

## REVIEW ARTICLE

# The 90-90-90 ART targets: Progress of the Marindi Sub-County Hospital, Homa Bay County, Kenya

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## ABSTRACT

Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) is an epidemic that the world still grapples with. In 2014, The Joint United Nations Program on HIV/AIDS (UNAIDS) set fast-track targets for 2020 to accelerate HIV response to end the HIV/AIDS epidemic by 2030. Ending the AIDS epidemic will motivate the development and public health efforts, indicating what global solidarity, multi-sectoral partnerships, and evidence-based actions can be achieved. The 'ambitious' targets state that by 2020, 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy, and 90% of all people receiving antiretroviral therapy will have viral load suppression. The purpose of this study was to assess the progress of the Marindi Sub-County Hospital towards achieving the 2020 United Nations' AIDS 'ambitious' 90-90-90 targets towards HIV testing, antiretroviral therapy, and viral load suppression. At the time of this review, 1,823 people receiving ART at the hospital have been tested, representing 73 percent of people who know their HIV status, giving the second 90 percent health outcome target a 100 percent score. The viral load suppression rate in the hospital was 93.3 percent. Marindi Sub-County Hospital has achieved the second and the third 90 but is yet to fully achieve the first 90. Achieving the second and third 90 may be right, but without achieving the first 90, it still means that many people who are HIV positive are not accessing treatment, which can lead to an increase in HIV-related morbidities, mortalities, and new HIV infections. Believably, the '90-90-90 targets' remain a powerful tool to assess progress towards HIV elimination and drive standards in care for PLHIV. From these results, 90-90-90 is not only feasible but also achievable.

## INTRODUCTION

Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) is still a major public health threat that has led to more than 32 million deaths and approximately 37.9 million people living with HIV by the end of 2018 globally, with over two-thirds of the

infected people living in Sub Saharan Africa ([World Health Organization \[WHO\], 2019](#)).

The first HIV case was diagnosed in Kenya in 1984. The epidemic caused devastating impacts across all sectors, and when the prevalence hit 30 percent in some regions, the government of Kenya declared HIV/AIDS a national disaster in 1999. The government then embarked on the task of creating awareness and advocacy to prevent new

infections (Kenya Ministry of Health [KMoH], 2020). Before then, The Ministry of Health in Kenya had established a program referred to as The National AIDS and STI Control Program (NAS COP) in 1987 to spearhead its interventions in the fight against HIV/AIDS. NAS COP operates as a unit and does technical co-ordination of HIV and AIDS programs mainly; it also works with other partners in HIV response (KMoH, 2020). As a result of these and other efforts, there is a decline in HIV infections in Kenya, just like there is globally, but the rate of new infections is unacceptably high (Kharsany & Karim, 2016).

Currently, Kenya has approximately 1.3 million people living with HIV, giving a national prevalence of 4.9 percent. HIV prevalence varies in Kenya's 47 counties, ranging from the lowest of less than two percent in nine counties and high rates in five counties, with Homa Bay County recording the highest (19.6 percent) (National AIDS and STI Control Program [NAS COP], 2020).

Marindi Sub-County Hospital is one of the health facilities in Kenya, which offers HIV/AIDS preventive, care, and treatment services. Marindi Sub-County Hospital is a health facility in Homa Bay County, the county with an HIV prevalence in Kenya (Kenya Health Information System [KHIS], 2019).

In 2014, The Joint United Nations Program on HIV/AIDS (UNAIDS) set fast-track targets for 2020 to accelerate HIV response to end the HIV/AIDS epidemic by 2030. The 90-90-90 targets to help end the HIV/AIDS epidemic state that by 2020, 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained Antiretroviral Therapy (ART), and 90% of all people receiving antiretroviral therapy will have viral load suppression (The Joint United Nations Program on HIV/AIDS [UNAIDS], 2014). The Marindi Sub-County Hospital has (over the years) been working relentlessly to meet these targets.

It has been six (6) years since the targets were set. It is important to review the facility's performance based on the standard targets to assess its level of progress towards achieving them. This would be beneficial in identifying gaps and fixing, where necessary, to keep the facility on track.

## MARINDI HOSPITAL'S APPROACH TOWARDS THE 90-90-90 TARGETS

The Sub-County hospital has a catchment population of 12,700 adults (6,604 men, 6,096 women), and 2,095 children below five years (KHIS, 2019). The hospital offers preventive and curative services. It also runs HIV prevention, care, and treatment services with support from Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), which gets its funds for the HIV/AIDS program from the US Center for Disease Control and Prevention (CDC). The Sub-County hospital has a Patient Support Center (PSC) that provides HIV prevention and treatment services. EGPAF has employed healthcare workers including two clinical officers, a pharmaceutical technologist, a nurse, a nutritionist, a laboratory technologist, two adherence counselors, two mentor mothers, three testing counselors, two peer counselors, a triage officer, and one health record officer who support HIV/AIDS care and management ("Filed observation", n.d.).

