HIV, TB and Primary Health Care Integration in an Urban Informal Settlement

The Experience of Médecins Sans Frontières (MSF) and The Ministry of Public Health and Sanitation (MoPHS) in Kibera, Nairobi

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Report prepared by Medecins Sans Frontieres (Belgium)
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- AIDS: Acquired Immunodeficiency Syndrome
- ANC: Ante-Natal Care
- ART: Antiretroviral Therapy
- ARVs: Antiretrovirals
- CD4: Lymphocyte expressing “Cluster of Differentiation 4” glycoproteins
- CMT: Case Management Team
- CO: Clinical Officer
- DTC: Diagnostic Testing and Counselling (=PICT)
- EPI: Expanded Programme on Immunization
- FP: Family Planning
- FUCHIA: Follow Up and Care of HIV Infection and AIDS
- GDP: Gross Domestic Product
- GIPA: Greater Involvement of People Living with or affected by HIV/AIDS
- GoK: Government of Kenya
- HIV: Human Immunodeficiency Virus
- HR: Human Resources
- KSHC: Kibera South Health Centre
- KIPOTEC: Kibera Post-Test Clubs (Network of PTCs)
- KSh: Kenyan Shillings
- MCH: Mother and Child Health
- MDGs: Millennium Development Goals
- M&E: Monitoring and Evaluation
- MoH: Ministry of Health
- MoPHS: Ministry of Public Health and Sanitation
- MSF: Médecins Sans Frontières
- MSF-OCB: Médecins Sans Frontières - Operational Centre Brussels
- NNEPOTEC: Nairobi Network of Post-Test Clubs
- OI: Opportunistic Infection
- OPD: Outpatient Department
- PCR: Polymerase Chain Reaction
- PEM: Protein Energy Malnutrition
- PEP: Post-Exposure Prophylaxis
- PHC: Primary Health Care
- PICT: Provider-Initiated Counselling and Testing
- PLWHA: People Living With HIV/AIDS
- PMTCT: Prevention of Mother To Child Transmission
- PNC: Post-Natal Care
- PPTCT: Prevention of Parent To Child Transmission
- PTC: Post-Test Club
- RCT: Routine Counselling and Testing
- SGBV: Sexual and Gender-Based Violence
- STI: Sexually Transmitted Infection
- TB: Tuberculosis
- TL: Treatment Literacy
- UN: United Nations
- VCT: Voluntary Counselling and Testing
- VL: Viral Load
Foreword

Kibera is the largest urban informal settlement in Kenya. The local population is mainly composed of people with low socio economic status, poor sanitation and inadequate safe water supplies. It is this environment that MSF Belgium and the Kenya Government through the Ministry of Public Health and Sanitation in Nairobi Province decided to partner to provide comprehensive TB, HIV and Integrated Primary Health care in order to address the huge burden of ill health due to communicable and non communicable diseases. The project has brought immense health benefits to the local residents despite the challenges of increasing demand and limited space available for the provision of health services. The hallmark of the project has been very strong and genuine partnership with the local residents, the Ministry of Health and MSF Belgium. In this project we see our clients beyond statistics and there is an interest to follow up these clients as they get treatment through deliberate involvement and support to community based structures.

The success of this model partnership project I believe has the potential of being replicated in similar settings in Kenya and other countries around the world.

Dr Samuel Ochola
Provincial Director of Public Health and Sanitation
Nairobi
Background: Informal Settlements in Kenya

Kenya's urban population is estimated to be around 9 million people, approximately 22% of the total population. Nairobi accounts for more than a third of this with a population of over 3 million people. The urban growth rate is approximately 4% per year. As such, the urban population of Kenya is predicted to rise to almost 14 million by 2020 (1).

Unfortunately this continuing rapid urbanisation coincides with a downturn in Kenya's economy, resulting from a combination of the global financial crisis and more localised problems such as drought, corruption and the 2008 post-election violence. The national GDP fell from 7% to 1.7% between 2007 and 2008. The unemployment rate is estimated to be 40%. Fifty percent of the population are thought to be living below the poverty line (2). A huge disparity is seen in the distribution of the wealth that does exist. More than 42% of the country's income is controlled by the wealthiest 10% of Kenyan households, while the poorest 10% of households account for a meagre 0.76%. This equates to a rich household earning KSh56 for every KSh1 earned by a poor household (3).

Approximately 71% of Kenya's urban population are thought to be residing in informal settlements (slums) (4).

