

MID-TERM REPORT ON IMPACT OF COVID-19 ON TB AND HIV IN AFRICA

Introduction:

The overall aim of the project was to assess the impact of COVID-19 on TB case detection and TB treatment outcomes as well as HIV testing of the general population and referral to antiretroviral services in the capital cities of Kenya (Nairobi), Malawi (Lilongwe) and Zimbabwe (Harare).

Health facilities were purposively selected in each of the cities in consultation with the national TB and HIV programme authorities. The health facilities were a representative mixture of hospitals, health centres, clinics and dispensaries which offered on site TB diagnostic and treatment services as well as on site HIV testing and antiretroviral treatment (ART). In Nairobi, there were 18 health facilities (6 hospitals, 8 health centres and 4 dispensaries). In Lilongwe, there were 8 health facilities (3 hospitals and 5 health centres). In Harare, there were 10 health facilities (9 polyclinics and 1 satellite clinic).

The project was agreed in May 2020 and data collection started in mid-June. The modus operandi has been to collect and validate aggregate data each month for the previous month (i.e., collect data in June for the month of May) as well as collect data retrospectively for the months of March 2019 to April 2020, which serves as the pre-COVID-19 control arm. Data collection and validation have been implemented using EpiCollect5. On case finding, testing and test results, the data are collected for the specific month. For TB treatment outcomes, data are collected on that specific month for the cohort of TB patients commenced on standardised first-line treatment 8 months previously – this allows for six months of treatment to be completed and a further two months for finalisation of outcomes as is the established practice in national TB control programmes the world over. This means, for example, that treatment outcomes reported for the month of May 2020 are for the cohorts of TB patients enrolled on treatment in September 2019. Monthly reports of the TB and HIV data are prepared and accompanied by a narrative giving possible explanations for the changes observed. Monthly and quarterly reports have been circulated in a timely manner to national authorities in each country, The Union Centre for Operational Research, the Special Programme for Research and Training in Tropical Diseases (TDR) and Vital Strategies.

Analyses:

The first COVID-19 cases in each country were reported to the World Health Organization (WHO) in March 2020. Six months later by August 31st, 2020, Kenya had reported 34,057 confirmed COVID-19 cases, Malawi had reported 5,536 confirmed COVID-19 cases and Zimbabwe had reported 6,412 confirmed COVID-19 cases.

We present two analyses of the impact of COVID-19.

First, we provide a direct comparison of 6-month aggregate TB and HIV numbers between March and August 2019 (Pre-COVID-19) and between March and August 2020 (COVID-19). The key data only are shown. Comprehensive country-specific data for the first analysis are shown in Supplementary Annex 1 (comparisons of six-months aggregate data) and Supplementary Annex 2 (comparisons of month-wise aggregate data over the six months period).

Second, we examine trends in key TB and HIV numbers in the COVID-19 period only related to interventions designed to mitigate the impact of SARS-CoV-2 on TB and HIV services.

1. Aggregate TB and HIV numbers in pre-COVID-19 and COVID-19 periods

Presumptive TB

In all countries, there was a decrease in the number of persons presenting with presumptive TB.

| Numbers recorded with Presumptive TB | Pre-Covid-19 Mar to Aug 2019 | Covid-19 Mar to Aug 2020 | Difference % between pre-COVID and COVID-19 |
|--------------------------------------|---------------------------------|-----------------------------|---|
| Kenya | 17,500 | 8,195 | 53.2% decrease |
| Malawi | 6,496 | 3,270 | 49.7% decrease |
| Zimbabwe | 1,474 | 1,057 | 28.3% decrease |
| TOTAL | 25,470 | 12,522 | 50.8% decrease |

In terms of demographics, the percentage decrease in all three countries was greater for children (combined total decrease= 80%) compared with adults (combined total decrease= 45%) and greater for females (combined total decrease= 57%) compared with males (combined total decrease= 43%). In all three countries, there was an increase in the proportion of presumptive TB patients diagnosed bacteriologically positive in the COVID period (9.7%) compared with the pre-COVID period (6.0%).