In implementing HIV/AIDS care and treatment program, the hospital follows the national guidelines on the use of antiretroviral drugs for treating and preventing HIV infection in Kenya. The guidelines which emphasize "treatment for all," give guidance on HIV testing, linkage and referral, antiretroviral therapy, viral load suppression, and HIV prevention strategies (KMoH, 2018). To work towards the 90-90-90 targets, the hospital uses the following approaches:

### Support Groups

Studies associate support groups with increased linkage and retention of newly diagnosed patients in the HIV continuum (Kave et al., 2019). Marindi Sub-County Hospital has various support groups based on characteristics that are unique to the clients. There is a discordant couples support group that encourages HIV-positive patients to come to the clinic with their HIV-negative spouses. Other support groups include an adolescent support group, Prevention of Mother-To-Child-Transmission (PMTCT) support group, and men only support groups. When these groups meet, they discuss freely among themselves, and they also raise issues they face and challenges, which the hospital team addresses. They receive more information on prevention measures, adherence to treatment, and nutrition counseling. The newly diagnosed clients quickly get assimilated into the groups, which help them in accepting their HIV diagnosis,

hence reducing stigma. Targeting interventions to specific groups may be more logistically feasible, effective, and less costly compared to targeting individuals. It is also important to note that targeting testing and treatment for those who are sexually active results in reducing HIV incidence (Abuelezam et al., 2019).

### HIV Testing Services

The hospital provides routine HIV Testing and Counseling Services (HTS) to all clients who visit the health facility regardless of the reasons for contact, using an opt-out approach whereby the testing services are offered by default, and the clients have an option to decline (Leidel et al., 2017). For infant diagnosis, the mother may decline the test, but testing the child is a requirement. The hospital uses the age-specific testing algorithms as stipulated in the 2018 guidelines on the use of antiretroviral drugs for treating and preventing HIV in Kenya (KMoH, 2018). These algorithms explain the process of early infant diagnosis, including infants below 18 months and birth testing, testing of children older than 18 months, adolescents, and adults. The HTS is integrated into all care pathways at all service delivery points, including tuberculosis clinics, sexual reproductive health/family planning clinics, maternal and child health clinics, pediatric and adult inpatient wards, nutrition clinics, and outpatient clinics. The approach ensures that everyone who comes into the hospital is given an opportunity to be tested if they do not know their HIV status yet (Isavwa et al., 2018).

The hospital offers a standard package, which comprises a pre-test session, the test, assessment of other health needs, a post-test session including Partner Notification Services (PNS) and child testing, and referral and linkage to other appropriate health services. Patients starting HIV care are given disclosure counseling and support, and family testing. PNS includes listing down the sexual partners during the risk period and using preferred means in tracing the contacts for testing. This approach is quite useful in testing people who would not otherwise visit the hospital for HIV testing services, especially men, young people, and people of key populations (Marsh et al., 2019).

### Multidisciplinary Team

A study shows that a Multi-Disciplinary Team (MDT) improves clinical outcomes among HIV patients (Elgalib et al., 2018). The hospital has an MDT that comprises the

nurse, clinical officer, laboratory technologist, adherence counselor, pharmaceutical technologist, nutritionist, and peer counselors. The MDT supports the clients, right from diagnosis to viral load suppression. The team meets every Friday to discuss cases of patients who have high viral loads. When the team discusses such cases, it looks at the enrolment date, the weight at the time of enrolment, the baseline CD4 results, the World Health Organization HIV staging, (Parekh et al., 2018), the regimen at enrolment, the occupation of the client, pill-timing, any documentation if the patient has pill reminder like a watch or mobile phone to set the alarm, any religious affiliation, the number of household members, and the viral load test results, among other things. The team then discusses possible actions, including a home visit to the client to understand the situation better. Each case is allocated to a team manager who will follow up on the case. The team calls these patients to come to the hospital, and then the adherence counselor takes the client through enhanced adherence counseling individually. The client makes a plan on how they intend to achieve the goal of suppressing the load of the virus. The laboratory technologist then takes their blood sample for viral load testing after three months. The team takes appropriate action based on the results, including contacting the regional office for further assistance. Monitoring the viral load is useful in early detection of treatment failure, low level of resistance, even if there is treatment failure, adherence counseling, and appropriate switching to second-line therapy (Bain et al., 2017; Bachmann et al., 2018).

### Strong Logistics Supply Chain and Management

The hospital has a strong supply chain system chaired by the pharmaceutical technologist, and the laboratory technologist and nutrition officer serve as members. This team does quantification of HIV/AIDS commodities, including testing kits, ARVs, and nutrition supplements, to enhance continuity of supplies.