Project Justification: Public health concerns of informal settlements

Informal settlements by definition are lacking in facilities such as water and sanitation, and are characterised by insecure, poor quality, overcrowded housing (5). These living conditions combined with poverty and a lack of access to health care result in a high mortality burden from preventable and treatable diseases. A study of two Nairobi slums revealed a mortality rate amongst the under fives more than four times higher than the rest of the population. Deaths were attributed to pneumonia, diarrhoeal diseases, maternal causes, malnutrition and anaemia, Acquired Immunodeficiency Syndrome (AIDS) and tuberculosis (TB). The mortality profile amongst the over fives was very different, with Human Immunodeficiency Virus (HIV)/AIDS and TB accounting for half of all deaths, followed by interpersonal violence injuries (4).

Chronic diseases are estimated to account for more than 60% of deaths worldwide and 43% of the global disease burden. They are a focus of attention in the developed world, but 79% of these deaths occur in developing countries. The top four offenders are cardiovascular diseases, cancer, chronic obstructive pulmonary disease, and type 2 diabetes. Common risk factors for all include high blood pressure, high cholesterol, and being overweight (6). For the populations of informal settlements, rural-urban migration and poverty has an effect on diet. Certain psycho-social issues such as alcoholism are also thought to be more prevalent in urban informal settlements. Poor diet and alcohol abuse can both contribute to hypertension and diabetes (7). Environmental pollution levels, especially indoor air pollution may contribute to chronic respiratory problems. For people living in informal settlements competing priorities and the lack of available health services discourage early diagnosis and management of these conditions. Consequently, patients present with severe disease and end-stage complications.

Mental health issues such as depression and anxiety can also be debilitating chronic diseases and have been linked to poverty and inequality (8). Mental health can also impact on medical care, for example by way of drug adherence. Mental health is therefore another important component to integrate into primary health packages in informal settings.
Project History: MSF in Nairobi and Kibera

Médecins Sans Frontières – Operational Centre Brussels (MSF-OCB) began working in Nairobi and its surrounding informal settlements in 1997. With the prevailing HIV epidemic, the district hospital was overwhelmed with moribund HIV patients originating from nearby slums. MSF began to work with the hospital, initially providing training, voluntary counselling and testing (VCT) and treatment of opportunistic infections (OIs), as ARVs were not yet available in Kenya. A community project to promote early diagnosis, provide treatment of OIs and support home-based palliative care of AIDS patients was also started. The community care project was provided in 3 different informal settlements, through a combination of 3 private MSF structures (“patient support centres”) and 2 MoH health centres.

Towards the end of 2003, anti-retroviral therapy (ART) became available in Kenya and prompted a change MSF began providing access to ART in 2000 in projects in South Africa and Thailand. These proved to be great successes and prompted a decision within MSF to scale-up this intervention and extend access to ART to all MSF HIV projects worldwide. Patented original brands of antiretroviral drugs (ARVs) remained unaffordable to the majority of Kenyans, and access to a limited supply of these drugs was restricted to a few high-cost private hospitals. The license allowing generic antiretroviral (ARV) drugs into Kenya came into force in May 2002 (9). However, all imported drugs are also subject to approval by Kenya’s Pharmacy and Poisons Board. This Board was unfortunately out of action the preceding nine months, following the expiry of their tenure, which resulted in delays in processing the applications for various generic ARVs. Government plans for national scale-up of ART were also severely delayed by funding issues, following the rejection of their first application to the Global Fund to fight HIV/AIDS, Tuberculosis and Malaria.

It was therefore in 2003 that generic ARVs became a tangible option in Kenya. MSF were the first to roll out the therapy; first in a project in Nyanza province, where the prevalence of HIV is the highest in the country, and then in Kibera. MoPHS implementation quickly followed.

The availability of ART prompted a change in strategy for the MSF project in Nairobi. The priority became to successfully introduce and rapidly scale-up this life-saving treatment to reach those most in need as soon as possible. ART was first introduced in the district hospital, where it was demonstrated to be both a feasible and effective treatment. Then an assessment was made to determine the most vulnerable population, to target the ART scale-up operation to those most in need. It was decided that the residents of Kibera informal settlement were most in need. Three particularly vulnerable areas in Kibera were selected for the operation and three clinics in these areas were established. Two MoPHS Primary Health Care (PHC) facilities run in partnership with MSF and a third vertical HIV clinic, started and run independently by MSF. ART was again successfully introduced and rapid scale-up followed. By the end of 2004, MSF were treating over 1000 patients in Kibera with ART.

From 2005 MSF began to focus on the benefits of integrated care. A horizontal model of care was thought to be the most appropriate framework through which to address the varied and interrelated health needs seen in the population. TB activities were incorporated into the facilities at this time. The Prevention of Parent To Child Transmission (PPTCT) programme was introduced in 2006. Outpatient services were incorporated into the HIV clinic during the post-election violence, after which they were more formally introduced at the beginning of 2008.

