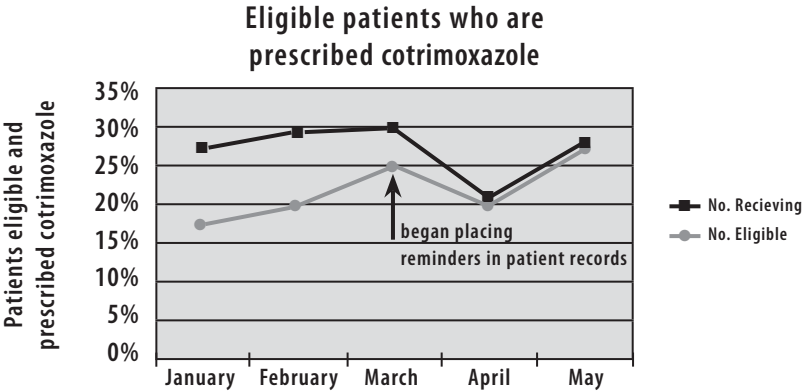
11.5 KEEPING QUALITY ON THE AGENDA

> **Notes from the Field:**
>
> The data clerk establishes a routine measurement system for monthly reporting of the agreed indicator. The results are graphically displayed and shared at the upcoming team meeting. They are put on the wall where everyone can see them.

Once you know that the change has worked, it is time to integrate this change throughout the entire centre. Leadership support and communication of the results are two important methods to ensure that the change happens. If the changes apply to other areas of the clinic beyond HIV care, they can be expanded there as well.

Resources

Your improvement work also needs to be integrated with efforts at district and national levels. Resources that may be available to you include tools to measure quality, training in QI, and ongoing support through clinical mentoring, coaching and supportive supervision. This communication with health officials and mentors is important because it also provides a way for you to let them know about problems at the centre beyond your control that affect the quality of services you provide. These problems often include broken equipment, medication and supply stock depletions, and infrastructure difficulties.

Your work to start and implement quality improvement will be strengthened by sharing your experiences with others. Opportunities for exchanging information and learning from others may speed up the improvement process.

Once the cycles of measurement and improvement begin, you may find it difficult to keep them going. Often external events occur that disrupt routine activities. If your clinic has made a commitment to improving care continuously as part of your regular discussions and meetings, and has engaged both staff and patients in improvement work, you will find that an expectation to continue has been created. Simple steps, such as setting aside even small periods of time to discuss performance, review data and to plan changes will keep quality improvement work going, and will result in better care for your patients.

Annex 2

Forms for Chapter 2: Planning integrated services at the health centre

2 Planning for integrated HIV services at the health centre

The generic tables below contains a list of essential and desirable interventions that have been arranged to be compatible with the current WHO priority list of interventions for HIV prevention, care, treatment, and support. The columns to the right are added to help sites to assess which services are currently being provided, and what new or expanded services are required.

The fifth column lists the relevant IMAI/IMCI guidelines and training course(s) (with letter codes as follows) and/or relevant Operations Manual chapters.

In countries not using IMAI/IMCI, replace with national primary care guidelines for acute and chronic HIV care and relevant standardized national curricula. If additional or alternative curricula are used, insert in this list.

A WHO IMAI/IMCI Chronic HIV Care with ART and Prevention Revision 1 with clinical and counseling training courses

B WHO IMAI Acute Care Revision 2 (3) with modular clinical training courses on management opportunistic infections, STI, mental health/neurological problems, PITC

C WHO IMAI Palliative Care: Symptom Management and End of Life Care with clinical training course plus caregiver booklet, patient self-management booklet, clinical training course

D WHO IMCI Chart Booklet for High HIV Settings and HIV complementary course or fully adapted IMCI course incorporating HIV

E WHO IMAI/STB TB Care with TB-HIV Co-management guideline module with short training course

F WHO IMPAC PCPNC guide or PMTCT section in IMAI/IMCI Chronic HIV Care with IMAI/IMPAC Integrated PMTCT training course

G WHO IMAI Reproductive Choice and Family Planning for PLHIV

H WHO Integrated HIV infant and young child feeding counseling

I WHO Adolescent Job Aid (draft) and short course on special chronic HIV care for adolescents

J WHO IMAI/IMCI Psychosocial Support for Children Affected and Infected by HIV

Annex 2.1: Increasing Knowledge of Sero-status					
Relevant IMAI/IMCI guidelines and training course(s) and/or relevant Operations Manual chapters					
What else needs to be done to deliver?					
Who needs to be trained to deliver this intervention?					
Are these interventions available in your health centre now?					
Increasing Knowledge of HIV Sero-status					
■ **Client- initiated testing and counselling (CITC)**					
■ **Provider-initiated testing and counselling**			OM3, B		
• PITC in antenatal care, during labour, in post-partum and newborn care			F		
• PITC in reproductive health services including family planning			G		
• PITC where patients shows signs/symptoms of illness suggesting HIV infection including TB, STI, other WHO staging illness and increasingly other common though minor complaints			B		
• PITC for men seeking circumcision as an HIV prevention intervention					
Diagnosis of HIV in infants and young children					
• Determine and document HIV-exposure status for all infants/ children • Recommend age-appropriate HIV testing for: ○ All HIV- exposed children ○ All children of unknown status ○ Sick children if HIV infection is suspected ○ Siblings of HIV-infected or exposed children or other family members ○ Collect blood, perform rapid HIV testing ○ Collect DBS and send sample for virological testing ○ Post-test counseling of parents/guardian			A		
Family and partner testing and counselling (based on index care)					
• Active support for disclosure and partner testing			A		
• Encourage and provide couples counselling			A		
Home testing and counseling • Support for home-based testing of partners			A		
Testing and counseling as a component of tolerant services for sex workers, MSM, adolescents, and other groups at high risk for transmission of HIV			**B**		
Support confidential HIV testing and counseling for health workers, to facilitate uptake of PEP and to provide early HIV care and treatment			**A**		
■ **Laboratory recommendations for HIV diagnosis**			**OM7**		

Annex 2.2: Accelerating HIV Prevention						
Relevant IMAI/IMCI guidelines and training course(s) and/or relevant Operations Manual chapters						
What else needs to be done to deliver?						
Who needs to be trained to deliver this intervention?						
Are these interventions available in your health centre now?						
Accelerating HIV Prevention						
■ **Prevention of sexual transmission of HIV**						
Condom promotion and provision			OM4, 6 A			
Detection and management of STI						

• For all adolescents and adults presenting for acute care
• Syndromic management
• As part of chronic HIV care
  ❍ Symptom screen on each HIV care visit
  ❍ Annual syphilis test in chronic HIV care for those at high risk
  ❍ Symptomatic treatment of HSV2
			A,B			

Safer sex and risk reduction counselling						
Note: These include many of the 'PwP' (Prevention with PLHIV) interventions which focus on prevention of HIV transmission (prevention of illness is under treatment and care) • Active support for disclosure and partner testing • Discordant couples risk reduction counselling and support • Counsel on continued possibility of HIV transmission and need to continue condom use • Counsel on return to sexuality and fertility on treatment • Assess substance use and relationship to risky behaviour • Brief alcohol interventions for harmful and hazardous alcohol use			A			
Male circumcision						
• Education, counseling regarding adult male circumcision • Wound care post-circumcision (some large health centres may provide male circumcision in some countries) • Neonatal male circumcision in large health centres with L&D			B			
Targeted interventions for commercial sex workers (CSW) and men who have sex with men (MSM)						
• Special, tolerant clinical services for CSW, MSM • Periodic presumptive treatment of STIs in sex workers • Outreach through peers			**B**			
Non-occupational post-exposure prophylaxis						
• Manage those who have experienced condom breakage when having sex with known HIV-infected source • Management of rape and sexual violence including PEP • Special management child sexual abuse			B			

■ **Special considerations targeting young people**						
• Tolerant, adolescent-friendly services • Ensure access reproductive health services including FP and condoms				**I**		
■ **Prevention of infection in infants and young children**						
Family planning and counselling						

• Family planning and reproductive choices counseling for all PLHIV
  ○ Planning a pregnancy
  ○ Avoiding pregnancy, including decision-making and informed choice of all contraceptive methods
  ○ If pregnant or planning pregnancy, counsel on risk of MTCT, PMTCT interventions and healthy conception, pregnancy, delivery and infant feeding
  ○ Family planning counseling and services modified for PLHIV including pills, injectable contraceptives, male and female condoms, fertility-awareness methods and Lactational Amonorrhea Method (LAM), referral for other methods.
• Provide third trimester and postpartum family planning counseling (modified for PLHIV)
				A,G		