### Implementing Quality Improvement Projects

Many healthcare settings use Quality Improvement (QI) approaches to address gaps in HIV service delivery effectively (Ikeda et al., 2019). Marindi Sub-County Hospital has a Quality Improvement Team (QIT) that consists of different cadres with a team leader that connects the team with senior management at the Sub-County and at EGPAF. Every quarter, the team analyzes data in all areas of HIV management from continuous

quality improvement (CQI) exercise. QIT team prioritizes gaps, analyzes root causes with fishbone diagram, develops site-specific improvement changes and prioritizes with countermeasures matrix, and implements improvement changes with Plan-Do-Study-Act (PDSA) (Izudi et al., 2018). The team shares the information with other staff during meetings and even have the plan pinned to an information board for monitoring.

### Staff Capability and Capacity Building

The hospital has a robust monitoring and evaluation system that assesses whether the project is on course or not. The health records department carries out data quality meetings monthly, involving all staff. The data from the primary data collection tools are verified against the monthly aggregation reporting tools. The data is then validated and keyed into the data recording system. The department also undertakes quarterly quality assurance and control improvement exercises and routine data quality audits and gives feedback to all the staff. From the exercise, the relevant departments could act on the areas that need improvement. The hospital conducts Continuing Medical Education (CME) sessions every Wednesday and engages in on-the-job training at service delivery points to build up the capability and capacity of the staff.

### Other Approaches

The hospital applies other approaches like continuing advocacy for condom use, repeat testing in men at higher risk (Kirby, 2018). Voluntary medical male circumcision, maternal prevention of mother-to-child transmission strategies, pre-exposure and post-exposure prophylaxis (Scott et al., 2018). These efforts, in addition to improvements in compliance with HIV care guidelines and clinical response to treatment, have resulted in the higher engagement of People Living with HIV/AIDS (PLWH) in the HIV multidisciplinary cascade of care and overall, have reduced HIV transmission (Lima et al., 2017).

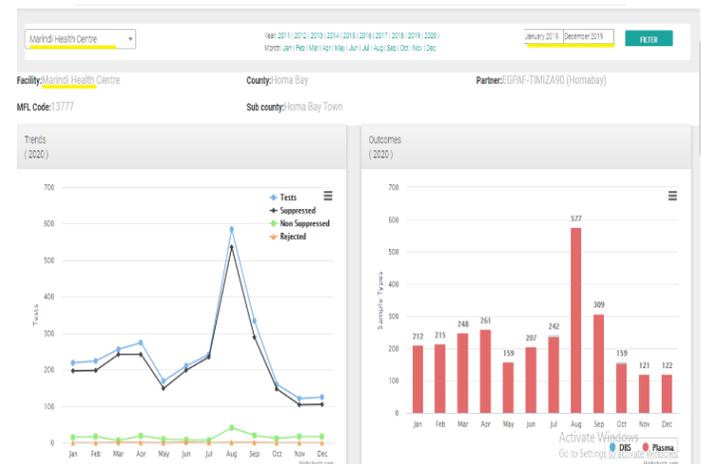
## PROGRESS OF THE HOSPITAL TOWARDS ACHIEVING 90-90-90

The first 90 target is that 90% of those living with HIV get tested. HIV testing is an important entry point for the uptake of prevention, treatment, and care services (Sibanda et al., 2019). As mentioned earlier, the Marindi Sub-County Hospital has a catchment area population of 12,700 people. With an HIV prevalence of 19.6 percent, the estimated number of people expected to be HIV positive in

the population is 2,490. The people tested so far are 1,823 giving a percentage of 73 percent. This means that about 667 people do not know their HIV status (KHIS, 2020). This is still below the target; however, part of the achievements are due to increased community awareness and accessibility of the services (Ssekalembe et al., 2020). Unfortunately, although the services are available and people are aware of them, some people opt not to get tested!

The second 90 requires that 90 percent of people diagnosed with HIV receive ART. All the 1,823 already tested receive ART at the Marindi Sub-County Hospital, giving the second 90 percent outcome target a 100 percent score. The third 90 states that 90 percent of patients on ART achieve viral load suppression. In the viral load test results, there are three categories: Below 400 copies, between 400 to 1,000 copies, and above 1,000 copies. Some studies define Low-Level Viremia (LLV) as the occurrence of at least one viral load measurement of 51–999 copies per mL during ART (Hermans et al., 2018) although all copies below 1,000 copies per mL are considered suppressed while above 1,000 copies are considered high (WHO, 2018). Persistent LLV is a risk factor for virological failure (Joya et al., 2019). The viral suppression rate in the hospital of below 400 copies and between 400-1000 copies is 83.4 and 9.9 percent, respectively, giving a total of 93.3 percent viral load suppression (Figures 1-3). Only 6.7 percent is not virally suppressed; therefore, the hospital has achieved the third 90.

