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Sustaining Tuberculosis (TB) Diagnostics Cascade with the COVID-19 Pandemic across Military Health Facilities in Nigeria

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Keywords: TB; Diagnostics cascade; TB/HIV co-infection.

Abstract

Background: The impact of COVID-19 on the diagnosis and management of tuberculosis (TB) patients is evolving. The triple burden of COVID-19, Tuberculosis, and Human Immunodeficiency Virus (HIV) is one of the major global health challenges of the twenty-first century. Nigeria ranks 10th among the 22 high-burden TB countries in the world. The objective of the study was to review the effect of the COVID-19 pandemic on the TB diagnostic cascade across Nigerian Military health facilities.

Methodology: This is a retrospective review of clinical data (April 2019 to March 2021) of facility TB diagnostics cascade among HIV patients across Military-supported facilities from (April 2019 to March 2020) and during the COVID-19 pandemic (April 2020 to March 2021). A comparison of the TB clinical cascade was made before and during the COVID-19 pandemic to review clinical screening, presumptive TB cases identified, diagnosis, and linkage to TB treatment. The program implemented virtual patient follow-up using peer volunteer trackers who call patients to enquire about basic TB clinical symptoms and refer suspects to the facility for diagnosis and treatment. This was done to ensure the non-interruption of TB services as a result of the COVID-19 lockdown restrictions.

Results: The percentage of TB presumptive cases identified was consistent at an average of 8% while TB diagnosis among the presumptive cases was an average of 10% with a linkage to TB treatment at an average of 91%.

Conclusion: The TB diagnostic cascade was sustained even with the COVID-19 pandemic lockdown restriction. However, there is a need to strengthen the quality of TB services, especially regarding TB treatment initiation in TB/HIV co-infected patients, and a need for continuous sensitization of patients and care providers on the need for early linkage to TB treatment.

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Introduction

Background

The coronavirus disease 2019 (COVID-19) pandemic has challenged modern public health practices because the response to the pandemic has introduced several health systems pressures related to economic resources, human resources, and essential service delivery [1,2]. For example, Tuberculosis case findings, treatment initiation, and treatment adherence have been greatly affected during the pandemic [3,4]. The Global Tuberculosis Report 2021 reported an 18% reduction in new tuberculosis diagnoses, from 7.1 million in 2019 to 5.8 million in 2020, and an increase in tuberculosis deaths among HIV-negative people, from an estimated 1.2 million deaths in 2019 to 1.3 million in 2020 [3].

Nigeria reported its index case of COVID-19 on February 27, 2020; incidentally, the first in West Africa according to the Nigerian Centre for Disease Control [4]. Subsequently, a lockdown or curfew in various states was implemented on 30 March 2020 to contain the fast spread of the virus. All citizens except those on essential duties were expected to stay at home and maintain good handwashing hygiene practices, local and international travels were restricted, businesses, offices, public gatherings (including religious places), schools, and universities were closed, and public and private sports were canceled. According to the NCDC, more than 286,000 tests, 43,537 confirmed positive cases, 22,567 active cases, 20,087 discharges, and 883 human deaths were reported as of August 1st, 2020 across 36 states in the country, including the Federal Capital Territory (FCT), Abuja [4].

Tuberculosis remains a global health emergency and needs our attention more than ever, given that significant resources are now being diverted to COVID-19 management. To lose sight of the unfinished business of Tuberculosis control will jeopardize important milestones, gains, and ambitions. We believe that now more than ever is the time to care about TB in adults and children especially as Nigeria ranks 10th among the 22 high-burden TB countries in the world [3]. TB control relies on early diagnosis and treatment, as reflected in the World Health Organization (WHO) End TB 2025 target of ≥90% of people who develop TB being notified and treated [5,6]. Active tuberculosis is 20-30 times more common in people living with HIV than those without [7]. WHO recommends people living with HIV are systematically screened for TB each time they visit a health facility and that in high-burden TB settings, systematic screening for TB in other selected high-risk groups may also be appropriate [5,8]. The objective of the study was to review the effect of the COVID-19 pandemic on the TB diagnostic cascade across Nigerian PEPFAR Military health facilities. In this paper, we look at how the military program in Nigeria was able to sustain the TB diagnostics cascade during the COVID-19 pandemic. We review key TB diagnostics indicators, and how the use of patient navigators was used to sustain TB screening and diagnosis to the linkage to treatment, despite the COVID-19 national-wide lockdown with attendance reduction in patients attendance at the health facilities.