Antiretroviral medicines for preventing HIV infection in infants						
• Assess eligibility for ART for infected mothers at first ANC visit: clinical staging, CD4 • Initiate ART for pregnant women eligible for ART based on staging of HIV disease • Provide ARV prophylaxis (AZT from 28 weeks; AZT, 3TC, sdNVP intrapartum plus sdNVP and AZT to newborn) or ART for PMTCT • Clinical and lab monitoring • Distinguish side effects from pregnancy problems • Provide enhanced adherence support during pregnancy • Ensure that woman takes ARV dose (either sdNVP or double dose AZT + sdNVP) as soon as labour starts • Intensified adherence support during labour • Prompt newborn dose and adherence support for newborn and maternal ARV drugs after discharge • Postpartum: Support adherence to AZT for 1 or 4 weeks to newborn and to AZT/3TC tail for 1 week for mother (if not on ART)				**A,F**		
Treatment, care, support for pregnant HIV-positive women						
• Interventions to prevent illness in PLHIV and sexual transmission, clinical management, and TB detection and treatment, as for all adolescents and adults—see above				**A,B**		

Infant feeding counselling and support						
• Antenatal: provide infant feeding counseling on choice; preparation for exclusive breastfeeding with early weaning or replacement feeding • L&D: • Postpartum/newborn care: Infant feeding counseling and support for exclusive BF or replacement feeding			**B,F**			
Other interventions to prevent MTCT and assure HIV-exposed infant testing, prevention and care						
Antenatal: • Emphasize importance of safer sex/condom use during pregnancy and lactation (partner may seek sex elsewhere) • Good antenatal practices that contribute to PMTCT: syphilis testing (and treatment of syphilis when required), STI screening and management, malaria IPT if not on co-trimoxazole, insecticide-treated bednets • Advise to deliver in facility; special modifications to careseeking advice for PLHIV • Educate on need and schedule for HIV testing of the newborn • Indicate maternal HIV status on both maternal and infant health card			**B,F**			
Good labour and childbirth practices that contribute to PMTCT: • No routine rupture of membranes or episiotomy • Avoid prolonged labour (using partograph) with prompt transfer of complicated cases or primiparous women before they become too complicated • Minimize cervical examinations • Safe delivery practices which minimize fetal contact with maternal blood and secretions • Avoid PPH by active management of third stage • Before discharge, review need and schedule for well child visits and HIV testing of the infant • Arrange follow-up of mother and newborn • Advise on safe disposal of lochia			**B,F**			
Postpartum/newborn care: • Advise when to seek care urgently—special instructions for PLHIV • Emphasize importance of safer sex/condom use during lactation (partner may seek sex elsewhere) • Assure continuity of HIV care for mother and HIV testing and care for newborn (co-trimoxazole for both mother and baby; HIV testing for baby; follow-up to make sure mother is in care) • Family planning counseling and provision of basic services			**B,F**			
■ **Prevention of HIV (and TB) transmission in health care settings**						

Infection control (including TB infection control)						
TB infection control • Screen all patients for cough and other symptoms of TB • For coughing patients, ask to cover mouth and provide tissue • Well ventilated indoor waiting area • Outdoor protected waiting area • Place coughing patients in separate waiting area or outdoors, as appropriate • Expedite coughing patients receipt of services • TB infection control plan in facility (see TB infection control section in Infrastructure chapter)				OM 4 E		
• Safe water supply and waste water management • Safe waste management • Handwashing and other hygiene • Latrines/toilets • Cleaning and laundry				OM 4		
Blood safety						
Safe injections, use of standard precautions						
• Standard precautions • Safe injections; sterile needles and syringes • Ample supply gloves • Goggles, aprons, long-arm gloves for infection prevention in L&D setting				OM 4,8		
Occupational post-exposure prophylaxis (PEP)				OM 8		

Annex 2.3: Treatment and care				
Relevant IMAI/IMCI guidelines and training course(s) and/or relevant Operations Manual chapters				
What else needs to be done to deliver?				
Who needs to be trained to deliver this intervention?				
Are these interventions available in your health centre now?				
Accelerating Scale-Up of HIV Treatment and Care				
■ Prevention and management of OIs and co-morbidities				
	Cotrimoxazole prophylaxis			
	• Cotrimoxazole prophylaxis- from 6 weeks of age in HIV-exposed infants; for all HIV-positive • Secondary prophylaxis for fungal infections (fluconazole)		**A**	
	Vaccine-preventable diseases			
	• Adults and adolescents: catch-up with recommended vaccinations that might have been missed (e.g. tetanus, polio) • Adolescent vaccination • Child immunizations: give DPT, OPV, Measles; give BCG at birth even if HIV-exposed if high TB endemicity (avoid BCG if known HIV infection); delay pneumococcal conjugate and H. influenzae type B if severe immunocompromise		**A**	
	Nutritional care and support			
	• For adolescents and adults • Clinical examination, assess anthropometry (e.g., weight, weight gain or loss, MUAC or BMI) • Nutrition counseling to assure adequate macro- and micro-nutrient intakes at RDA though diversified diets, fortified foods, and, if these are inadequate, micronutrient supplements		**A,B**	
	• Nutritional assessment and support for children- growth and development monitoring • Measure & chart weight every visit; adjust dose accordingly • Measure MUAC, check for oedema and signs of wasting • Assess and classify nutritional status • Counsel on improving diet through supplementation, fortification or dietary modification • Vitamin A prophylaxis where indicated • Mebendazole prophylaxis • Provide micro-nutrient supplement where indicated • Identify local services and possibilities for referral • Maintain list of local community service for nutritional support including food supplementation, household food security and livelihood support • Provide micronutrient supplementation where indicated • Support for exclusive breastfeeding (EBF) for first six months or support for exclusive replacement feeding if chosen and AFASS		**A,D**	

Prevention (label in left margin spanning the Prevention rows)

Prevention	• Provide nutrition counseling on energy- and nutrient-rich complementary foods, for feeding from six months of age • Determine if target weight gain has been achieved (or plot and interpret weight for age on growth chart) • Perform basic developmental assessment • Document on child health, HIV care card, growth chart					
	Water, sanitation, hygiene					
	• Promotion of safe drinking water (education) • Promotion of hand washing with soap (education) • Infants, children: provide education on safe disposal of stool			**A,D**		
Clinical care and support services	**Pneumonia**			**B,D**		
	Malaria (prevention and treatment)					
	• Insecticide- treated mosquito nets • Cotrimoxazole prophylaxis provides prevention • Case management malaria			**B,D**		
	Diarrhoea			**B,D**		
	Malnutrition					
	• Assess and classify malnutrition • Manage uncomplicated malnutrition in adults • Manage severe uncomplicated malnutrition; including provide additional macronutritional support according to nutrition assessment and clinical conditions			**B,D**		
	Mental health and psychosocial support					
	• Screening and basic management of depression, suicide risk, hazardous or harmful alcohol use • Recognize and refer psychotic patients • Individual counseling (post-test, adherence support, disclosure, risk reduction, etc) including counselor-assisted disclosure • Peer support groups • Encourage family members to participate in patient's care and treatment • Linkages to FBOs and CBOs for prevention and support services where available • Couples counseling			**A,B**		
	Special for children: Psychosocial counseling, support • Develop and initiate child-specific disclosure plan • Support disclosure as appropriate to the age and developmental stage of the child • Identify community mechanisms for referral for child-specific support • Provide guidance, support parents and care providers for disclosure to the child & ongoing counseling			**A,J**		

Other common conditions						
• Syndromic management of non-severe OIs • Initiate emergency management of severe OIs; refer severe OIs • Educate on early care seeking for illnesses • Manage skin problems • Manage or recognize/refer neurological problems (especially cryptococcal meningitis, peripheral neuropathy) **Special for children:** • Ear infection • Routine childhood clinical services as described in IMCI or other national child health service package				B D		
■ **Prevention & treatment HIV-associated TB**						
Intensified case finding						
• Ask/observe for cough and other symptoms and do clinical assessment for others signs during every chronic HIV patient visit; during all acute care visits; and for all household contacts • Send sputums for AFB and respond to results or perform on-site				A,B,E		
IPT for TB				AE		
TB-HIV co-management (including TB-ART co-treatment)						

• Determine disease site, type, category of TB
• Refer (and follow-up) to district clinician for further evaluation and treatment plan for the following patients:
  ○ defaulted;
  ○ suspected smear negative or extrapulmonary TB, for chest X-ray and further evaluation
  ○ suspect chronic or MDR TB patient;
  ○ TB-HIV patients for TB-ART co-treatment plan
  ○ to rule out active TB before starting INH prophylaxis, as required
  ○ Where referral is impossible: empirically diagnose and treat severely ill patients with suspected smear-negative pulmonary and extrapulmonary TB
• Initiate TB treatment in smear positive patients who are new, relapse, or treatment after failure and new smear positive TB-HIV patients not already on ART using the national regimens; refer others to district clinician for treatment plan
• Manage patients who have been started on TB or TB-ART co-treatment by the district clinician, following their treatment plan
• For all patients in treatment:
  ○ educate about TB and HIV
  ○ support adherence and self-management and provide DOT as appropriate
  ○ train and supervise TB and TB-ART community treatment providers/supporters
  ○ supply/dispense TB and ART treatment
				E		

