The Chronic Diseases Clinic of Ifakara (CDCI) and the Kilombero and Ulanga Antiretroviral Cohort Study (KIULARCO) at the St. Francis Referral Hospital

Annual Report for the year 2016



A collaboration between

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- Ifakara Health Institute (IHI), Ifakara, Tanzania (Director: Dr. H. Masanja)
- Swiss Tropical and Public Health Institute (Swiss TPH), Basel, Switzerland (Project Coordinators: PD Dr. Maja Weisser, Prof. Ch. Hatz , Prof. M. Tanner; Director Swiss TPH: Prof. J. Utzinger)
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I. Background

As an integral part of the St. Francis Hospital Referral (SFRH) in Ifakara, the Chronic Disease Clinic (CDCI) is responsible for the care of HIV-infected individuals according to care and treatment guidelines developed by the Tanzanian National AIDS Control Program since 2005. The activities of CDCI include care for out- and in-patients with a documented HIV infection seen at the SFRH. The services include adult patients, pregnant women, HIV-exposed and HIV-infected children. Since 2013 the Tuberculosis (TB) clinic of SFRH has been integrated into CDCI, in order to improve services and outcome of patients with TB and HIV co-infection.

In addition, CDCI is in charge of 'provider-initiated testing and counselling (PITC) service, aiming at testing for HIV all patients seeking medical services at the SFRH irrespective of the clinical presentation. Also, CDCI offers voluntary counselling and testing (VCT). Patients with positive test results are enrolled into care on the same day.

To enhance capacity within the Kilombero district, the CDCI offers supervision and training of the staff of other care and treatment centers (CTC) and is involved in educational activities to the community, e.g. radio casting. Over 10 years, more than 20 health staff trained at CDCI are now working in health institutions all over Tanzania.

Patients attending the CDCI are asked for informed consent to be enrolled in the Kilombero and Ulanga Antiretroviral Cohort (KIULARCO), a database of demographic and clinical information and a plasma storage. The data provide a unique opportunity to study the epidemiology of HIV in the Kilombero region but also to localize the most important needs of these patients. Since its foundation, more than 9,000 patients have been seen at the clinic, with more than 6000 having started antiretroviral therapy (ART).

The CDCI aims to be a center of excellence in the management of HIV in rural Africa, with three main pillars: clinical care, training of healthcare providers, and research driven by the local needs. .

II. Patient Numbers

Number of HIV Testing at SFRH 2016

Figure 1 and 2 show the numbers of patients being tested for HIV at the SFRH during 2016 in routine care. VCT denotes voluntary counselling and testing, PICT is being done at the OPD (outpatient department) or IPD (inpatient department). Figure 1 shows absolute numbers. Figure 2 the percentage of positive tests/all patients tested. We could not assess the numbers of all patients seen at SFRH.