The project in Kibera developed a chronic disease care package at the beginning of 2009 in response to the increasing number of cases of hypertension, diabetes and asthma seen by the clinicians. Routine care and follow-up of these conditions has now been integrated into the outpatient services provided.
Current MSF project in Kibera

Today MSF provides a comprehensive package of integrated HIV, TB and PHC services from the three health centres in Kibera. Working together with the MoPHS ensures the future sustainability of the project. The collaboration and support of the MoPHS is vital to the project and is greatly appreciated. A brief overview of the package of services currently offered in the clinics in Kibera is provided below.

**Primary Health Care:**
- Out-Patient Department (OPD)
- Mother and Child Health (MCH) care, including:
  - Family Planning (FP), Ante-Natal-Care (ANC), access to safe delivery, Post-Natal-Care (PNC), EPI (Expanded Programme on Immunisation)
- Sexual Health Clinic
- Care of Sexual and Gender-Based Violence
- Chronic Disease care: hypertension, diabetes, asthma and epilepsy
- Nutritional screening, counseling and treatment
- Mental Health care
- Counseling
- Health Education
- Laboratory: Basic diagnostic and monitoring tests
- Emergency Referrals

**HIV:**
- Testing
- Counseling and support groups
- ART (First and Second Line ART)
- OI prophylaxis and treatment
- PPTCT programme
- PEP for survivors of SGBV
- Treatment Literacy
- Laboratory: Diagnostic and monitoring tests (e.g. RDTs, CD4, PCR, VL, Creatinine, ALAT, etc.)
- Health Education
- Links to PTCs
- Access to social support

**TB:**
- Screening
- Laboratory diagnosis
- Treatment
- MDR-TB diagnosis and treatment
- Isoniazid Prophylaxis
- Treatment Literacy
- Counseling
- Access to Social Support

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*Gatwekera Clinic provides FP only, for all other MCH services patients are referred to Kibera South Health Centre*
Demonstrable Need

There are few other actors within Kibera and even less providing free, quality health care. As such, the MSF project continues to manage a high volume of patients every day, with increasing numbers of patients accessing services each year (see Table 1 below).

Table 1
Use of Services, Kibera Project 2008-2009.

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient Consultations</td>
<td>47,986</td>
<td>69,277</td>
</tr>
<tr>
<td>HIV Clients on ART (Active on follow up 2)</td>
<td>2084</td>
<td>2,617</td>
</tr>
<tr>
<td>HIV Clients not on ART (Active on follow up 2)</td>
<td>1091</td>
<td>988</td>
</tr>
<tr>
<td>Total Active HIV Cohort 2</td>
<td>3175</td>
<td>3,605</td>
</tr>
<tr>
<td>TB Patients Started on Treatment</td>
<td>460</td>
<td>531</td>
</tr>
<tr>
<td>HIV Testing Sessions</td>
<td>5,750</td>
<td>6,575</td>
</tr>
<tr>
<td>PMTCT Mothers receiving ART / ARV prophylaxis and supported delivery</td>
<td>195</td>
<td>218</td>
</tr>
<tr>
<td>Family Planning Consultations</td>
<td>9,524</td>
<td>13,188</td>
</tr>
<tr>
<td>ANC Mothers (first visits)</td>
<td>2,524</td>
<td>2,993</td>
</tr>
<tr>
<td>Children receiving full routine EPI Vaccination</td>
<td>1,423</td>
<td>1,467</td>
</tr>
<tr>
<td>Acute Therapeutic Feeding Programme Enrolments</td>
<td>249</td>
<td>351</td>
</tr>
<tr>
<td>Supplementary Feeding Programme / Targeted Nutritional Support Programme Enrolments</td>
<td>582</td>
<td>950</td>
</tr>
<tr>
<td>SGBV Survivors Treated and Counselled</td>
<td>38</td>
<td>49</td>
</tr>
</tbody>
</table>

2 Definition of Active: last date of next appointment within eight weeks.

The profile of health needs for the residents of Kibera is fitting with what we would expect for an urban informal settlement. The bulk of the workload comprises of out-patient consultations, 60% of which are for respiratory tract infections or diarrhoea (see fig.1). The MCH department services the sexual and reproductive health needs of the population and performs routine childhood immunisations. A large and growing cohort of HIV positive patients are diagnosed and monitored by the three clinics, mostly adults. By the end of 2009, 73% (2,617/3605) of the active HIV cohort were receiving ART. The clinics also diagnose and treat malnutrition and TB. Consistently around 60% of TB patients started on treatment in the project are co-infected with HIV. Almost half (45% in 2008) of malnourished patients seen in the clinics have an underlying pathology of HIV and/or TB. Intake of chronic disease patients rose steadily throughout 2008 to reach 178 patients by the end of the year, prompting the development and incorporation of a more formal chronic disease care package into clinic services in 2009.