Methodology

This is a retrospective review of clinical data of patients accessing care at Military health facilities from April 2019 to March 2021. We reviewed the TB diagnostics cascade among HIV patients in 34 Military PEPFAR supported facilities spread across the six geopolitical zones of Nigeria before the COVID-19 pandemic(April 2019 to March 2020) and during the COVID-19 pandemic (April 2020 to March 2021). A comparison of the TB clinical cascade was made before and during the COVID-19 pandemic to review clinical screening, presumptive TB cases identified, cases diagnosed with TB, and linkage to TB treatment.

The study population was patients accessing HIV care and treatment services, both newly diagnosed and those already on treatment. Each patient had clinical TB screening using the WHO four symptoms screening tool (current cough, fever, weight loss, and night sweats). Due to the ongoing COVID-19 lockdown and the implementation of multi-month ARV dispensing for HIV patients, the program implemented virtual patient follow-up using the peer volunteer trackers who called patients to enquire about basic TB clinical symptoms and referred suspects to the nearest PEPFAR supported Military health facility for further diagnosis and treatment. In addition, during the lockdown, collaboration and linkage were strengthened among the 34 supported Military health facilities. This allowed patients to access care and treatment at any of such health facilities nearest to them during the lockdown and data was harmonized on the DHIS2 platform. The objective was to ensure the non-interruption of TB screening services resulting from the COVID-19 lockdown restrictions. These processes are shown in figures 1 and 2 below.

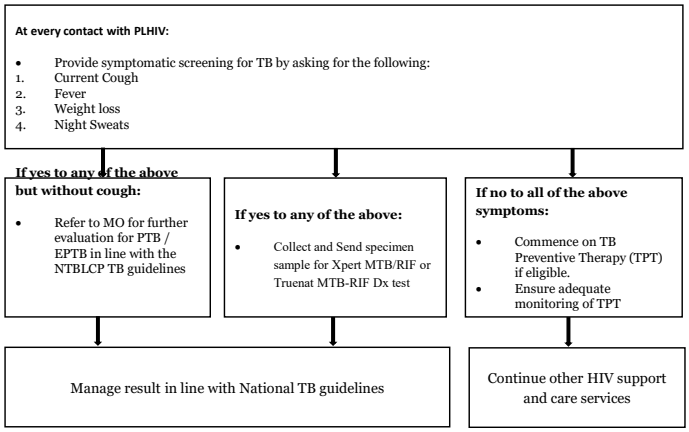

Figure 1: Algorithm for TB screening among adults living with HIV.

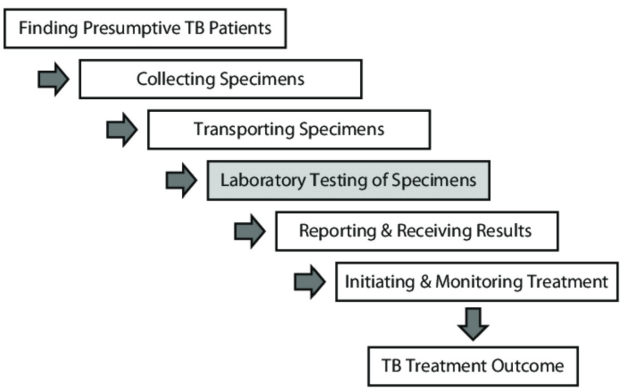

Figure 2: Algorithm for TB treatment [9].

Data was collected on the national TB presumptive and Treatment registers and reported as aggregate data into the NMOD-DOD DHIS2 platform called ProHIMS. The result was downloaded into MS Excel and analysis and trends were calculated to show trends in the TB diagnostics cascade pre and post-COVID-19 lockdown in Nigerian Military health facilities. Data visualization was done using Tableau 2.xx and MS Excel.

We did not seek separate ethical approval for this study as all data were collected for programmatic and quality improvement purposes. The data reported on ProHIMS/DHIS2 is collected in a de-identified manner and summarized on the platform. Additionally, because this intervention was designed as a public health service implemented in collaboration with the GON and NMOD and not a research study, we did not collect consent from participants for using the data, nor was there any official recruitment into the study. This study was done as part of the MOD-USAMRD-A/N pre-approved Basic Program Evaluation (BPE) protocol approved by WRAIR and MODHREC.

Results

The TB cascade data we reviewed were: the number of ART patients who were screened for TB at least once during the reporting period, the number identified as presumptive TB cases, the number with a confirmed diagnosis of TB, and the number of ART patients who were started on TB treatment. Percentage identification, diagnosis with TB, and patients started on TB treatment were calculated and plotted on a line graph (Figure 4) to show a one-year trend before the COVID-19 lockdown and one year after the lockdown. This spanned the period from April 2019 to March 2021.