Registered TB

In all countries, there was an overall decrease in the number of persons being registered with TB.

| Numbers registered with a diagnosis of TB | Pre-Covid-19 Mar to Aug 2019 | Covid-19 Mar to Aug 2020 | Difference % between pre-COVID and COVID-19 |
|---|---------------------------------|-----------------------------|---|
| Kenya | 2,041 | 1,334 | 34.6% decrease |
| Malawi | 962 | 745 | 22.6% decrease |
| Zimbabwe | 504 | 376 | 25.4% decrease |
| TOTAL | 3,507 | 2,455 | 30.0% decrease |

In all three countries, there was a fairly similar decrease in the different types of TB: the combined total decrease was 31% for bacteriologically confirmed PTB, 34% for clinically diagnosed PTB and 23% for extrapulmonary TB. Persons with TB who were newly tested for HIV (this excluded those who had known HIV-positive status or who had been recently tested HIV-negative) decreased 5% in Kenya and 7% in Zimbabwe: Malawi has an issue with this HIV data which is currently being reviewed.

TB Treatment Success

In Kenya and Zimbabwe, treatment success rates decreased while in Malawi they remained almost unchanged. Overall, the combined treatment success rate decreased in the three countries.

| Numbers enrolled 8 months previously | Pre-Covid-19 Mar to Aug 2019 | | Covid-19 Mar to Aug 2020 | | Difference % between Pre-COVID and COVID-19 |
|--------------------------------------|---------------------------------|-----------------------|-----------------------------|-----------------------|---|
| | Enrolled | Treatment Success (%) | Enrolled | Treatment Success (%) | |
| Kenya | 1,894 | 1,285 (67.8) | 1934 | 1,237 (64.0) | 3.8% decrease |
| Malawi | 922 | 888 (96.3) | 860 | 830 (96.5) | 0.2% increase |
| Zimbabwe | 587 | 470 (80.1) | 518 | 328 (63.3) | 16.8% decrease |
| TOTAL | 3403 | 2,643 (77.7) | 3,312 | 2,395 (72.3) | 5.4% decrease |

The largest adverse outcome contributor to decreased treatment success rates was the outcome “not evaluated”; this increased between the pre-COVID and COVID-19 periods from 19% to 24% in Kenya, from 0.3% to 1.3% in Malawi and from 13% to 29% in Zimbabwe.

HIV testing in the general population

In all countries, there was an overall decrease in numbers of people being tested for HIV.

| Numbers tested for HIV | Pre-Covid-19 Mar to Aug 2019 | Covid-19 Mar to Aug 2020 | Difference % between pre-COVID and COVID-19 |
|------------------------|---------------------------------|-----------------------------|---|
| Kenya | 88,349 | 35,676 | 59.6% decrease |
| Malawi | 108,204 | 57,972 | 46.4% decrease |
| Zimbabwe | 49,900 | 18,987 | 61.9% decrease |
| TOTAL | 246,453 | 112,635 | 54.3% decrease |

In terms of demographics, there were slight variations between the countries, but otherwise small differences between demographic groups. The combined total decrease was 54% for adults, 56% for children, 59% for males and 52% for females. In all three countries, there was an increase in the proportion of those diagnosed HIV-positive: this was 3.4% in the pre-COVID period and 4.6% in the COVID-19 period. The proportion of HIV-positive persons referred to antiretroviral therapy (ART) services was high in all three countries varying from 90% to 100%: between the pre-COVID and COVID-19 periods, there was a 4% increase in referrals in both Kenya and Zimbabwe and a 1% decrease in referrals in Malawi.

Summary and possible explanations for the findings

For TB case finding, the COVID-19 outbreak was associated with a decrease in people presenting with presumptive TB, with negative effects most apparent in children and in females. Reasons for the increase in bacteriological positivity are not known but it maybe that people with less severe symptoms did not attend. There was a similar decrease in all categories of registered TB patients and the proportion of those newly HIV tested decreased slightly.