❍ monitor treatment ❍ ensure continuation of TB treatment ❍ determine treatment outcome • Maintain records related to TB treatment and ART					
Special TB related services for children- as for adults plus • Screen and refer children with suspected TB for further evaluation, diagnosis, and treatment plan: • Determine and document history of TB contact and symptoms consistent with TB during at each encounter (regular or acute visit) • Perform or refer sputum smear microscopy for AFB if child can produce sputum • Refer (and follow-up) all children who have history of close contact with a TB patient and symptoms consistent with TB (cough, fever, weight loss, failure to thrive) to district clinician for further evaluation • Screen HIV exposed and infected children for TB • Where referral is not possible: empirically diagnose and treat severely ill children with suspected TB who are not already on ART • Provide isoniazid prophylaxis to all HIV-infected children under five years of age in close contact with a TB patient after ruling out active TB			E		
Palliative care symptom management and end-of-life care					
• Provide management which integrates specific treatment and prevention with effective management of symptoms • Pain assessment using a grading scale • Chronic pain management using several analgesics including oral morphine using the analgesic ladder • Initiate oral morphine • Manage side effects of oral morphine and adjust dose • Manage neuralgia and other special pain problems • Medical and non-medical symptom management of nausea and vomiting, weight loss, mouth ulcers, persistent diarrhoea, confusion, anxiety, insomnia, itching, bedsores, cough or difficult breathing, fever, etc • Teach caregivers at home to provide effective palliative care including pain management and to detect and report possible TB • Home-based palliative care • Health centre back up to home-based palliative care **Special for children:** • Recognize, grade and manage pain in children • Symptom management in children • Family/caretaker preparation/support/counseling Provide basic guidance and support for the child to deal with illness, death and bereavement • Provide basic guidance and support parents and care providers in caring for the sick or dying child			C		

Antiretroviral therapy for adults, adolescents, children					

• Regular/ongoing review and staging
• Regular/ongoing laboratory monitoring with prioritized use of CD4
• Adherence preparation, support (including counseling and aids such as pill boxes) and monitoring
• Use of community organizations, community volunteers or CHWs to track patients who have missed appointments
• Preparation of treatment supporters
• Support patient self-management
• Initiate first-line ART in uncomplicated patients
• Clinical monitoring of first-line ART for toxicity and effectiveness
   ○ Recognize and manage mild and moderate ARV drugs toxicity
   ○ Recognize and refer severe or life threatening drug toxicities
• Appropriate identification and referral of complex patients and patients with possible treatment failure
• Substitute between d4T and AZT for toxicity
• Immunologic monitoring for effectiveness: prioritized use CD4
• Laboratory monitoring for toxicity using haemoglobin
• Support community-based interventions:
   ○ Treatment preparedness for both HIV and TB
   ○ Treatment support for ART, TB treatment and prophylaxis
   ○ Home delivery of drug refills
   ○ Peer support
				A	

Special for children- as above plus: • Start ART in HIV-positive infants • Perform paediatric clinical review and clinical staging • Send and use CD4% and CD4 count for immunological staging in children • Determine eligibility for ART in children • Prepare children and care givers for initiation of ART • Special paediatric adherence preparation and ongoing support • Adjust drug dosage as the child grows • Provide guidance, support parents and care providers in addressing treatment adherence • Start preparations for long term ART adherence • Identify key obstacles and offer practical solutions to improve adherence				**A,D**	
Special for adolescents- as above plus • Tanner staging to determine whether paediatric or adult dosing • Special psychosocial support for adolescent PLHIV • Peer support groups and other special psychosocial support for young people living with HIV				**A,I**	

Care and treatment for health workers						
• Offer confidential HIV testing and counseling for health workers, to facilitate uptake of PEP and to provide early HIV care and treatment • Encourage HIV prevention (both sexual exposure and occupational) • Support health worker safety including safe injection, other standard precautions—see prevention of HIV and transmission in facilities above • If HIV positive, link with special services for HIV care and treatment				**A OM 8**		
Strategic Information: patient monitoring						
• Pre-ART: Maintain PreART records (HIV care/ART card, PreART register); regular/ongoing clinical and laboratory monitoring and staging to identify ART-eligible patients • On ART: Maintain records related to ART (HIV care/ART card, ART register, reports; includes early warning indicators for drug resistance) • PMTCT-MCH patient monitoring system • TB-HIV patient monitoring system				**OM5**		

Annex 3

**Forms for Chapter 3:Services integration,
linkages and triage**

3.1 Numeric Code list for services outside the health centre

For community services use the following numeric codes:	For clinical services outside the health centre or services useful for health centre use the following letter codes
1. Adherence counseling	A. Ambulance and emergency services
Children services	B. District clinician who supervises HIV care at this health centre
2. Schools, day care	C. District HIV coordinator
3. Programmes providing school fees	D. District hospital – adult ward in charge
4. Peer support groups for older children	E. District hospital- ART clinic in charge
5. Recreational activities for children	F. District hospital – paediatric ward in-charge
6. Programmes to support child headed households	G. District lab
7. Community volunteer support for children	H. District MCH coordinator
8. Financial and day care support to attend health facility appointments for children	I. District Pharmacy
9. Part or full time foster care	J. District TB coordinator
10. Community day care – adults	K. Driver/transport
11. Community volunteer support	L. Family Planning
12. Family planning	M. OB/GYN Services
Financial support	N. Other district clinicians
13. Government grants	O. Palliative care (symptom management, end of life care expert
14. Income generation skills training activities	P. PEP services
15. Vocational skills training	Q. Pharmacy
16. Saving and loans groups	R. Power
17. Microfinance institutions	S. Radio
18. Funeral associations	T. Special disease surveillance reporting numbers
19. Food support	U. STI services
20. HIV counseling and testing	V. TB services
21. Home-based care coordinator	W. Telephone
22. Information and education activities in fight against stigma	X. Town/municipality/Utility numbers
23. Legal support	Y. Warm line for clinical consultations on HIV/ART complications
24. Material support	Z. Waste system
25. Mental health services	AA. Water
26. Microfinance	BB.Other clinical services
27. Nutrition counseling	CC.BB. Other clinical services
28. Peer support groups	
29. PLHA support	
30. Prevention services	
Psychosocial or spiritual support	
31. Counseling programmes	
32. Peer support groups	
33. Faith based organizations	
34. Community volunteer support	
35. Prayer groups	
36. PLHIV activist groups, advocates	
37. Social welfare services (water, food, clothing, shelter)	
38. Support for domestic groups	
39. Treatment support groups	
40. CITC	
41. Youth support groups	
42. Other _____	

3.2 Directory of Services Form- listed by organization name:

Organization	Services Provided	Fees for services	Address	Phone number	Hours of Service	Contact Person
Name of Org A						
Name of Org B						
Name of Org C						
Name of Org D etc						

3.3 Directory of services form – listed by services provided

Community Services Provided	Organization	Fees	Address	Phone number	Hours of Service	Contact Person
1. Adherence counseling						
Children services						
3. Schools, day care						
4. Programmes providing school fees						
5. Peer support Groups						
6. Recreational activities for children						
7. Programmes to support child headed households						
8. Community volunteer support for children						
9. Financial and day care support to attend health facility appointments for children						
10. Part or full time foster care						

Community Services Provided	Organization	Fees	Address	Phone number	Hours of Service	Contact Person
11. Community day care-adults						
12. Community volunteer support						
13. Family planning						
Financial support						
14. Government grants						
15. Income generation skills, training, activities						
16. Vocational skills training						
17. Savings and loans groups						
18. Microfinance institutions						
19. Funeral associations						
20. Food support						
21. HIV counseling and testing						

Community Services Provided	Organization	Fees	Address	Phone number	Hours of Service	Contact Person
22. Home-based care coordinator						
23. Information and education activities to fight against stigma						
24. Legal support						
25. Material support						
26. Mental health services						
27. Microfinance						
28. Nutrition counseling						
29. Peer support groups						
30. PLHA support						
31. Prevention services						
Psychosocial or spiritual support						
32. Counseling programmes						

Community Services Provided	Organization	Fees	Address	Phone number	Hours of Service	Contact Person
33. Peer support groups						
34. Faith based organizations						
35. Community volunteer support						
36. Prayer groups						
37. PLHIV activist groups advocates						
38. Social welfare services (water, food, clothing, shelter)						
39. Support for domestic violence victims						
40. Treatment support groups						
41. CITC						
42. Youth Support Groups						
43. Other						

Community Services Provided	Organization	Fees	Address	Phone number	Hours of Service	Contact Person
A. Ambulance and emergency services						
B. District clinician who supervises HIV care at this health centre						
C. District HIV coordinator						
D. District hospital adult ward in charge						
E. District hospital ART clinic in charge						
F. District hospital paediatric ward in charge						
G. District lab						
H. District MCH coordinator						
I. District pharmacy						
J. District TB coordinator						
K. Driver / transport						
L. Family Planning						
M. OB/GYZ Services						
N. Other district clinicians						
O. Palliative care (symptom management, end of life care)						

Community Services Provided	Organization	Fees	Address	Phone number	Hours of Service	Contact Person
P. PEP services						
Q. Pharmacy						
R. Power						
S. Radio						
T. Special disease surveillance reporting numbers						
U. STI Services						
V. TB services						
W. Telephone						
X. Town / Municipality / Utility numbers						
Y. Warm line for clinical consultations on HIV/ART complications						
Z. Waste system						
AA. Water						
AB. Other clinical services						