Figure 1
Morbidity, 2008.
Human Resources (HR)

Essential to perform all these activities are the project staff. A brief outline of all project staff is given below (see Table 2). Each clinic (Silanga Dispensary, Gatwekera Clinic, Kibera South Health Centre) has a core staff, supported by mobile staff who move between the clinics offering specific services (e.g. the ambulance), supervision, or relieving staff on leave (“flyers”). In addition to this the Health Promotion team provides services such as Treatment Literacy and other educational activities for all clinics. In support of all the project activities a management team is in place providing coordination, monitoring and evaluation, medical technical support and supervision, logistic supplies and maintenance, administrative and financial activities.

Table 2.

<table>
<thead>
<tr>
<th>Kibera Clinics Staff</th>
<th>Silanga Dispensary</th>
<th>Gatwekera Clinic</th>
<th>Kibera South Health Centre</th>
<th>Kibera Project Management / Support Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse In-Charge</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Field Coordinator 1</td>
</tr>
<tr>
<td>COs</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>Medical Focal Point 1</td>
</tr>
<tr>
<td>Nurses</td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>Assistant Medical Focal Point 1</td>
</tr>
<tr>
<td>Nurse/Midwife (SGBV)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>HIV Programme Supervisor 1</td>
</tr>
<tr>
<td>CMT, Outreach Nurse / Counsellor</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>TB / OPD Programme Supervisor 1</td>
</tr>
<tr>
<td>Nutritionist / Nurse Nutritionist</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Assistant HIV / TB / OPD Supervisor 1</td>
</tr>
<tr>
<td>Counsellors</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>MCH Programme Supervisor 1</td>
</tr>
<tr>
<td>Social Worker</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Assistant MCH Supervisor 1</td>
</tr>
<tr>
<td>Receptionist</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Psychiatrist / Counselling / Mental Health Supervisor 1</td>
</tr>
<tr>
<td>Laboratory technicians</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>Translator 1</td>
</tr>
<tr>
<td>Data technician</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Epidemiologist 1</td>
</tr>
<tr>
<td>Office Keepers (Cleaners)</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>Data Manager 1</td>
</tr>
<tr>
<td>Security guards</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>Assistant Data Manager 1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Health Promotion Coordinator 1</td>
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<td></td>
<td>Accountant 1</td>
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<td></td>
<td></td>
<td>Assistant Administrator 1</td>
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<td></td>
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<td></td>
<td></td>
<td>Secretary / Receptionist 1</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Supplies Logistician 1</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>Technical Logistician 1</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Drivers 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Office Keeper 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Office Gardener 1</td>
</tr>
</tbody>
</table>

“Flyers” / Specialised Work at all 3 clinics

| Social / CMT Supervisor | 1 |                       |                       | Assistant Administrator 1 |
| Nurse Flyer            | 1 |                       |                       | Secretary / Receptionist 1 |
| Nurse - Ambulance / MDRTB | 1 |                       |                       | Supplies Logistician 1 |
| Counsellor Flyer       | 1 |                       |                       | Technical Logistician 1 |
| Security guard Flyers  | 2 |                       |                       | Drivers 5 |

Health Promotion Sub-Project

| Health Promotion Team | 7 | | | |
| Office Keeper         | 1 | | | |
| Security guards       | 3 | | | |
Integration as a model of care

There are various logical arguments in favour of integration of HIV, TB, and PHC services. Integration promotes access to care, favours increased diagnosis of HIV, TB, and HIV/TB co-infections, and facilitates an improved quality of care. There is a strong argument for providing joint care of HIV and TB, there are also strong links between sexual and reproductive health (SRH) and HIV care, and between nutrition and both HIV and TB. Furthermore, integration promotes the normalisation of HIV and works towards reducing stigma. On a programmatic level, we suggest that integration as a model of care has the potential for resource-efficient scale up of activities and encourages capacity building of staff.

**Figure 2.**
**Natural Overlap of Services in Integrated Care**

Access to Care: The One Stop Shop Approach
Integrating care provides a “one stop shop” for patients. It facilitates access by providing services for the whole family. It enables patients to consult for multiple health complaints in one visit, in one place, and in so doing reduces the time spent travelling between facilities and away from work.

Integration Promotes HIV Testing and TB Case Finding
As is illustrated in Figure 2 (above), integrated services naturally overlap at certain points. One of the major benefits of integration is the opportunities it facilitates for HIV and TB diagnostic testing.

Diagnostic Testing and Counselling (DTC)
The majority of HIV testing carried out in the MSF clinics in Kibera (52% in 2008) is diagnostic testing and counselling (DTC). HIV tests are proposed by the clinicians to patients at high risk of infection or on presentation of symptoms consistent with HIV infection during consultation. DTC is an important mode of testing, facilitating diagnosis of patients who might not have otherwise presented themselves specifically for HIV testing.