Figure 1

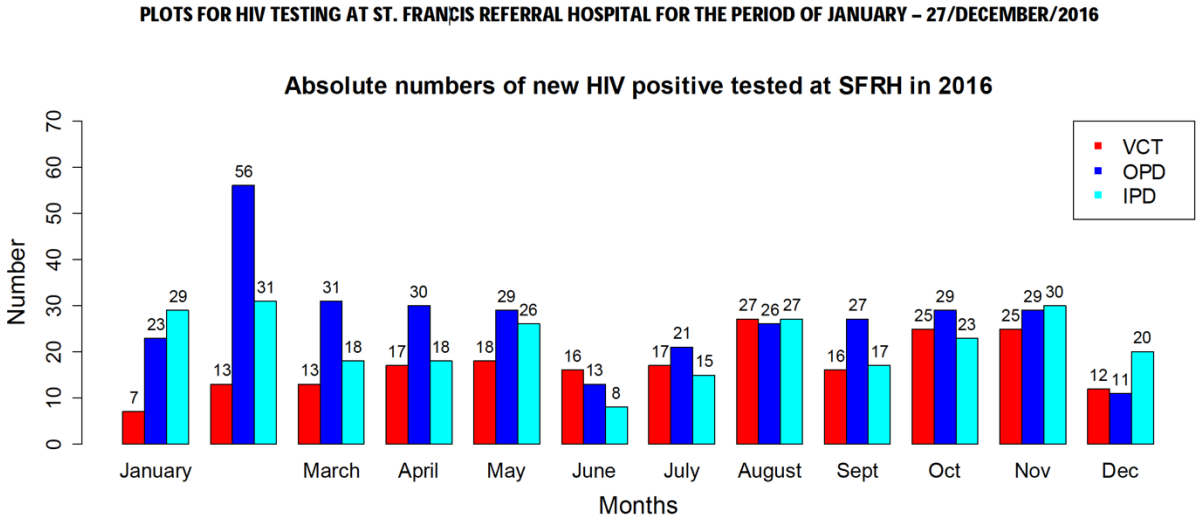
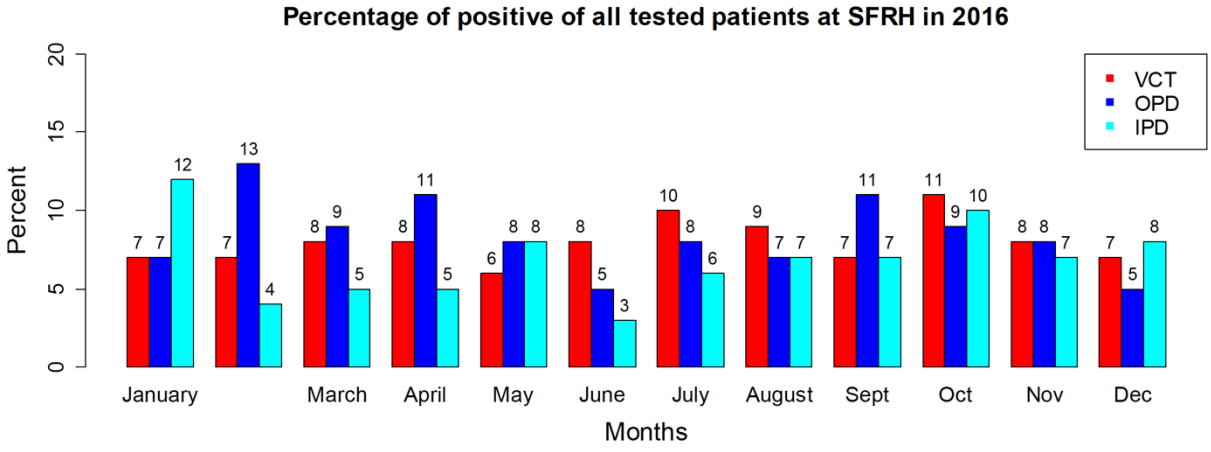


Figure 2



Number of patients attended at CDCI until December 2016

Table 1 shows the summary of the total number of patients ever enrolled according the NACP database, and ever initiated ART stratified by age group, at the end of December 2017.

	Adult (≥15 year-old)		**Children (<15year-old)**		
	Female	**Male**	**Female**	**Male**	**Total**
Cumulative number of persons enrolled, n	5607	3055	437	439	
Total, n	8662		876		9538
Cumulative number of persons on ART, n(%)*	4444 (79)	2276 (75)	331 (76)	361 (82)	
Total, n(%)	6720 (76)		692 (79)		7412 (78)

III. Staff of the CDCI

39 staff members are permanently employed at the CDCI by four different organizations, namely IHI (23), SFRH (7), TUNAJALI/USAID (8), and Swiss TPH (1). The CDCI team is composed of seven medical doctors, 2 clinical officers, 4 registered nurses, 3 counsellors, 5 auxilliary nurses, 1 pharmacist, 2 statisticians, 6 data clerks, 4 biologists, 2 lab technician, and 2 auxilliary staff (2). The team has been quite stable over the last years, allowing to build up established structures in order to best serve patients, build up research and training.

IV. Infrastructure

Since January 2017 the CDCI is placed at the new outpatient department of SFRH, which has been funded by the Swiss Agency for Development and Collaboration (SDC). The building integrates CDCI within regular outpatient services and consists of 1 reception room, 1 room for triage, 2 rooms for pharmacy (1 HIV, 1 TB), 2 rooms for testing and counselling, 8 rooms for clinicians, 1-day hospital room, 1 data and server room, 1 meeting hall and toilets for patients and staff. The clinic is supported by local network and IHI wireless internet access in all rooms. All clinicians and most of non-clinicians have computers available with access to the electronic patient database (openMRS).

The One Stop Clinic, the integrated service clinic for HIV-affected families (HIV-positive pregnant women, exposed and/or infected infants, siblings and parents remain within the Reproductive and Child Health Clinic (RCHC) of SFRH. For the main storage of drugs, the pharmacy remained within the SFRH (integrated 2014) in order to closely link to the hospital pharmacy with an integrated ordering system for ordering of drugs to the governmental pharmacy MSD (ELMIS).

V. Clinical Activities

Paperless Clinic

Since June 2013, all patient data are captured within an electronic data collection system, allowing an almost paperless clinic. This system, based on Open Medical Record System (www.openmrs.org) serves clinical purposes of patient care and documentation with the great advantage of being accessible from different workstations (clinicians, triage, registration, pharmacy, laboratory) simultaneously allowing a much more efficient workflow and reduced

waiting times for patients. Also it allows a harmonized way of capturing information among CDCI clinicians as well as data extraction for scientific projects.