For TB treatment outcomes, we assessed patients enrolled 8 months before the assessment month to allow for treatment courses to be finished and health care staff to follow up and record outcomes. There was a decrease in treatment success, and this was mainly due to an increase in patients not being evaluated. It is also possible that COVID-19 decreased access to health services resulting in patients missing their appointment for their final sputum evaluation.

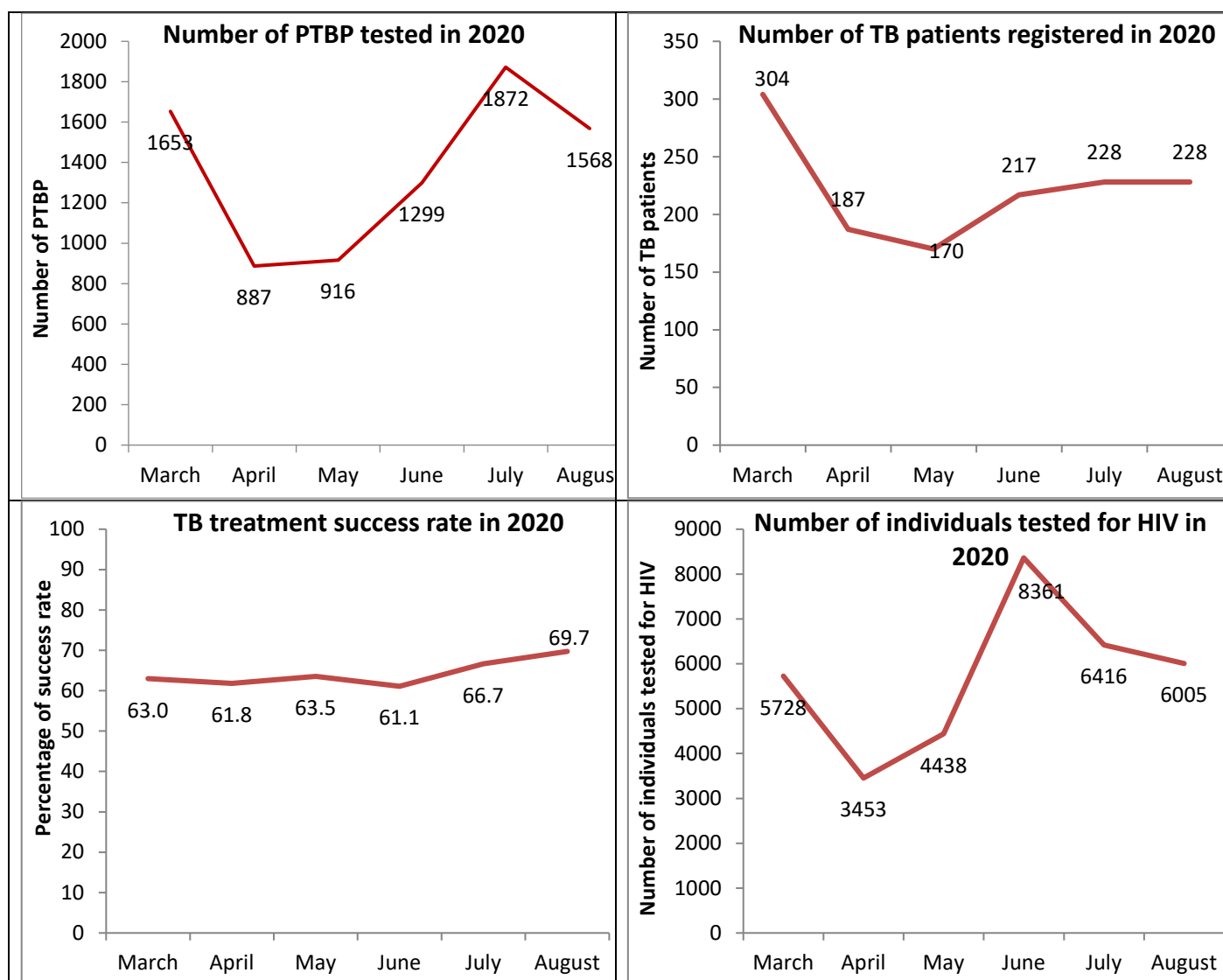
Finally, general HIV testing declined considerably between the two periods, and this decline was similar according to age and gender. The proportion of people diagnosed with HIV increased slightly. This might be due to promotion of HIV-self testing as a screening test to limit patient-provider contact as part of COVID preventive measures while rapid HIV testing was reserved to confirm those with self-testing reactive tests. Referrals of HIV-positive persons for antiretroviral therapy (ART) remained high and largely unchanged during the two periods which we speculate was due to having ART services available on site.