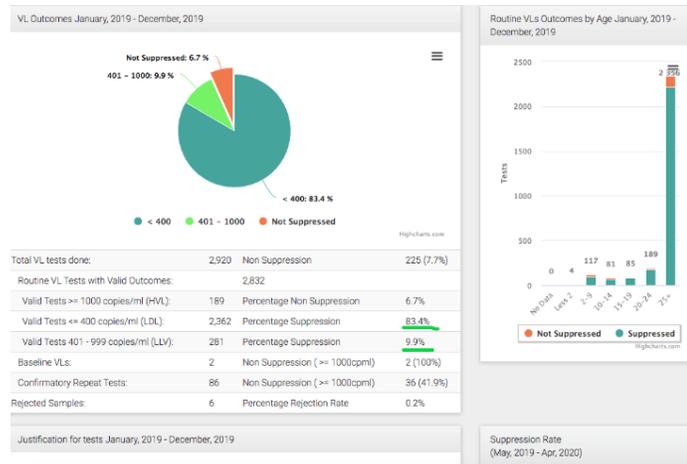
**Figure 1:**  
VL Outcomes



Source: [viralload.nascop.org/sites](http://viralload.nascop.org/sites)

The 90-90-90 target is a useful tool in implementing HIV/AIDS programs (Brown et al., 2018). Studies show that around 90% or more of people will agree to an HIV test if it is offered, that people started on ART adhere to a very high level, that ART suppresses the load of the virus and reduces transmission by close to 100%, and that retention of the clients is probably much higher than predicted (Reuben et al., 2018).

**Figure 2:**  
VL tests and Results

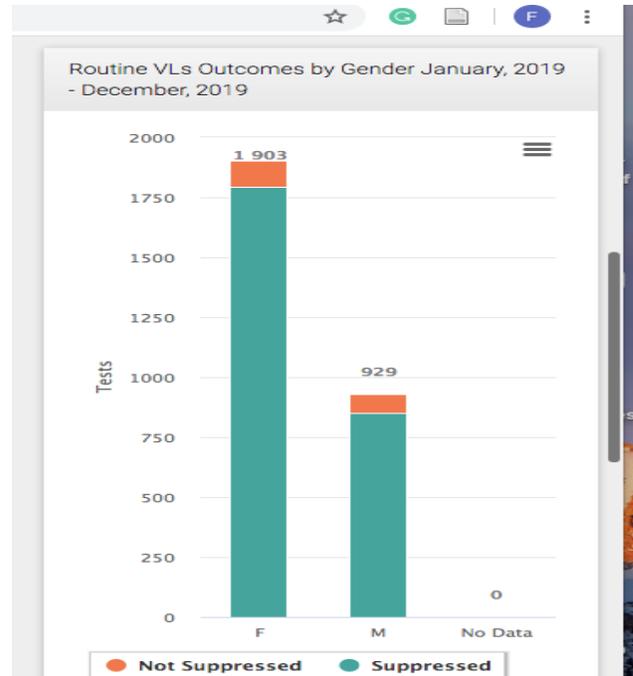


Source: [viralload.nascop.org/sites](http://viralload.nascop.org/sites)

### CHALLENGES

Arguably, there are human resource constraints in most of the health systems in which HIV/AIDS is the most predominant pathology (Jamieson & Kellerman, 2016). Marindi Sub-County Hospital is no exception. The number of staff managing HIV/AIDS are few compared to the number required as per the human resources norms and standards (KMoH, 2014). Lack of ownership of the HIV programs by the mainstream government health care workers and the involved communities is another challenge. Most of the HIV response work is left to workers employed by development partners supporting the HIV work. The other challenge is the fewer number of men with known HIV status. In figure 3 above, even the number of samples from female clients is more than twice the number of samples from males. This means that fewer men are tested; therefore, few are in the ART program. Recent HIV data in other areas also show that "men are less likely to know their status, practice consistent prevention, or access treatment" (Centres for Disease Control and Prevention [CDC], 2018)."

**Figure 3:**  
VL Outcomes by Gender.



Source: [viralload.nascop.org/sites](http://viralload.nascop.org/sites)

### CONCLUSIONS

Looking at the progress of the sub-county hospital based on the UNAIDS 90-90-90 targets, the Marindi Sub-County Hospital has achieved the second and the third 90 but is yet to achieve the first 90. Achieving the second and third 90 may be right, but without achieving the first 90, it still means that many people who are HIV positive are not accessing treatment, which could lead to an increase in HIV-related morbidities, mortalities, and more new HIV infections. Admittedly, the 90-90-90 targets remain a powerful tool to assess progress towards HIV elimination and drive standards in care for PLHIV. From the results, 90-90-90 is not only feasible but also achievable.

Future studies should aim to find out why more males, than females, choose not to know their HIV status.

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**OrCID iDs:** Nil identified.

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