Annex 5

Forms for Chapter 5: Infrastructure

5.1   Electrical load estimator

5.1 Electrical load estimator example

Electrical load estimator for large and small health centres							
		No	Watts	Hours	Days Per Week	Day Total in Watt-Hours	Estimate of those connected at one time[1]
Essential lab	Microscope	2	46	4	6	315	
	Hgb meter	1	29	2	6	25	
	Microhaematocrit centrifuge	1	575	1	6	493	
Cooling	Fan						
	Air conditioner (adaptation)						
	Refrigerator run on AC (adaptation)	1	1500	24	7	36000	
	Refrigerator run from 12 or 24 volt battery bank directly						
Critical lights	Small health centre: Emergency visits at night						
	Portable exam lights (where ambient light not adequate)	1	25	1	7	25 night total	
	Security at night	4	10	11	7		40
	Large health centres also: More emergency outpatient visits						
	Labour room						
	Delivery room	1	40	5	7	200	40
	Emergency surgery						
	Recovery room	1	20	3	7	60	20
	Inpatient beds- small ward	2	10	3	5	43	20
	Night nurse	1	20	8	7	160	20
	Toilets at night	2	10	2	7	40	20
	Waiting room	1	20	4	7	80	
Commu-nication	Recharge mobile phone						
	CB radio						
Patient education	VCR or DVD player	1	20	2	4	23	20
	TV monitor	1	140	2	4	160	140
	Laptop computer	1	150	8	6	1,029	150

1   For inverter sizing

Annex 6

Forms for Chapter 6: Monitoring services, patients, and programmes

6.1   Figure showing data flow in the HIV Care/ART
        Patient monitoring system
6.2   Figure showing data flow in the
        TB/HIV Patient monitoring system
6.3   Figure showing data Flow in the interlinked MCH/ANC/
        PMTCT and HIV Care/ART patient monitoring system
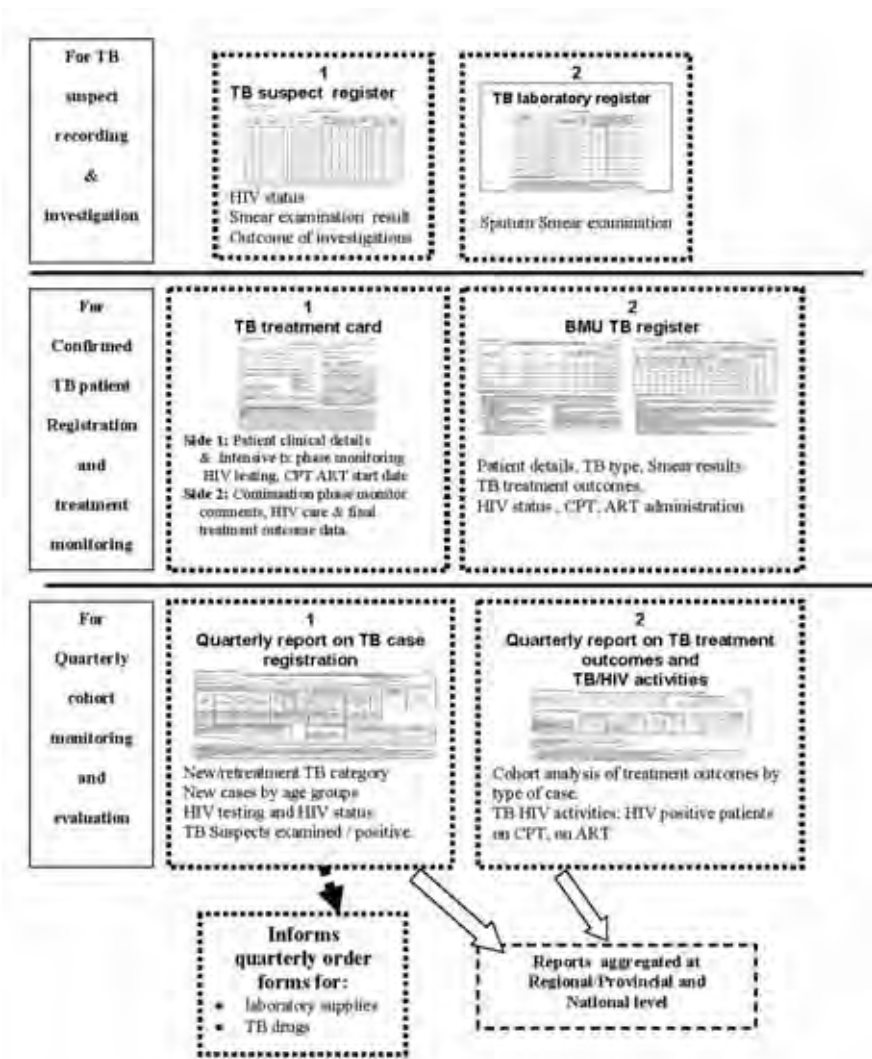
6.1 Figure showing data flow in the HIV Care/ART patient monitoring system

The diagrams on the following pages show the flow of data through the three illustrative, interlinked patient monitoring systems.

6.2 Figure showing data flow in the TB/HIV patient monitoring system

6.3 Figure showing data flow in the interlinked MCH/ANC/ PMTCT and HIV Care/ART patient monitoring system
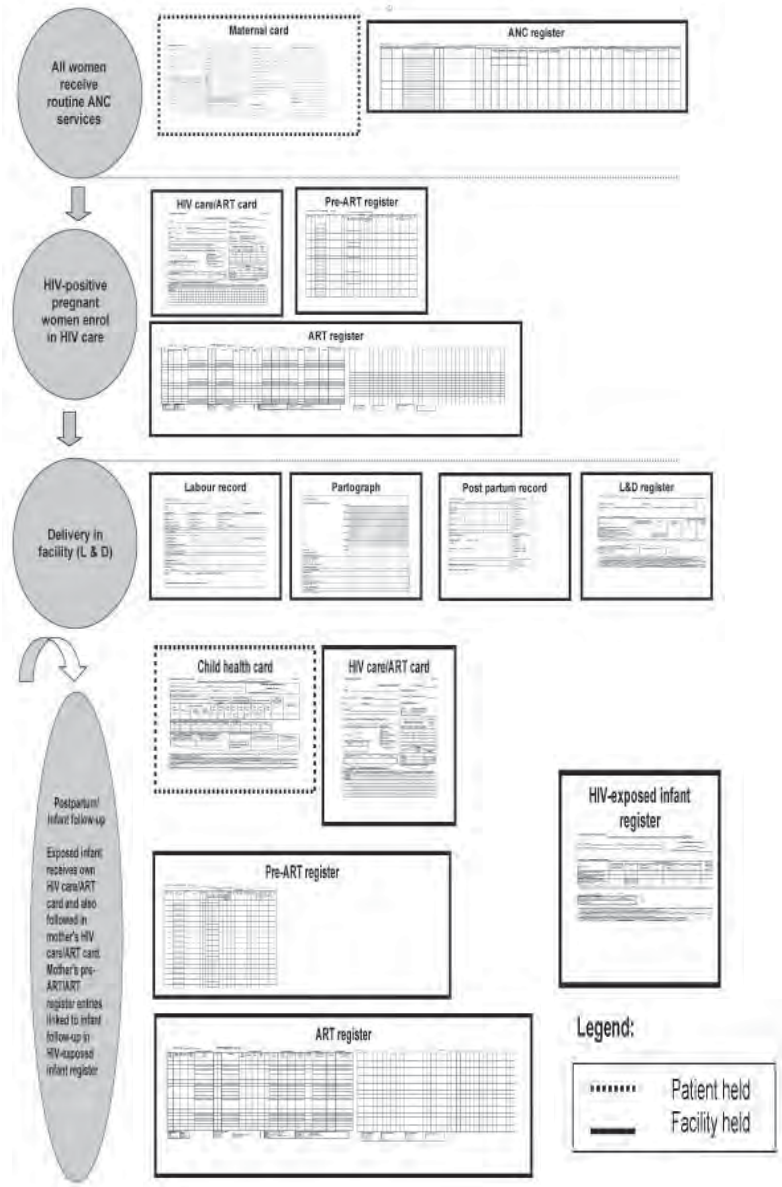
Annex 7

Forms for Chapter Six: Supply management

7.1 Indicators of poor quality or damaged supplies

▶ **INDICATORS OF POOR QUALITY OR DAMAGED SUPPLIES**

PACKAGING, LOOK FOR:
▶ Broken or ripped packaging (vials, bottles, boxes, etc.)