The reasons for the negative impact of COVID-19 have been generally similar in the three countries. All three cities went into lockdown of varying extent, with businesses closed, large gatherings of people banned, people not permitted to leave their homes or movement limited to their localities, police and army manning roadblocks, limited availability of public transport and dusk to dawn curfews. Health facilities either stopped providing services (due to staff shortages as a result of COVID-19 infection or lack of Personal Protective equipment [PPE]) or had reduced opening hours. Fewer patients were allowed into health facilities to avoid overcrowding and to allow for physical distancing, and those that were allowed in were screened with temperature checks. As a result, long queues were observed outside health facilities which increased patient waiting times and this may have resulted in patients walking away unattended, especially men. Forced quarantine of persons diagnosed with COVID-19 evoked fear and stigma in the community and people kept away from health facilities. This included those with TB-related symptoms - as COVID-19 numbers increased in each country, patients were tested in some facilities for TB and COVID-19 at the same time. Patients also have temperature checks on entering a health facility and anyone with a high temperature is also screened for COVID-19. Kenya also experienced a go-slow by health care workers and Zimbabwe experienced health care worker strikes over lack of PPE and poor remuneration. In Zimbabwe, voluntary medical male circumcision (VMMC) activities were halted resulting in a decrease in general HIV testing and in August there were stock-outs of rapid HIV test kits in some health facilities.

2. Trends in TB and HIV numbers in the COVID-19 period

In this analysis we present the monthly trends over the six-month period from March 2020 to August 2020 for four key variables: i) numbers presenting with presumptive TB, ii) numbers diagnosed and registered with TB, iii) TB treatment success rates and iv) general HIV testing. These trends along with the explanations for why they have occurred are shown on separate pages for each country. Figure 1 shows the data for Kenya; Figure 2 shows the data for Malawi; and Figure 3 shows the data for Zimbabwe.

Figure-1: Trends in key monitoring indicators of TB and HIV testing services during the COVID (March-August 2020) period in selected facilities of Kenya