The percentage of TB presumptive cases identified was 11%, 30%, 4%, and 4% respectively in the four quarters before the COVID-19 lockdown (April 2019 to March 2020) while it was 4%, 6%, 2%, 3% respectively in the four quarters after (April 2020 to March 2021). While the percentage of TB diagnosis among the presumptive cases was 9%, 7%, 8%, and 11% respectively in the four quarters prior to COVID-19 lockdown and 10%, 11%, and 12% respectively in the four quarters after the lockdown, and percentage linkage to TB treatment was 93%, 98%, 93%, 83% respectively in the four quarters before COVID-19 lockdown and 96%, 89%, 81%, 100% respectively in the four quarters after. (Figure 4).

<*Fig 3*: TB CASCADE PRE AND POST COVID -19 LOCKDOWN>

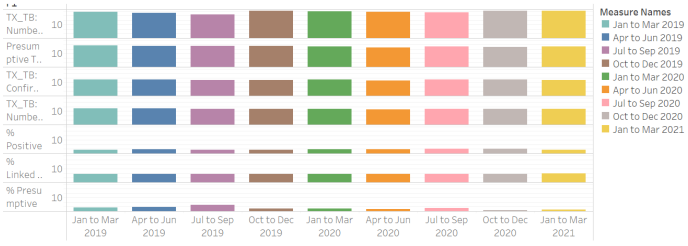

Figure 3: TB Cascade Pre and Post COVID-19 Lockdown.

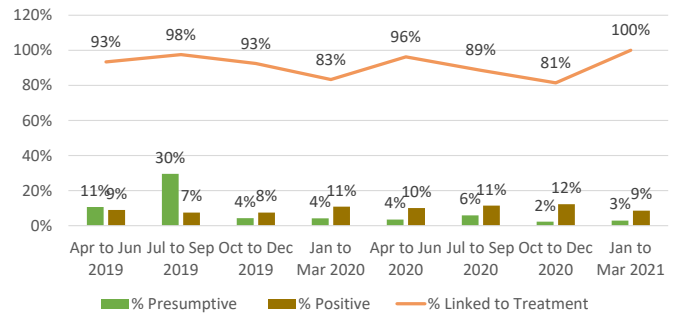

Figure 4: Quarterly TB Diagnostic Cascade April 2019 to March 2021.

Discussion

The care cascade represents a valuable and feasible approach for monitoring TB programs [10] It has been indicated that symptom screening for TB carried out by healthcare providers has the likelihood of diagnosing TB with high positive and low negative predictive values in HIV-positive patients [11,12]. However, the unique challenge was the stigma associated with common symptoms of TB during the COVID-19 pandemic as most of the symptoms are similar to that of COVID-19. Many of the patients would answer "no" to the questions so that they would not be asked to get tested for COVID-19. The TB care cascade has the potential to improve TB/HIV program monitoring and to inform the targeting of interventions to improve TB case finding, diagnosis, linkage to treatment, and retention in care to achieve free survival for TB patients [13]. Despite the challenges, the TB diagnostic cascade was sustained regardless of the COVID-19 pandemic lockdown restrictions with the involvement of peer volunteer trackers and synergy across the PEPFAR-supported Military health facilities.

This finding is at variance with the study in Northern Nigeria in which Odume et al reported a negative impact of COVID-19 on active TB case findings with a progressive decrease in clinic attendance, presumptive TB case identification, the number of TB cases detected, and number who initiated treatment for the TB Surge and the WoW interventions since the onset of the COVID-19 pandemic [14]. The difference in the findings could be attributed to the fact that their study was a short intervention study carried out between March and April 2020 which coincided with the lockdown period of 30 March to 1 June 2020, while this study lasted beyond this period. In addition, this study was on people living with HIV (new and old patients), who were more accustomed to regular follow-up routines than the general population who were the focus of the study by Odume et al [14].

There are limitations in the scope of the cascade as gaps involved in active TB case finding were not covered in this manuscript. In addition, some of the patients could not be reached by the volunteers but nonetheless as described above, the care cascade also provides a framework for understanding how patients traverse stages in TB/HIV care [13]. We, therefore, conclude that with the continuous engagement of peer volunteer trackers in TB care, the TB diagnostic cascade was sustained even with the COVID-19 pandemic movement restriction. Hence, this practice should be strengthened as it is important for achieving the ambitious goal of reducing TB incidence by 90% by 2035, as envisioned by the End TB strategy [15].

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