LABELS, LOOK FOR:
▶ Missing, incomplete or unreadable labels

IF Liquids, LOOK FOR:
▶ Discolouration
▶ Cloudiness
▶ Sediment
▶ Broken seal on bottle
▶ Cracks in ampoule, bottle or vial
▶ Dampness or moisture in packaging
▶ Torn or ripped packaging

IF Latex Products, LOOK FOR:
▶ Dryness
▶ Brittleness
▶ Cracks

IF Lubricated latex products, LOOK FOR:
▶ Sticky packaging
▶ Discoloured product or lubricant
▶ Stained packaging
▶ Leakage of the lubricant (moist or damp packaging)

IF Foil packs, LOOK FOR:
▶ Perforations in the packaging

IF Chemical reagents, LOOK FOR:
▶ Discolouration

IF tablets (PILLS), LOOK FOR:
▶ Discolouration
▶ Crumbled pills
▶ Missing pills (from blister pack)
▶ Stickiness (especially coated tablets)
▶ Unusual smell

IF Capsules, LOOK FOR:
▶ Discolouration
▶ Stickiness
▶ Crushed capsules

IF Injectables, LOOK FOR:
▶ Liquid not returning to suspension after shaking

IF Sterile products (including intrauterine devices), LOOK FOR:
▶ Torn or ripped packaging
▶ Missing parts
▶ Broken or bent parts
▶ Moisture inside the packaging
▶ Stained packaging

IF Tubes, LOOK FOR:
▶ Stickiness
▶ Leaking contents
▶ Perforations or holes in the tube

7.2 Requisition and issue voucher

From *Guidelines for the Storage of Essential Medicines and Other Health Commodities* (JSI/DELIVER)

REQUISITION AND ISSUE VOUCHER					
Requisition and Issue Voucher No.: ⎯⎯⎯⎯⎯⎯					
Date: ⎯⎯⎯⎯⎯⎯⎯ Ship to: ⎯⎯⎯⎯⎯⎯⎯⎯ ⎯⎯⎯⎯⎯⎯⎯⎯ ⎯⎯⎯⎯⎯⎯⎯⎯					

REQUISITION			ISSUE		Remarks
Article	Quantity on hand	Quantity received	Shipped	Received	

REQUISITION	
Requested by: ⎯⎯⎯⎯⎯⎯	Date: ⎯⎯⎯⎯⎯⎯
Approved by: ⎯⎯⎯⎯⎯⎯	Date: ⎯⎯⎯⎯⎯⎯

ISSUE	
Approved by: ⎯⎯⎯⎯⎯⎯	Date: ⎯⎯⎯⎯⎯⎯
Shipped by: ⎯⎯⎯⎯⎯⎯	Date: ⎯⎯⎯⎯⎯⎯

RECEIPT	
Received by: ⎯⎯⎯⎯⎯⎯	Date: ⎯⎯⎯⎯⎯⎯

(MAKE 4 COPIES)

7.3 Requisition for pharmaceutical supplies form

REQUISITION NUMBER:
01390

FOR MEDICAL SUPPLIER USE ONLY

ISSUE VOUCHER NUMBER

Health Care Facility Office
Stamp

Health Care Facility: _____

Send requisition to: _____
(Medical Supplier)

DATE:

ITEM	UNIT + SIZE	CODE NUMBER	QUANTITY	CODE NUMBER (if amended)	QUANTITY ISSUED
Only one item (one form, one strength) per line.					

TOTAL #
OF BOXES
IN ORDER:

Medical supplies, detailed above, are
received in good condition and are of
good quality.

DATE ORDER RECEIVED: _____

DATE ORDER COMPLETED: _____

DATE OF DISPATCH: _____

_____
(Recipient's Signature and Office)

_____
(Medical Supplier Signature and Office)

_____
(Requisitioner's Signature and Office)

7.4 Delivery form

DATE	REQUISITION NUMBER	ISSUE VOUCHER NUMBER	DELIVERY PERSON NAME + SIGNATURE	VEHICLE REG. NO.	NO. OF BOXES	STAFF MEMBER SIGNATURE

7.5 Discrepancy report form

HEALTH CARE FACILITY:		DATE:			
RECEIVED BY:		WITNESSED BY:			
DETAILS OF SHIPMENT					
REQUISITION NUMBER: NAME OF DELIVERY PERSON: NUMBER OF BOXES RECEIVED:		TRANSPORTER: VEHICLE REGISTRATION :			
DETAILS OF DISCREPANCIES					
ISSUE VOUCHER	ITEM DESCRIPTION		CODE	UNIT+SIZE	QUANTITY
ITEMS MISSING / OVER-ISSUED					
EXPIRED ITEMS					
DAMAGED OR POOR QUALITY ITEMS					
OTHER DISCREPANCIES					
NAME (print): (signature): OFFICE HELD:					
CC:					

7.6 Stock card

ITEM:					CODE NUMBER:		
UNIT + SIZE:					PRICE:		

MAXIMUM STOCK LEVEL_____ MINIMUM STOCK LEVEL: _____ :_____

Date	Received from	Quantity received	Issued To	Quantity issued	Balance in stock	Remarks	Signature

7.7 Monthly report and requisition form

Province: _____ District: _____ Location: _____

Facility type Depot: District Store: Facility: _____ Other: _____

Report for Month beginning: _____, 20_____ ending: _____, 20_____

Product	Unit	Beginning balance	Received this month	Dispensed/ issued	Losses/ adjustments	Ending balance	Amount needed

7.8 Temperature control log

Temperature control log: ARV Pharmacy store refrigerator

Month/Year: ……………..200___

Acceptable Range: 2–8˚C

Date	Time	Recorded Temp (C)	Within Acceptable Range Yes()/No	Initials
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

Temperature control log: Pharmacy ARV store

Month/Year: …………..../200__

Acceptable Range: +18-25°C

Date	A.M. Time	Recorded Temp (C)	Acceptable Yes( )/No	Initials	P.M. Time	Recorded Temp (C)	Acceptable Yes( )/No	Initials
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

7.9 Patient counselling checklist for ARVs

1.Introduce yourself

2.Identify who is being counseled

3.Check what the patient or his/her representative already knows about the medicines:
   a. What did the doctor/nurse tell you the medication was for?
   b. How did the doctor/nurse tell you to take the medicines?
   c. What other information did the doctor/nurse tell you about taking this medication?

4.Make sure the patient or his/her representative understands how these medications work
(Not a cure, only suppresses the virus, can still infect others, can still get sick from other
   illnesses)

5.Ask for patient's questions and concerns

6.Give the name of medicine and describe appearance
(Show the patient the identifier code on solid dosage forms and show the label. If possible,
   open package and show the tablets. Refer to patient counseling information.)

7.Name the route of administration

8.Give directions/instructions
Explain to the patient or his/her representative the directions they should follow (number
   of pills, amount of fluid, when to take, not to share/miss dose, not to take more or less,
   missed doses to be taken as soon as possible or skip and go to regular dosing schedule,
   no double dosing. Continue taking even when feeling better, otherwise medicines may
   not work and are limited. Do not stop taking drugs without doctor's knowledge).

9.Give information on the possible drug interactions (herbs, other medicines)

10.Give information on the side effects of the medicines

11.Give instructions on how the medication should be stored

**12.Check the understanding of the patient or his/her representative by asking them to
   repeat back to you key information. Remind them of information they left out**

13. Final check for questions and concerns

Annex 8

Forms for Chapter 8: Laboratory services

8.1 HIV testing register

Testing Site Name: _____

Type of testing site (Circle one): VCT   PMTCT   TB   Other

Serial No.	Patient/Client Code	Age (Years)	Sex	Date Tested (dd/mm/yy)	HIV Test-1* Kit Name Lot No. Expiration Date ___ (Circle one)	HIV Test-2* Kit Name Lot No. Expiration Date ___ (Circle one)	HIV Test-3* Kit Name Lot No. Expiration Date ___ (Circle one)	Final Results** (Circle one)	Tester	Mark if sent for Confirmation or EQA	Confirmation or EQA Results (Circle one)	Comments
1			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
2			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
3			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
4			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
5			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
6			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
7			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
8			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
9			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
10			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
11			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
12			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
13			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
14			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
15			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
16			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
17			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
18			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
19			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	
20			M F	/ /	NR R INV	NR R INV	NR R INV	NEG POS IND		☐	NEG POS IND	

Total non-reactive/negative _____
Total reactive/positive _____
Total invalid _____
Total inconclusive _____
Total tests _____

* Test is considered invalid (INV) if control line does not develop, irrespective of presence or absence of client line. If invalid, please record and repeat using the same test on a new row.
** If no interpretation is considered indeterminate (IND) if Test 1 and Test 2 results are not the same and a 3rd Test (the tie-breaker) is not available.
COMPLETING PAGE TOTALS WILL ASSIST WITH ONGOING QUALITY ASSURANCE AND PREPARING MONTHLY REPORTS.