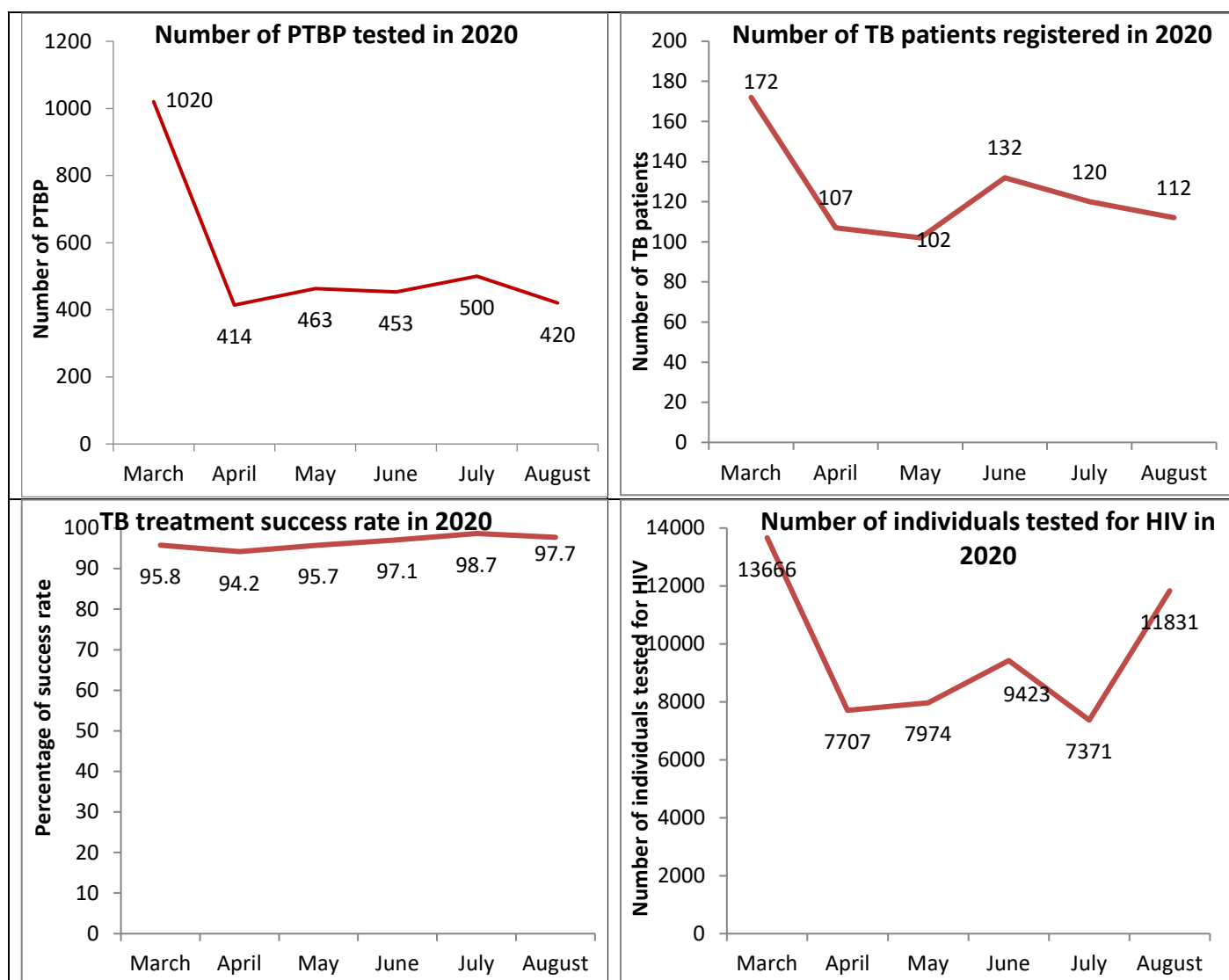


Treatment outcome was considered 'treatment success' when the TB patient was either cured or had 'treatment completed'. The success rate was calculated for the month-wise cohort of TB patients commenced on treatment 8 months prior to the reporting month (considering six months of treatment to be completed and another two months to finalise the recording of outcomes).

Kenya has been able to partially reverse the initial decline in the four key parameters for a variety of reasons.

Actions taken to cope with COVID-19: From a TB perspective, patients with respiratory symptoms have been fast-tracked and prioritised for TB screening; health facilities have initiated dual testing for TB and SARS-CoV-2; the Nairobi County TB Department and implementing partners have expanded active case finding and contact tracing initiatives in community hot spots such as slums; targets have been set from some health facilities for actively finding cases; longer appointments for TB drug-pick-ups have been scheduled to reduce health facility visits. From an HIV perspective, there has been promotion and provision of HIV self-testing among key populations; vans have been used to deliver HIV services to key populations in their homes; community health volunteers have reached out to people who do not know their HIV status; appointments for drug-pick-ups have been rescheduled to reduce health facility visits; treatment buddies have collected medicines for children; more adherence counselling has been done on the phone. These initiatives were offset to some extent by a health care worker go-slow in all services in August.