The implementation of this system has required the acquisition of desktop computers for most of the staff members, the installation of a wireless internet access and the adequacy of the electric installation to bridge potential power cuts. Maintenance of the IT and electric systems are crucial for the functioning of the clinic, which was achieved on virtually all workdays.

An upgrade of the openMRS system with adaptation to the current needs has been prepared by the team and should be completed with the help of DAR University (group of Samuel Masasi). Furthermore, we work on the option of exportation of data required from NACP from our openMRS. Currently NACP database is filled on paper and entered in the electronic NACP database manually.

CDCI activities within the Outpatient Department

Patients visiting our CTC as new patients are enrolled into HIV care immediately after testing, taken to the laboratory for baseline investigations (full blood count, creatinine, alanine aminotransferase, CD4, VDRL, hepatitis B serology, cryptococcus antigen (if CD4<150/ul) and stool for parasites, chest xray) on the same day. If stable, the patients will be seen the next day by a clinician. If unstable or presenting with an acute health problem according the triaging nurse, they will be seen on the same day. Follow-up controls are done every three months - if stable twice a year by a nurse and twice a year by a clinician. Also twice a year, if not otherwise indicated clinically, blood tests are done on the day before consultation. In case of suspicion of clinical or immunological treatment failure, viral load will be measured and if >100copies/ml, resistance testing will be done. Patients with TB are seen by clinicians and treated according National Guidelines.

Improving Retention in care

Long term retention in care is a major challenge in the care of chronic diseases. An effective coordination of more than 30 volunteers funded by TUNAJALI (USAID) has been implemented to track patients lost-to-follow-up. A tracking coordinator working at the CDCI regularly follows-up with the help of community health workers. With the upgrade of the new openMRS an appointment module will be integrated to facilitate automatic tracking alerts.

CDCI activities within SFRH Wards

If a patient is referred from the outpatient department to the wards, if a patient tests newly HIV-positive or if a known HIV-patient from another CTC needs hospitalization, a designated MD from CDCI is informed and will visit the patient throughout hospitalization on a daily basis together with an intern doctor from SFRH on daily rounds. Additionally, this doctor is in charge of patients hospitalized on the TB ward. Once a week a grand round under the supervision of the head of CDCI is done.

According to government requirements, the setup of a ward and outpatient department to treat multidrug resistance (MDR) TB is planned in order for SFRH to become one of the referral centers for MDR-TB in Tanzania.



Integration of HIV and Tuberculosis Activities

In order to maximize the screening and treatment of these two often linked diseases, the CDCI - in agreement with the hospital directorate - integrated the TB clinic and is now in charge of providing outpatient and inpatient TB care.

Confirmation of TB after clinical suspicion and chest x-ray is routinely done with Xpert MTB/RIF from sputum according the Tuberculosis and Leprosy National Control Programme (NTLP). Also for patients included in associated study projects, sputum is sent for testing to IHI laboratory in Bagamoyo and other materials such as pleural, pericardial fluid, ascites, cerebrospinal fluid are tested by xpert. Sonography is performed in case of suspicion of extrapulmonary TB according to the FASH protocol (focused assessment with Sonography for HIV-associated Tuberculosis).

Integration of the CDCI with the antenatal and under-five clinic of SFRH

Care for HIV-infected pregnant women, measures to reduce/eliminate mother-to-child

transmission and early infant diagnosis are key in HIV service delivery. To improve these services and clinical outcomes of both pregnant women and HIV-exposed and infected children, a linkage with the Antenatal and Under-five Clinic of SFRH was established in 2013. Within a specific project, the so-called 'One Stop Clinic', started its services in 2014 as a part of CDCI. The model project issponsored by a Merck-for-Mothers' grant. A team of two medical doctors, a counsellor and a nurse from CDCI care for HIV-infected pregnant women, HIV-exposed and HIV-positive children and their families in one site. Besides clinical care the One Stop Clinic and the function as a referral clinic at the Kilombero district, offers twice yearly training for healthcare workers from other districts. For more details on the One Stop Clinic of Ifakara, see Annex II.

Pharmacy

The management of stocks of antiretroviral drugs is handled through the governmental Medical Stores Department (MSD) and is ordered through their electronic ordering system according consumption reports integrated into the hospital (ELMIS). Currently, only one pharmacist is working at the CDCI, without proper backup, which is a challenge. Since its start in 2005 uninterrupted drug provision to enrolled patients was achieved with only very little drug shortages in the past and virtually no shortages in recent years.

VCT and PITC services

Three trained counsellors (2 for adult patients, 1 for pediatric patients and families) are in charge of ensuring the implementation of the Tanzanian guidelines for voluntary counselling and testing (VCT) and provided-initiated testing and counselling (PITC). Besides testing persons coming for testing on a voluntary basis, all patients presenting to the SFRH for whatever reason are supposed to be tested for HIV. During worktimes on workdays this appears to be greatly achieved (see numbers in Figure 1), during weekends and nights we still face challenges to get patients tested. Numbers are captured monthly and are regularly reported to hospital staff as a feedback.