Examples of frequent comments:
- Kit expired
- IND specimen sent to reference lab
- asked patient to return in 1 month

8.2 Request sputum smear microscopy examination

Request for Sputum Smear Microscopy Examination

The completed form with results should be sent promptly by laboratory to the referring facility

Referring facility [1] _____ Date _____

Name of patient _____ Age _____ Sex: ☐ M ☐ F

Client number _____ TB suspect number _____

Complete address _____

_____

Reason for sputum smear microscopy examination:
    ☐ Diagnosis

OR ☐ Follow-up   Number of months of treatment: _____   BMU TB Register No. [2] _____

Name and signature of person requesting examination _____

1. Including all public and private health facility/providers
2. Be sure to enter the patient's BMU TB Register No. for follow-up of patients on chemotherapy

RESULTS (to be completed in the laboratory)

Laboratory Serial No. _____

Date collected [3]	Sputum Specimen	Visual appearance [4]	RESULTS				
			NEG	(1-9)	(+)	(++)	(+++)
	1						
	2						
	3						

3. To be completed by the person collecting the sputum
4. Blood-stained, muco-purulent, saliva

Examined by _____

Date _____   Signature _____

8.3 Register of TB suspects

Annexe 8.3
Year _____

Date	TB suspect number	Name of TB suspect	Age M/F	Complete address	Result of HIV test	Date sputum collected	Date sputum sent to lab	Date results received	Results of sputum examination			TB treatment card opened (record date)	Observations Clinician's diagnosis
									1	2	3		

8.4 Infant PCR lab requisition form with program monitoring data

HIV Reference Laboratory Name:

PATIENT INFORMATION

Patient ID

☐☐ - ☐ - ☐☐ - ☐☐☐ - ☐☐

First Name

Last Name ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Date of Birth

(DD/MM/YYYY)   Sex (M/F)

☐☐ / ☐☐ / ☐☐☐☐   ☐

PMTCT INFORMATION

Child ever breastfed? ☐

1=Yes 2=No 3=Don't know

Currently breastfeeding? ☐

1=Yes 2=No

Date stopped breastfeeding
(DD/MM/YYYY)

☐☐ / ☐☐ / ☐☐☐☐

Baby on CTX ? ☐

1=No 2= Already been on CTX 3= Starting today

Baby on ARV therapy? ☐

1=Yes 2=No

Mother PMTCT prophylaxis (tick all given)

☐ None   ☐ AZT

☐ > 4 weeks   ☐ HAART

☐ SD-NVP   ☐ AZT< 4 weeks

☐Don't know

Baby PMTCT prophylaxis (tick all given)

☐None   ☐ SD-NVP

☐ AZT   ☐ Don't know

Mother CD4 count done in past 6 months ☐

0=No 1=Yes 2= No

CLICIAN REQUESTING TEST

Name (print neatly):

Signature:

Clinical site name or code:

SPECIMEN INFORMAITON

Date specimen collected:
(DD/MM/YYYY)

☐☐/☐☐/☐☐☐

Reason for the test: ☐

1= First test for healthy baby of HIV and mother

2= First test for sick baby

3= Repeat test after weaning from breast

4= Repeat because first sample lost, not tested, indeterminate result or other problem

5= Repeat because of clinical suspicion for first result was wrong

Clinical setting: ☐

1= inpatient 2= outpatient 3= home visit

Rapid test done in the last week? ☐

1= Yes 2= No

If Yes, result of rapid test: ☐

1=Positive 2= Negative
3=indeterminate

LABATORY USE ONLY

Sample References Number
☐☐☐☐☐☐☐☐☐☐☐

Date specimen received by lab:
(DD/MM/YYYY)
☐☐/☐☐/☐☐☐

Was the specimen of sufficient quality for testing? ☐

1=Yes 2 = No

Date assay performed (DD/MM/YYYY)
☐☐/☐☐/☐☐☐

Qualitative PCR test result:
☐ POSITIVE (by 2 tests on same card)
☐ NEGATIVE
☐ INDERTERMINATE

Signature of testing technician:

Signature of supervisor:

8.5 DBS logbook

Date of test	Infant name	Birth date	Mother's contact information	First test write 1 If not first test, write reason for repeat: 2= Weaned 3= Indetermined 4= Sample problem 5= Lost 6= First result doubted	Test speciment number	Result 1= pos 2= neg 3= Indeterminate 4= Untestable 5= Lost	Date of post-test counselling	Date first seen in ART clinic

8.6 Pregnancy test worksheet

State: _____ LGA: _____ Facility name: _____

Month/Year		
Pregnancy test		
Lot Number		
Expiry Date		

Date (dd/mm/yy)	Lab No.	Client No.	Result (Mark "√" in the box)				Controls		Result	Lab. Scientist/Technician	
			Non-ART		ART		Positive Control	Negative Control		Name	Signature
			negative	positive	negative	positive					
Total on this page:											

8.7 CD4 request form

Laboratory Request Form for CD4

Name of Health Centre_____Date_____

Name of Patient_____Age_____Sex_____

Address_____

Patient's ID Number (unique)_____

Reason:

❏ Staging

❏ Enrolment HIV care

❏ Initiation ART

❏ 6 months

❏ 12 months

❏ 24 months

❏ Suspect treatment failure

❏ Other_____

ART:

❏ Started_____month/year

❏ Planned

❏ Uncertain eligibility

Signature of Person Requesting Examination_____

Result Communicated to Health Centre—Date_____

8.8 Lab supplies list for health centre

Primary Health Centre		
Rapid HIV, syphilis, and malaria tests	**1.**	rapid test kits
	2.	positive and negative controls (if not included with kit)
	3.	timer with alarm
	4.	good source of lighting
	5.	job aids
Haemoglobin		
	1.	WHO Haemoglobin Colour Scale (laminated, standard colours) plus specially absorbent test strips
	2.	Haemoglobinometer (if possible) with specific supplies or Haematocrit centrifuge and tubes
	3.	job aids
	1.	Microscope-(preferably binocular)
	2.	10x, 40x, 100x oil immersion objectives
	3.	Microscope dust cover
	4.	immersion oil
Microscopy supplies (for malaria or AFB smear microscopy)	**5.**	bottle dropper
	6.	sparebulb/fuse
	7.	lenscleaner
	8.	lenspaper
	8.	slide storage containers
	10.	slides
	11.	xylene (to remove oil before placing into storage box)
	12.	pictorial reference material or colored atlases/job aids
TB/AFB smear	**1.**	disposable wooden applicator sticks or wire loops using sand-alcohol flask/spirit lamp

Primary Health Centre		
	2.	if used, flask to hold sand-alcohol
	3.	Funnel
	4.	filterpaper
	5.	marking instrument - depends on slide ((frosted - lead pencil; unfrosted - diamond stylus)
	6.	AFB stain (either kit or stain (prepared at district level))
	7.	distilledwater
	8.	timer withalarm
	9.	spiritlamp
	10.	methanol and spare wicks for lamp
	11.	stainingrack
	12.	slide warming tray (optional)
	13.	dryingrack
	14.	Forceps
	15.	phenolic agents or bleach
	16.	bottle to store 1:10 bleach solutions for that day's use
	17.	sputum collection cups
	18.	specimen transport bags
	19.	4x4gauze
	20.	waterproofmarker
	21.	AFB positive and negative unstained smears
	22.	TB sputum register
	23.	Laboratorylogbook
	24.	red ink pen for positives
	25.	black/blue pen for negatives
Malaria smear	1.	Giemsa stain (either kit or stain (prepared at district level))
	2.	Bench Aid for Diagnosis of Malaria Infection or other job aid
Pregnancy Test	1.	rapid kit
	2.	positive and negative controls (if not provided with kit)
	3.	Urine collection cups
	4.	waterproofmarkers
	5.	timer with alarm
	6.	appropriate pipet/tips if not supplied with kit

Primary Health Centre		
Urine dipstick for sugar and protein	1.	reagent strips
	2.	positive and negative controls
	3.	color interpretive chart
	4.	urine collection cups
	5.	waterproofmarkers
	6.	pediatric urine collection bags
	7.	timer withalarm
Transport Supplies for referral testing	1.	insulated cool boxes to hold ambient temperature and refrigerated specimens
	2.	transferal list
	3.	transferal log
	4.	system of reporting results from recipient laboratory
	5.	appropriate sending containers and preservatives
	6.	sealable plastic transport bags
Phlebotomy/ fingerstick supplies	1.	lancets
	2.	2x2 gauze
	3.	21 G needles
	4.	23 G needles
	5.	alcohol prep pad
	6.	band aids or paper tape
	7.	safety needle holder and adapter
	8.	butterfly safety assembly
	9.	disposable tourniquets
	10.	EDTA tubes plastic
	11.	red top tubes with clot activator
	12.	pediatric EDTA tubes
	13.	pediatric red top tubes
	14.	betadine prepss
	15.	sharps container

Primary Health Centre		
Safety	1.	safety goggles or glasses
	2.	gloves (small, medium, and/or large) according to staff
	3.	fluid resistant lab coats use within laboratory
	4.	eye wash station or portable dispenser
	5.	ABC fire extinguisher
	6.	hazardous spill kit
	7.	hand soap
	8.	bleach
	9.	papertowels
	10.	disinfectant wipes (optional)
	11.	biohazard receptacle with lid and separate disposable bag inserts to burn
	12.	first aid kit
	13.	sharps container.
Clerical	1.	binders for SOP's
	2.	protectors for SOP's (or laminated SOP's)
	3.	log books for QC and patient data management
	4.	paper
	5.	requisition forms (if separate from request form -result forms)
	6.	adhesivelabels

Annex 9

Forms for Chapter 9: Human Resources

9.1   **Clinical and counselling training log**

9.2   **Training log for patient monitoring, laboratory, supply, leadership, quality management**

9.1 Clinical and counselling training log fill in position and staff initials; next to each training course, indicate code of the course in a circle (course title, organization providing training), duration, and date of training. Continue staff columns on next page- line up across gutter (or produce in A3)