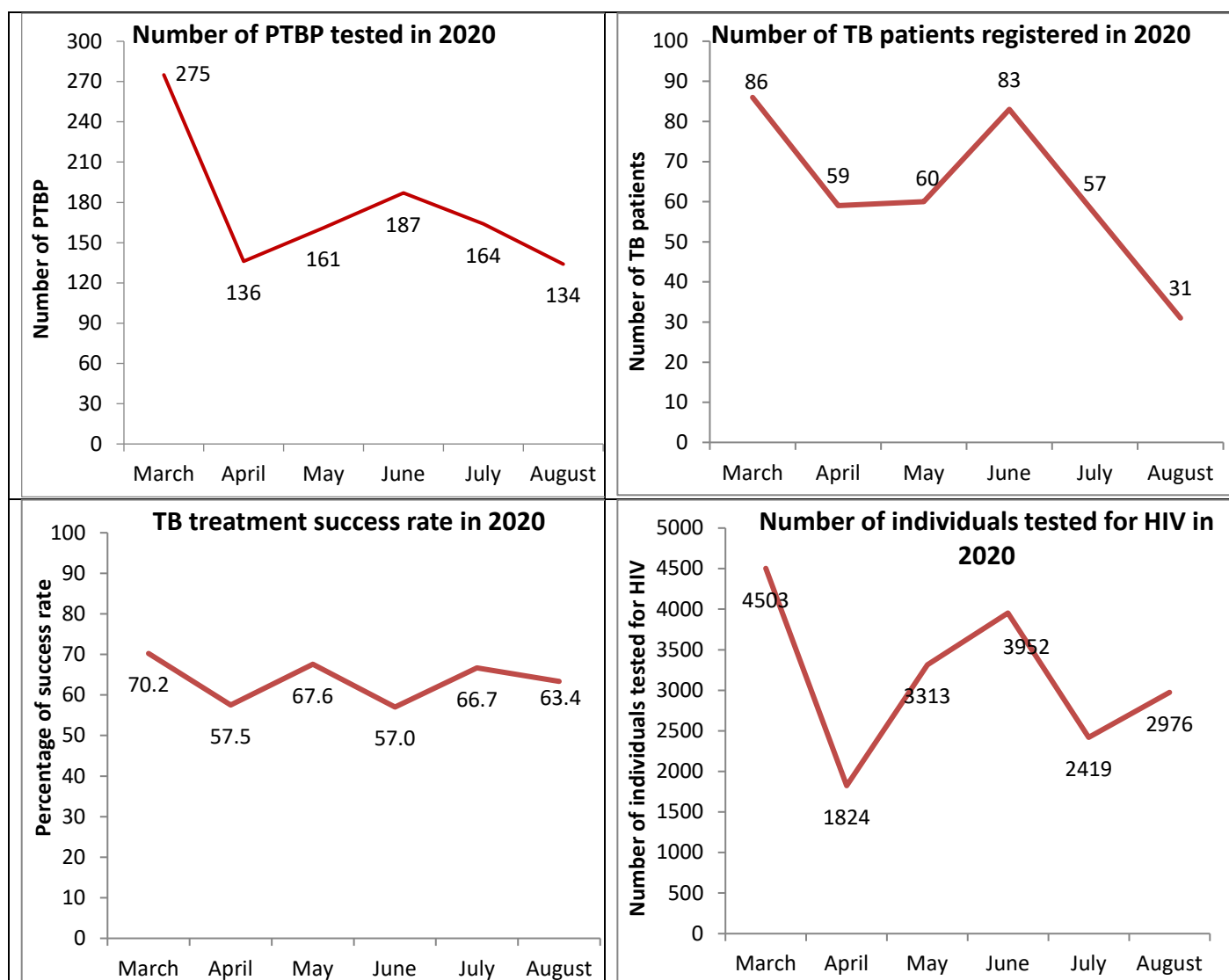
Figure-2: Trends in key monitoring indicators of TB and HIV testing services during the COVID (March-August 2020) period in selected facilities of Malawi



Treatment outcome was considered 'treatment success' when the TB patient was either cured or had 'treatment completed'. The success rate was calculated for the month-wise cohort of TB patients commenced on treatment 8 months prior to the reporting month (considering six months of treatment to be completed and another two months to finalise the recording of outcomes).