Additionally, the team takes care of counselling of patients with adherence issues on an individual patient level.

Malnutrition Project

Through an external funding source (AfircaViva) a malnutrition project was started late 2016 and is currently being implemented, aiming at delivering therapeutic foods to malnourished children irrespective of their HIV status. With this purpose a nutritionist and a nurse will be hired not only in charge of care of malnourished children but also for training of staff.

VI. Laboratory activities

Monitoring of HIV-Therapy and Screening and Diagnosis of Opportunistic Infections

The routine screening and monitoring by laboratory testing is done at the Ifakara Health Institute Laboratory. In the baseline workup, all patients receive a full blood count, a CD4 count, creatinine and liver transaminase testing as well as screening for certain comorbidities (VDRL and Hepatitis B) and in case of CD4 cell count <150/ul a cryptococcal antigen test. Additionally, if symtoms for TB are present, Xpert TB/RIF in sputum is performed. In Follow-up examination, in stable patients twice yearly blood is taken for CD4 measurement and safety laboratory.

Negotiations with the District, Regional and Chief Medical Offices to get reagents for routine monitoring through the Government are progressing. The planned, necessary switch from CD4 to Viral load monitoring is a major concern as the reagents to perform theses tests should come from the government. Through a research project IHI laboratory has acquired an Abott Viral load machine, which would be ready for use as soon as the Government provides reagents. We would be in a good position to offer viral load testing for Kilmbero and Ulanga Districts in agreement with government services.

Resistance testing is done in case of documented virological treatment failure through research funds. Additional screenings include chest x-ray for TB, cervical cancer screening through visual inspection with acetic acid at existing facilities at SFRH.

Early Infant Diagnosis

DNA PCR for early infant diagnosis has been routinely implemented at IHI lab with a 2 weeks turnaround time.

VII. Research activities

The research projects at the CDCI address local needs and are primarily aimed to impact the quality of care in our setting as well as to generate knowledge on HIV in rural health settings, that may eventually be extrapolated to similar settings in Tanzania and other African countries. Moreover, the research activities provide a unique opportunity for capacity building and career development of the local staff.

The most important research fields are:

- Antiretroviral Outcomes
- Tuberculosis-HIV Co-Infection
- Cryptococcal Meningitis
- Prevention of Mother to Child Transmission (PMTCT) and Pediatric HIV
- Co-Morbidities

Involved in research projects of CDCI/KIULARCO are researchers from the IHI staff and partners from Swiss TPH, Universities of Basel and Berne. Additionally, some projects are done in collaboration with international partners with expertise in the field. Studies for Cryptococcal infections have been carried out with the Infectious Diseases Institute, Makerere University in Kampala, Uganda, the University of Minnesota, USA. Other projects were done together with the Hospital Clínic of Barcelona, and the Barcelona Centre for International Health Research, the Social and Preventive Medicine Institute of the University Zürich and others. These collaborations are mainly intended to enhance the motivation of the phyisians, to increase the visibility of our project and to ultimately revert in an increasingly better quality of care, training and research. A list of publications of the CDCI can be found in Annex I.

VIII. Training activities

The first working hour is dedicated to education and training of staff including clinical

case discussions, state of the art lectures on HIV and associated diseases, resistance committee and journal clubs every day. Each type of session is coordinated by a medical doctor on a rotational basis, thereby contributing to a continuous medical education and fostering clinical discussion among the members of the team.

Currently, 2 medical doctors are abroad for Master degrees (Dr. Herry Mapesi: MSc in Epidemiology at the Swiss TPH in February 2017 and Dr. Lameck B. Luwanda master program in Oxford, UK. Other master since October 2016). Also attendance of National and International conferences aim at distributing our research results but also educate staff in current state of the art of HIV and TB management and research projects. Career plans are pivotal in keeping health personnel in this rural setting and will be further developed.



IX. Conclusions

Twelve years after the CDCI was established, the clinic is very successful in serving a large number of patients from the Kilombero area. It is also a referral center for smaller CTCs in the Kilombero/Ulanga districts. Teaching and training of staff including capacity building are integrated into daily routine, and research is crucial for motivation and commitment to improve healthcare of patients.

The unique conjunction of clinical care and good training and research possibilities in a rural African setting, together with the strong links with international partners with expertise in different key areas for success, makes of the CDCI/KIULARCO project an ideal platform to generate evidence tackling the real challenges of HIV in Africa, which may be extrapolated to similar settings in Tanzania and abroad.

ANNEX I. LIST OF PUBLICATIONS of the CDCI

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