Staff initials	RN: SG	RN/ midwife: BN	EN: JP	EN:	Lay pro- vider: KJ
Basic clinical training in integrated HIV prevention, care and treatment					
Chronic HIV care, ART, prevention with PLHIV (includes clinical staging, cotrimoxazole and INH prophylaxis, how to fill patient HIV care/ART card, intensified TB case finding	A-IMAI basic HIV-ART; 5 days, Feb 04				
Acute care (when to suspect HIV and TB, OI management)	B; 2 days; Feb 04				
Provider-initiated testing and counselling for clinicians - basic course	F; 1 day; Nov 07				
TB infection control	J; 1 day; June 08				
Universal precautions, PEP and other workplace safety issues					
Follow-on clinical training					
TB-HIV co-management					
IMCI-HIV complementary course (HIV testing, diagnosis and management of OI in children, follow-up)					
Adolescents in HIV care					
PMTCT integrated with improved antenatal and postpartum care					
PMTCT integrated with improved labour and delivery care					
Reproductive choice and family planning for PLHIV					
Syndromic STI management					
Palliative care: symptom management and end-of-life care					
Mental health/neurology					
Brief interventions for hazardous and harmful alcohol use					
Basic counselling training					
Lay counsellor training course (PITC, prevention with PLHIV, post-test support, patient education, adherence counselling, psychosocial support)					
Follow-on counselling training					
Advanced post-test counselling					
Infant feeding counselling and support					
Psychosocial support for children					
Post-rape care					
Working with vulnerable groups (e.g. orphans)					
Brief alcohol interventions					

9.2 Training log for patient monitoring, laboratory, supply, leadership, quality management

fill in position and staff initials; next to each training course, indicate code of the course in a circle (course title, organization providing training), duration, and date of training. Continue staff columns on next page- line up across gutter (or produce in A3)

Staff initials					
Patient monitoring training should include the following key skill:					
Transferring data to registers and completing quarterly report and cohort analysis forms (can be done by data clerk)					
Advanced patient monitoring (how to oversee registers and reports, calculate indicators, and use data for clinical decision-making)					
Supply management					
Drug supply management at first-level facility					
Basic HIV-related laboratory services training to perform and quality assure tests:					
Malaria smear					
Malaria rapid test					
Send TB sputums					
Prepare and read TB sputums					
HIV rapid test					
Syphilis rapid test					
Pregnancy test					
Haemoglobin estimate using WHO Colour Scale					
Haemoglobin using haemoglobinometer (if used)					
Haematocrit					
Urine dipstick for protein and glucose					
CD4: collect blood, prepare for transport					
DBS: collect blood, prepare for transport					
Leadership and management training can include these skills:					
Programme planning					
Financial management					
Mentoring, supervision, staff appraisal					
Monitoring and evaluation					
Supply management					
Facility management, including workplace safety					
Basic quality management training should include the following skills:					
Performance measurement					
Quality improvement					
5 S's at the health centre					
Follow-on quality management training (for head HIV provider/in-charge)					
Comprehensive quality management training					
Facilitating quality improvement at your health centre					
Leading 5 S activities					

Annex 10

Forms for Chapter Ten: Leadership and facility mangement

10.1　Budget sheet
10.2　Cash flow projection sheet
10.3　Urgent response to workplace HIV exposure
10.4　Allotment ledger
10.5　Purchase order/voucher
10.6　 Petty cash book
10.7　Cash voucher
10.8　Cash receipt
10.9　Revenue book
10.10　Financial reporting form

10.1 Budget sheet

| Category | Resources Needed | Expenditures | | | | Income | | |
		Costing Unit	Cost per unit	Number of units	Total Costs	Total income	Donar A	Donar B
Personnel	Nurses	Monthly salary	300	24	7200			
	Driver	Monthly salary	100	12	1200			
	...	...	...	...	...			
	SUBTOTAL				8400	8400	3000	5400
Material								
Medical supplies								

10.2. Cash flow projection sheet

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sp	Oct	Nov	Dec
Funds at beginning of month	1000											
Projected Income												
Donor A												
Ministry												
...												
Total Income												
Projected Expendatures												
Salaries												
Equipment												
Medical supplies												
...												
Total Expenditures												
Funds available at end of month*												

* = funds at the beginning of months + total income – total expenditures

10.3 Urgent response to workplace HIV exposure

When a health worker is exposed to HIV through a needlestick or splash of blood or body fluid, the following stepsd should be taken to ensure their safety.

Step 1:   Give first aid

Needle stick exposure or other laceration	After a splash contacts unbroken skin	After a splash contacts the eye	After a splash contacts the mouth
Attend to the injury immediately Do not squeeze the injury site Wash site immediately using soap or a mild solution If running water is not available, clean site with a gel or hand-rub solution	wash the area immediately	Wash the exposed eye immediately with water or normal saline Sit in a chair, tilt the head back and have a colleague gently pour water or normal saline over the ey, pulling eyelids up and down to make sure the eye is cleaned thoroughly If contact lenses are worn, leave them in place while irrigating the eye, as they form a barrir over the eye and will help protect it Once the eye has been cleaned, remove the contact lenses and clean them in the normal manner. This will make them safe to wear again	Spit the fluid out immediately Rinse the mouth thoroughly, using water or saline, and spit again Repeat this process several times
Do not use any strong solutions such as bleach or iodine, as these may irritate the wound or skin and make the injury worse *Do not* use soap or disinfectant on the eye or in the mouth			

Step 2:   Contact your health centre contact person designated for workplace HIV exposure

Name	Mobile phone	Hours available

Step 3: Determine whether PEP is needed:

PEP is needed urgently if **all four conditions** below are present:

- Workplace exposure occured within 72 hours.

- The exposed person is HIV-negative. If therei status is unknown, advise them to take an HIV test.

- You determined there is a high or medium-risk exposure to blood, body tissues, blood-stained fluid and otherbodily fluids (see chart below and your clinical guidelines).

> **PEP should be available 24 hours a day, seven days a week**

How to determine if the exposure warrants PEP

SIGNS	CLASIFIED AS	TREATMENTS
Puncture or cut with: - Large bore hollow needle - Needle used in source patient's artery or vein - Deep puncture wound or - Visible blood on instrument	HIGH RISK EXPOSURE	Offer PEP regimen: - 28 days of AZT-3TC or d4T-3TC* Before starting PEP, strongly recommend HIV testing and couselling to the exposed person Stop PEP if the exposed person is HIV-positive and refer for chronic HIV care
- Puncture or cut with small bore or solid needle - Superficial scratch, or - Splash onto broken skin or mucus membranes	MEDIUM RISK EXPOSURE	
Splash onto intact skin	VERY LOW RISK	PEP not recommended

*See IMAI Chronic HIV Care with ART and Prevention guideline module and your national PEP guidelines for details

Step 4: HIV testing and counselling – confidential and with informed consent

Recommend testing to the source of the exposure if their HIV status is not known.
Recommend testing to the exposed person as soon as possible and before starting *PEP*.

- If the exposed person is already HIV positive, s/he should not receive PEP, as it can cause ARV resistance which can limit future treatent options. HIV-positive exposed persons should instead be referref for HIV care and possible three-drug ART.

Step 5: Administer PEP as soon as possible

Give a first dose on the health centre, dispense remaining pills and arrange follow-up according to national PEP guidelines.

Step 6: Record theworkplace exposure incident in the health centre log book

Contact your district health office for this log book if you do not have one.

10.4 Allotment ledger

Date	Details	Document number	Amount Credited (received)	Amount Debited (paid out)	Personnel	Infrastructure	Supplies	Communication	Transport
1 Jan	Ministry allocation for one month	01	5000						
5 Jan	Salary driver	51		150	150				
8 Jan	Rent premises	52		300		300			
8 Jan	Paper	53		40			40		
15 Jan	Purchase order laboratory	54		3000		3000			
1 Feb	Totals		5000	3490	150	3300	40		

10.5 Purchase order/voucher

Purchase Order No. …

Date …….

Goods	**Amount**

………………………………...………..   ………….....………………………….

………………………………...………...   ………….....………………………….

………………………………...……….   …………….....……………..…………

Authorized by (health centre)

Cleared by (allotment number)

10.6 Petty cash book

Date	Details	Document number	Amount		Debit breakdown				
			Credited (received)	Debited (paid out)	Personnel	Infrastructure	Supplies	Communication	Transport
15 Jan	To imprest	01	50						
16 Jan	Stamps	02		8.40				8.40	
1 Feb	Bus fare	03		5.30					5.30
3 Feb	Phone recharge	04		10.00				10.00	
27 Feb	Kerosne	05		13.60					13.60
1 Mar	Sub-totals		50	37.30					
	Balance			12.70					
	Balance brought forward (B/F)		12.70						
1 Mar	To imprest		37.30						
20 Mar	Bus fare	06		5.30					5.30

10.7 Cash voucher

Petty Cash Voucher No. …

Date …….

Goods   **Amount**

……………………………………..   …………………………………….

……………………………………...   …………………………………….