Integration of HIV services with general TB and OPD makes additional entry points for testing available (illustrated in Figure 3). The rise in TB prevalence of recent years in Kenya has been primarily attributed...
to the HIV epidemic. Nationwide 45% of all TB cases are co-infected with HIV (10). Within the clinics this figure is routinely above 60%. All TB patients are therefore routinely proposed HIV testing. OPD patients exhibiting any symptoms of HIV infection are proposed on-site counselling and testing. Within the OPD there are certain patient groups where HIV testing may be particularly indicated, for example, malnourished patients or patients with other STIs. Wasting and malnutrition can be symptomatic of HIV infection. Patients are routinely screened for weight loss and malnutrition in the clinics and can be proposed testing by clinicians where indicated. STI infections indicate unprotected sex and a risk of exposure to HIV. The presence of another STI can also increase susceptibility to HIV infection if exposed. HIV testing is therefore routinely proposed together with other STI diagnostic tests. The OPD also has the advantage that it services everybody, men, women and children, therefore offering an opportunity of diagnosis to all ages and sexes. This can be of particular importance in the diagnosis of infants and children, whom might not otherwise be brought specifically for testing by their parents or guardians. DTC yields the highest positivity rate in the clinics, representing an efficient testing strategy (33% positive of all DTC testing in 2008).

Routine Counselling and Testing (RCT)
Within PHC, reproductive health offers another very important entry point for HIV testing. In the clinics in Kibera, HIV testing is proposed to all ANC mothers. Acceptance of this routine counselling and testing (RCT) is high (93% of ANC mothers in 2008). RCT accounted for 41% of all HIV tests done in the project in 2008, with an HIV prevalence amongst ANC mothers of 9%. The importance of testing at this point is as an entry point to the PPTCT programme.

The National AIDS/STD Control Programme of Kenya (NASCOP) estimates that 50-60,000 children are newly infected with HIV annually (11). These are preventable infections. The principal route of infection in children is vertical transmission from mother to child. Without intervention the risk of HIV transmission from a positive mother to her child is 20-45% (12,13). However, it has been shown that this risk can be minimised to less than 2% when preventative measures are followed during pregnancy, labour and delivery, and breastfeeding, and with attention to family planning (14). It is therefore of paramount importance for pregnant women, or women planning a family, to know their HIV status.

Figure 3.
Integration facilitates increased entry points for HIV testing.

Voluntary Counselling and Testing (VCT)
People aware of a possible exposure to HIV may seek access to a health facility with the express purpose of being tested for HIV. Integration benefits VCT by encouraging access through reduced facility-associated stigma. Particularly in a densely populated area such as Kibera, there is little privacy. Unfortunately, there remains a stigma associated with HIV, which can discourage patients from attending vertical HIV programmes. Providing HIV testing as part of a horizontal programme, integrated with other more socially acceptable services, encourages patient access and therefore facilitates increased detection of HIV infections.
Anecdotally in the clinics in Kibera, some patients will even present a fictitious minor OPD complaint at triage, only to request an HIV test upon reaching the clinical officer. The waiting time for OPD patients in the clinics is relatively long, especially if compared to external vertical VCT providers, so it appears there is a strong desire for discrete and anonymous testing.

The Kibera project sees relatively low numbers of patients for VCT (see figure 3). But this is partly explained by fact that VCT services are officially limited to one of the three clinics. This is a decision based on prioritising an already heavy testing workload in the clinics (through DTC and RCT) to maintain quality of care, and the availability of other VCT providers in the vicinity to perform this service for the community.

**TB Case Finding**

Where HIV testing amongst TB patients is important, the reverse is also true. Integration offers the possibility of screening all HIV positive patients for TB. HIV/TB co-infections contribute heavily to TB–associated morbidity and mortality. In HIV positive patients TB infections often present as sputum negative, meaning it is important to consider co-infection in the analysis of results. In areas of high HIV prevalence a chest x-ray is recommended for TB diagnosis. In the clinics in Kibera in 2008, 26% of TB patients on treatment had smear negative, pulmonary TB (See Table 3).

<table>
<thead>
<tr>
<th>Table 3. Kibera TB Patients on Treatment 2008 and 2009. Case breakdown by Form and Type of TB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TB Form</strong></td>
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<tr>
<td></td>
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<tr>
<td>2008</td>
</tr>
<tr>
<td>2009</td>
</tr>
</tbody>
</table>

**Integration Enhances Quality of Care**

Integration promotes a more holistic, patient-centred approach to care. Staff are encouraged to take responsibility for the treatment of all of the ailments of each patient. This in turn facilitates a better quality of care as the clinician has an overview of all the patients issues and treatments.

HIV, TB and PHC are intrinsically linked, centred in patients’ needs. The relationships between the conditions encompassed by these different areas exist whether services to address them are located in one facility or not. Integration merely facilitates their diagnosis and management by health service providers.