Actions taken to cope with COVID-19: In Malawi, human rights groups obtained an injunction to prevent the government implementing a full national lockdown. The government instead put in measures that included: banning of gatherings of more than 100 people in places; banning government meetings; and advising ministries, companies and organizations to allow employees to work from home. Health care staff were repurposed to COVID-19 activities and health facilities operated general health services with reduced staffing levels. Combined with a community wide fear of COVID-19 and quarantine for those found positive, these measures have resulted in low numbers of persons presenting with presumptive TB and being registered with diagnosed TB during the COVID-19 period. Treatment success rates have continued at a high level and this has been seen in other districts. This is a result of TB facility staff continuing to trace patients and ensure that most of them get evaluated at the end of treatment. Lighthouse staff has provided technical support in the eight selected health facilities for tracing HIV-infected TB patients. In August, the HIV Department of the Ministry of Health eased lock-down restrictions which allowed a full spectrum of HIV services to resume. This has included community HIV testing and community tracing of people who missed clinic appointments – we believe that this accounts for the increase in numbers being HIV tested in August.

Figure-3: Trends in key monitoring indicators of TB and HIV testing services during the COVID (March-August 2020) period in selected facilities of Zimbabwe



Treatment outcome was considered ‘treatment success’ when the TB patient was either cured or had ‘treatment completed’. The success rate was calculated for the month-wise cohort of TB patients commenced on treatment 8 months prior to the reporting month (considering six months of treatment to be completed and another two months to finalise the recording of outcomes).

Zimbabwe has been under tight lockdown for most of the COVID-19 period and services have been further disrupted by temporary health facility closures, re-purposing of TB workers to COVID activities, health care worker strikes over remuneration and lack of PPE, a cessation of voluntary medical male circumcision (VMMC) services, use of locum staff which has disrupted TB registration processes and stock-outs of HIV test kits in some facilities.

Actions taken to cope with COVID-19: Initiatives in the last two months to try and overcome this disruption have included: promotion of HIV-self testing as a screening tool with rapid HIV testing in health facilities reserved for those who are reactive (this might explain the slight increase in HIV-positivity in the last 3 months); harmonising contact tracing for TB and COVID patients; re-scheduling of appointments for drug-pick-ups to make these longer and therefore reduce health facility visits. These initiatives resulted in an increase in numbers of people with presumptive TB and registered TB in May and June, but the health care worker strikes had negative effects from July onwards.

Conclusion:

All three African cities (Nairobi, Lilongwe and Harare) have seen a marked decline in TB case finding and HIV testing during the first six-months of the COVID-19 outbreak compared with a similar period of time the year before. TB treatment success has decreased and this has largely been due to an increase in patients “not being evaluated”. Referrals to ART have not been affected.

A number of TB- and HIV-related initiatives have been introduced and implemented in Nairobi and this has resulted in an improvement in TB case finding, TB treatment success and HIV testing. TB case finding has remained at a low level in Lilongwe, although TB treatment success rates have been consistently high. HIV testing numbers in Lilongwe have started to improve in the month of August possibly due to reintroducing a full spectrum of HIV services including community HIV testing. Harare had started to see an improvement in case numbers in May and June, but TB and HIV parameters declined in July and August. This decline is multi-factorial and is not only due to COVID-19 restrictions, but health care worker strikes, health facility closures and stock-outs of consumables in some facilities.

Moving forward, country coordinators will continue to collect and validate data from the selected health facilities. In particular, the high treatment success rates observed in Lilongwe warrant further review outside of COVID-19. The country coordinators will engage more strongly with the programme directors over the next five months to assess whether they can maintain an increase in services as seen in Nairobi and reverse some of the declines in TB and HIV parameters in Lilongwe and Harare.

In conclusion, we thank Vital Strategies and Resolve most sincerely for the financial support which has made this operational research study feasible to implement.

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