…………………………………….   …………………………………

Encl. receipt (to be attached)

Signed (by health worker making purchase)

Cleared by (manager/finance officer)

10.8 Cash receipt

Cash receipt No. …

Date …….

Amount received   **for goods/services**

……………………………………..   …………………………………….

……………………………………...   …………………………………….

…………………………………….   …………………………………

Received from: ………………………………………………………..

Received by: ………………………………………………………...

10.9 Revenue book

Date	Details	Receipt Number	Amount Received	Transferred to allotment
1 Jan	CD4 Testing	01	20	
2 Jan	ARVs	02	15	
2 Jan	OI Drugs	03	1	
1 Feb	Totals		36	36
	Balance			0
	Balance B/F		0	

10.10 Financial reporting form

	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total
Funds received					
Expenditures by category					
Personnel					
Infrastructure					
Supplies					
Communication					
Transportation					
Total Expenditures					
Balance					

Annex 11

Forms for Chapter Eleven: Quality Improvement (QI)

11.1 Decision matrix: selecting QI projects

Purpose: To develop, display and rate your proposed QI projects against severak benchmark criteria (you select)

Aim: To priritize and select a defined nuber of QI projects to undertake in the next 12 months

Expenditures	Criteria				Total
	Issue Seen As Important	Realistic Scope	Likelihood of Success	Potental Impact	
1.					
2.					
3.					
4.					
5.					
6.					

Sample Decision Matrix

Rank the potential QI projects of each criterion on a scale of 1-5 (5=totally meets creteria)

a) Under the column entitled "ptential QI Projects", make a list of areas or processe that should be considred for quality improvement projects

b) Using a scale from 1-5 (5=totally meets creteria, easily accomplished, very doable), rate each project by using criteria (You may wish to revise te criteria to include other items such as cost)

c) Select the project(s) with the highest score to undertake

11.2 Quality improvement template

Health centre:

Service or clinic within health centre:

Aim Statement:

Problem Statement:

Team:

- **Team Leader**
- **Team Members**
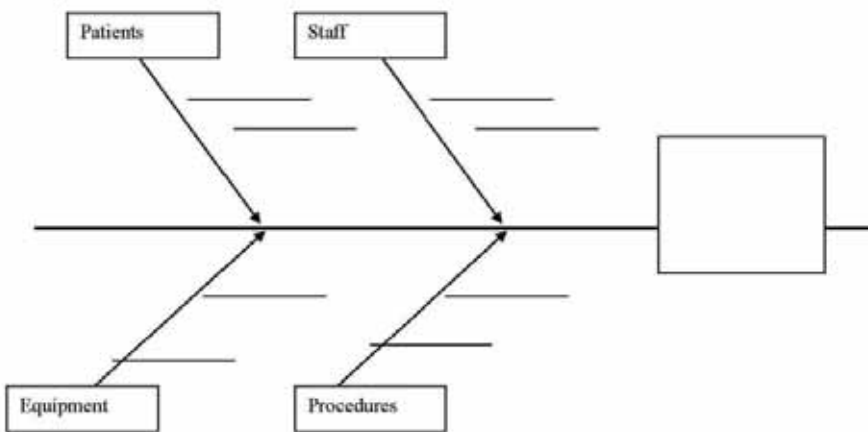
Measurement Description:

Baseline Data:

11.3 QI projects template

Process Evaluation/Root Cause Analysis

**Fishbone Diagram: Completed Yes _____ No _____
(See attached)**

**Flowcharts: Initial Process completed Yes _____ No _____
              Revised Process completed Yes____ No _____**

Actions/Interventions:

Follow-up Data:

Status and Future Follow-up:

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Acronyms

3TC	lamivudine
ABC	airway-Breathing-Circulation
AFB	acid fast bacillus
AIDS	acquired Immunodeficiency syndrome
AMC	average monthly consumption
ANC	antenatal care
APMR	annual patient monitoring review
ART	antiretroviral therapy
ARV	antiretroviral
AZT	azidothymidine, generic zidovudine (ZDV)
BMU	basic management unit
CAB	community advisory board
CAH	child and adolescent health
CBO	community-Based organization
CD4	count of the lymphocytes with a CD4 surface marker per cubic millimetre of blood
CHW	community health worker
CITC	client-initiated testing and counselling
CSW	commercial sex worker
CTX	cotrimoxazole
d4T	stavudine
DBS	dried blood spot (for infant HIV testing)
DOTS	directly observed treatment, short-course (WHO TB strategy)
EFV	efavirenz
EPI	expanded programme on immunization
EQA	external quality assurance
FBO	faith based organization
FDC	fixed dose combination
FEFO	first expiry first out
FIFO	first In first out
FP	family planning
HIV	human immunodeficiency virus
HMIS	health management information system
HRZE	isoniazid- rifampicin- pyrazinamide- ethambutol
HR	isoniazid- rifampicin
IC	infection control
IEC	information Eeducation communication
IPT	intermittent preventive therapy for malaria
IPT	isoniazid preventive therapy (for tuberculosis)

IMAI	integrated management of mdolescent and adult illness
IMCI	integrated management of childhood illness
IMPAC	integrated management of pregnancy and childbirth
INH	isoniazid
ITN	insecticide-treated bed nets
IUD	intrauterine device
L&D	labour and delivery
MCH	maternal and child health
MDR	multidrug resistant
MSM	men who have sex with men
MTCT	mother to child transmission
MUAC	mid-upper arm circumference
NVP	nevirapine
NGO	nongovernmental organization
NNRTI	non-nucleoside reverse transcriptase Inhibitor
NRTI	nucleoside reverse transcriptase inhibitor
NTP	national TB programme
OI	opportunistic infection
OPD	outpatient department
PEP	post exposure prophylaxis
PCPNC	pregnancy, childbirth, postpartum and newborn care (WHO IMPAC first-level guideline)
PCR	polymerase chain reaction (for HIV viral testing)
PI	protease inhibitor
PITC	provider-initiated testing and counselling
PLHIV	people living with HIV
PMTCT	prevention of mother to child transmission (of HIV)
PCP	pneumocystis pneumonia
QC	quality control
QI	quality improvement
sdNVP	single dose nevirapine
SOP	standard operating procedures
SP	sulfadoxine-pyrimethamine
STI	sexually transmitted infection
TB	tuberculosis
TI	transfer in
TO	transfer out
UA	universal access
UNGASS	united Nations General Assembly Special Session on HIV/AIDS

Organization abbreviations

ANECCA	African Network for the Care of Children affected by HIV/AIDS	**IUATLD**	The International Union Against Tuberculosis and Lung Disease
APMG	AIDS Project Management Group	**JICA**	Japan International Cooperation Group
AIDS Relief	The AIDS Relief Consortium (lead by Catholic Relief Services)	**JSI**	John Snow International
CDC GAP	The Centers for Disease Control and Prevention's Global AIDS programme	**MEASURE/ Evaluation**	Monitoring and Evaluation to Assess and Use Results
CHAI	The William J. Clinton Foundation "Clinton HIV/AIDS Initiative"	**MSF**	Médecins Sans Frontières
CIDRZ	The Center for Infectious Disease Research in Zambia	**MSH**	Management Sciences for Health
EPN	Ecumenical Pharmaceutical Network	**PEPFAR**	The United States President's Emergency Plan for AIDS Relief
EGPAF	The Elisabeth Glaser Pediatric AIDS Foundation	**URC-CHS**	University Research Co., LLC - Centre for Human Sciences
GFTAM	The Global Fund to Fight AIDS, Tuberculosis and Malaria	**UNAIDS**	The Joint United Nations Programme on HIV/AIDS
FHI	Family Health International	**UNICEF**	The United Nations Children's Fund
GFTAM	The Global Fund to fight AIDS, Tuberculosis and Malaria	**USAID**	United States Agency for International Development
GNP+	The Global Network of People living with HIV/AIDS	**WHO**	The World Health Organization
HRSA	Health Resources and Services Administration of the US Department of Health and Human Services		
ICAP	The International Center for AIDS Care and Treatment Programmes		

Process of developing the operations manual for delivery of HIV prevention, care and treatment at primary health centres in high-prevalence and resource-constrained settings

This Operations Manual was developed as part of a WHO-PEPFAR collaboration on health centre scale up. Its development involved experienced experts from many implementing partners, WHO and MOH staff active in implementing HIV and related primary health care services as well as other NGOs and FBOs, PLHIV activist groups, bilateral and multilateral agencies.

The process of developing this Operations Manual covers the period of 2007-2008. Each chapter is written by panel writers with a support from iterative expert panels. Electronic review of drafts and several expert meetings were organized to review the recommendations and reach consensus, and to summarize their technical basis and possible country adaptations (these will appear in the IMAI country adaptation guide).

The expert groups assembled all current references and source materials on a share point site. Individual experts contributed their implementation experience and all relevant source material for each chapter. Each chapter was shared with the expert group and all panelists for review. Review comments were assembled in a matrix, discussed when necessary from a technical point of view, then incorporated.

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The HIV/AIDS Department at WHO, plans to review the need to update this Manual in December 2009 after field-testing and closely monitored adaptation and early use by countries and partners.