Malnutrition, considered here as an element of PHC, has long been linked with both HIV and TB. Protein Energy Malnutrition (PEM) in particular influences both susceptibility to infection and the severity of infection outcomes by suppressing the immune system (15). Therefore as a co-morbidity with HIV and/or TB, malnutrition accelerates a negative spiral of events. Malnutrition screening and treatment should therefore be systematically integrated as part of HIV and TB programmes, to provide patients with the energy and nutrients necessary to bolster their immune systems, break this vicious cycle, and improve treatment outcomes.

Treatment outcomes for HIV/TB co-infections are linked whether you consider TB as an opportunistic infection of HIV, or HIV as an underlying cause of TB. Both infections require significant follow up and long treatment regimes. Treatment by the same clinician ensures the consideration of contraindicated drug combinations.

Integration of HIV and TB activities may indirectly facilitate the provision of care for other conditions. For example, investment in laboratory facilities for monitoring of HIV patients could facilitate the availability
of laboratory tests to monitor chronic disease patients and the consequent integration of chronic disease care into the programme.

Routine inclusion of PMTCT in MCH programmes in itself is an essential improvement to the quality of reproductive healthcare provided. Take infant mortality as an indicator of quality care, without PMTCT interventions almost half of the babies born to HIV positive mothers could be born HIV positive. Without treatment half of these HIV positive children will die before the age of two years.

Advantages on a Programmatic Scale
Integration is a viable model of care that can be considered for scale-up or decentralisation of activities. It is both sustainable and resource-efficient to integrate HIV and TB services into existing PHC facilities. Scaling up through this model promotes capacity building of existing staff to enable them to manage the additional responsibilities required. Integration may also indirectly improve the overall quality of services in the PHC clinics through the increased attention and funding it necessitates. In this way funds available for prominent issues such as HIV may also benefit the wider population.

Challenges Faced in Integration and in Informal Settlements
One of the major challenges faced by the project is simply the high demand for services (see Table 1). It is a challenge resulting from integration, in catering for all the needs of all the patients within one facility. However, it is also a challenge of providing free, quality health services in an area where other facilities are lacking. The actual population serviced by the clinics is much larger than their theoretical catchment area. The population is also somehow unstable and mobile, which presents another challenge. The clinics operate at the limits of their capacity and the teams work hard to meet the needs of the community whilst maintaining a high quality of care. To achieve this, use of available HR, time and space must all be maximised. Needs identified in the project must be prioritised with clear objectives set.

Task Shifting, Paradoxical Simplification and a Fast-Track System
Limited human resources can be a challenge in providing quality health care in resource-limited settings. This can be managed by reviewing the necessary tasks and considering the capacity of the people available to carry out part or all of each task. Can some tasks traditionally carried out by clinically trained staff be undertaken by health workers with less clinical training? Are their activities which would be appropriate to delegate to non-clinical staff? Rational redistribution of responsibilities in this way has been dubbed task shifting. Task shifting is a strategy recognised and advocated for by the WHO. It has been successfully implemented in various forms in various healthcare projects around the world.

In the clinics in Kibera, consultations are predominantly carried out by Clinical Officers (COs). This practice is now common place in various countries where Doctors are in short supply. There is also a growing trend to further shift the more routine elements of consultations from COs to Nurses. Management of HIV can be a particularly complex infection to manage, but task shifting to COs is facilitated through the provision of sophisticated laboratory tests such as CD4 counts. This is known as paradoxical simplification, where something technologically advanced such as flow cytometry can be used to bring into being simplified, streamlined protocols. Simplified protocols then allow patient management by health care staff with less specialised clinical training. For example, COs and nurses are able to use a patient’s CD4 count to guide their activities, such as when to initiate a patient on ART, or as an indicator of treatment failure. To ensure the success of task-shifting it should be accompanied by strong supportive supervision. In the clinics in Kibera, a supervisory team of Doctors are at hand for consultation and support with more complicated cases. Regular staff training sessions are also provided for continuous medical education.

Integration of a growing cohort of HIV patients requiring life-long care necessitates a significant workload to be managed by healthcare staff. The clinics operate a Track System for HIV patients to encourage that valuable consultation time is spent on those patients most in need of clinical attention. Patients are categorised into fast, medium, or slow tracks, according to the stability of their health, current symptoms and
any drug toxicities. Stable patients are fast-tracked with longer intervals between scheduled appointments and some tasks, such as prescription refills, shifted from COs to trained Nurses. Those patients with more severe complaints are put on the slow track for closer monitoring and treatment by COs and Doctors.

HIV testing and counselling activities also pose a considerable workload to clinic staff, with a total of 5750 sessions carried out in 2008. In the clinics in Kibera the RCT is carried out by a nurse as part of ANC services. For DTC and VCT this activity has been shifted from nurses to certified counsellors. HIV diagnostic tests now come in the form of rapid diagnostic tests (RDTs), which require little technical expertise to perform and provide results within a matter of minutes. A counsellor performing the test has the added value of professional counselling skills that enable him or her to provide quality psychosocial support to patients when disclosing the test results. Quality control of the diagnostic tools for all testing is provided by the clinic laboratory staff. Training, supervision and technical support is again provided by the management team.

Peer Empowerment – Meaningful Involvement of Available HR
A message delivered by someone with experience of the subject on which they speak will generally have a greater impact than information given by someone with only a theoretical knowledge. Who better to provide information on HIV, than a person living with HIV/AIDS (PLWHA), who is also able to share his or her own experiences? Every day in the clinics in Kibera, “expert patients” share their knowledge and experiences with co-patients, they assist in mini-group activities, mobilise patients for treatment literacy and also engage in community-outreach activities. Generally the expert patients are volunteers who have been through the MSF treatment literacy training themselves and are passionate to share this knowledge with others. They are provided with further support to build their knowledge-base on HIV and to understand adult learning principles and confidentiality ethics. MSF are not alone in this strategy, nor is it a new idea. In 1994 the concept of Greater Involvement of People Living with or affected by HIV/AIDS (GIPA) was formally voiced by UNAIDS as an essential part of national responses to the HIV epidemic, a declaration agreed by 42 countries (16). PLWHA are a valuable human resource and their meaningful involvement in HIV programmes, other than as the beneficiaries, is an important step.

Limited Space – Prioritising Infection Control
Kibera is a densely populated, crowded environment. Working in facilities situated within Kibera, available space within the clinics is also limited. Careful consideration must be given to patient flow and use of the available areas must be prioritised. An essential element to take into account in this arrangement is infection control. For the many arguments in favour of integration of TB services into HIV and PHC, the main argument for maintaining separate services is the increased risk of nosocomial infection. For this reason, allocation of separate areas for diagnosed cases of TB is of paramount importance. Selected areas must be well ventilated. Waiting bays can be in the open air, consultation rooms should at least have a window that can be opened and consideration should be given to the placement of furniture within the room to minimise the risk to the attending clinician. Staff attending to TB patients all day should also wear a protective high filtration mask. Attention should be paid to the ventilation in all other clinic areas also, particularly the general waiting bay where TB cases as yet undiagnosed may be seated with other patients. Appointment schedules can also be used minimise the risk of infection. In the clinics, specific days are allocated for TB consultations.
Maintaining Specialised Care within Integration - Children, Teens and Adults

A challenge in providing services for whole families as part of the one stop shop approach is to retain specialised care targeted to the needs of the different patient groups this encompasses. For example, children, teenagers and adults faced with HIV infection have different needs. Consider the issue of adherence to ART. To commit to this life-long treatment regime, patients require some knowledge and understanding of both their infection and their treatment. The capacity for digestion and acceptance of a positive HIV test result and comprehension of information about the virus and about ARVs is very different between a child, a teenager and an adult. Similarly, different stages of development also present patients with different issues and concerns relating to their status and its impact on their lives. For these reasons, treatment literacy tools, counselling sessions, and support group activities of the clinics in Kibera have been adjusted for the needs of different patients.

For children, a fairytale storybook was developed called “Thanks ARVs”, which uses characters such as an Uncle Lion and a wicked hyena to help children understand what is happening to them and how to keep themselves healthy. It can also be a useful tool to assist parents or caretakers in status disclosure to the child, as it can prompt questions from the child as he/she identifies with elements of the story (“the animals take medicines twice a day like me, do I have the same virus?”). Counselling activities such as “Hero Book” training are also provided. This is an exercise that encourages children to share their emotions and discuss difficult issues through drawing autobiographical pictures. “Children’s Fun Days” are also organised three times a year during school holidays. These are day trips to entertainment or nature parks, which facilitate mixing of paediatric patients, helps build relationships between the children and staff and simply encourages the children to have fun.

For teenagers, a youth information booklet was developed that provides a summary of important information on HIV. This booklet uses more official terminology, but still has some illustrations to assist in understanding what, for example, a CD4 count means (pictures show CD4 cells as warriors guarding a child). The youth booklet also contains messages about safe sex, an important issue to address for these older children who are or may soon become sexually active. Teenage support groups are also held monthly.

For adults, treatment literacy sessions are available that provide a comprehensive overview of HIV infection and treatment. Targeted support groups are also organised, for example, for discordant couples and for patients on second line treatment. Links with external actors are also facilitated, for example with local Post-Test Clubs (through KIPOTEC and NNEPOTEC).
**Treatment Adherence – The Problem of a Mobile Population?**

Treatment outcomes for TB patients and HIV patients on ART, though demonstrating some progress and success, also reveal an ongoing challenge of treatment adherence. Loss to follow up for HIV patients at one year on ART was 12% in 2009, similarly, treatment interruption for TB patients during the same period was 10% (see Tables 4 and 5).

### Table 4. MSF Kibera Project HIV Treatment Outcomes after 1 year, 2008 and 2009 cohorts.

<table>
<thead>
<tr>
<th>ARV Cohort</th>
<th>On Treatment</th>
<th>Treatment Interrupted</th>
<th>Lost to Follow-Up</th>
<th>Transferred Out</th>
<th>Dead</th>
<th>Not Specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>68% (476 / 703)</td>
<td>1% (7 / 703)</td>
<td>15% (106 / 703)</td>
<td>9% (66 / 703)</td>
<td>6% (44 / 703)</td>
<td>1% (4 / 703)</td>
</tr>
<tr>
<td>2009</td>
<td>69% (479 / 696)</td>
<td>1% (6 / 696)</td>
<td>12% (83 / 696)</td>
<td>11% (79 / 696)</td>
<td>7% (47 / 696)</td>
<td>0% (2 / 696)</td>
</tr>
</tbody>
</table>

### Table 5. MSF Kibera Project TB Treatment Outcomes 2008.

<table>
<thead>
<tr>
<th>TB Treatment Outcome</th>
<th>Treatment Success</th>
<th>Treatment Interrupted</th>
<th>Transferred Out</th>
<th>Treatment Failure</th>
<th>Died</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>69% (319 / 460)</td>
<td>12% (54 / 460)</td>
<td>12% (53 / 460)</td>
<td>1% (6 / 460)</td>
<td>6% (28 / 460)</td>
</tr>
<tr>
<td>2009</td>
<td>70% (369 / 530)</td>
<td>10% (52 / 530)</td>
<td>13% (70 / 530)</td>
<td>2% (12 / 530)</td>
<td>5% (27 / 530)</td>
</tr>
</tbody>
</table>

*Note 1/531 patients still on treatment at time of writing*

The project attempts to identify and address any issues that may affect adherence as early as possible. Before patients start either TB treatment or ART, they attend a social needs assessment session with a project social worker. Each patient’s needs are discussed and, where at all possible, patients are referred to partners providing social support services. HIV patients are further provided with specific pre-treatment counselling sessions to discuss issues pertaining to ART prior to initiation. Counsellors go over technical information about ART and try to empower the patients to incorporate their diagnosis into their life. A tracing system is in place to follow-up HIV patients on ART, PPTCT mothers and children, TB, nutrition and chronic disease patients who miss an appointment; first by phone call then if necessary by home visit. Counselling sessions specifically on the importance of adherence are provided, both for patients on ART and TB patients. Counsellors and medical staff also support patients suffering from depression and anxiety, which can otherwise also impact on treatment adherence.

Measures such as these have helped to identify and minimise some issues of non-adherence. However, feedback documented by our tracing staff suggests that the majority of reasons for Kibera clinic patients missing an appointment have to do with competing priorities beyond the control of the project. Unemployment is a problem in Kibera. Those residents who do have employment are often employed as daily workers. The source and duration of this work is unpredictable, but for many people it forms the main source of household income. Work is often given as a reason for having missed an appointment and is an example of the type of competing priorities in question. Another reason commonly given is that the patient had to travel “up-country”. The motivation behind these trips is not always clear, but it alludes to the seemingly transient nature of the population of Kibera, which may be common to many informal settlements where a large proportion of the population are thought to have migrated from rural areas in search of employment. Where possible, the project has made adaptations to fit its programmes to this context. The track system allows stable HIV patients up to six months between appointed full
clinic consultations. Drug supplies (cotrimoxazole, ART) are given for up to three months, with a quick prescription-refill pick-up system in place, direct from the clinic pharmacies between appointments. Drug supplies also include a small buffer stock, allowing patients to remain adherent to treatment even if they are, for whatever reason, unable to attend the clinic on the scheduled day of appointment. Patients are also issued with a clinic card detailing their treatment history, facilitating care by another facility in case of unplanned travels.

**Conclusion**

The populations of urban informal settlements such as Kibera face many unmet health needs. Many of these needs naturally overlap and will present in the same patient, for example, HIV/TB co-infections, the need for PMTCT services within routine ANC, or the relationship between malnutrition, immunity and infection. A “one stop shop” clinic therefore offers an efficient mode to address these requirements. Furthermore, integration may also enhance the quality of care through its patient-centred approach. The MSF and MoPHS project has demonstrated the feasibility of providing HIV, TB and Primary Health Care through an integrated model of care in the setting of an informal settlement.

**References**

8. Patel V. Is Depression a Disease of Poverty? Regional Health Forum WHO South-East Asia Region 2006, Volume 5, Number 1.