

Covid-19 and infectious diseases

Solome Okware and Stephen Ian Walimbwa ask what the frontline workers combatting HIV and TB need to know

The severe acute respiratory syndrome corona virus 2 (SARS-CoV-2)/Covid-19 pandemic has claimed the lives of over 600,000 patients worldwide.¹ First identified in Wuhan, Hubei province in China in November 2019, Covid-19 quickly spread to all parts of the globe.²

Transmission of Covid-19 from an infected person to another is mainly by small droplets from the mouth and nose which are expelled when coughing, sneezing or speaking. Fomite contaminations of surfaces and aerosol transmission have also been implicated in the spread of Covid-19. The ease of spread has potentially predisposed millions of vulnerable populations to risk of contracting Covid-19.³

Africa reported the first case of Covid-19 in Egypt in February 2020. Other African countries quickly reported imported cases and subsequently local transmission has been reported. With the spread of Covid-19 across Africa, the demand on the health system to quickly adapt and provide care for these cases continues to rise.⁴ To date, nearly 600,000 cases (and approaching 10,000 deaths) have been reported across Africa¹ although the number will increase, as vaccine development and potential treatment options are still not at sight. Prediction modeling by WHO Afro, estimated 29–40 million cases and 80,000–190,000 deaths would occur across Africa within the first year of the pandemic if public health interventions failed.⁵

Uganda, like many countries, activated through the Ministry of Health public health interventions to halt the transmission of Covid-19 and therefore flatten the curve early in its outbreak. Nationwide campaigns to sensitise the population about Covid-19 were introduced, which included social distancing (Tonsemerbera campaign), partial lockdowns, restrictions in movement with nighttime curfew, closure of points of entry for all non-cargo vehicles, and restrictions in mass gatherings. Implementation of these interventions has contained the spread of the pandemic, although it is plausible that there have been dire consequences for the provision of non-Covid-19 essential health services.

Prior to instituting measures against Covid-19, programmes focused on malaria, tuberculosis (TB) and HIV/AIDS were enjoying successes. Programme-specific gains have been made in the prevention and treatment of these three high-burden infectious diseases in Uganda. The 2018 UNAIDS report for Uganda on targets for

90-90-90 showed that 84% of people living with HIV knew their status, 72% of people living with HIV were accessing antiretroviral therapy and 64% of people living with HIV were virologically suppressed. The 2019 World Malaria report highlights significant gains Uganda has registered in prevention of malaria with 1.5 million fewer cases and increased access to antimalarials. For TB, the gains have been slower with treatment outcomes especially among HIV/TB coinfecting patients showing improvement with over 90% TB screening for HIV infected patients in care.

Covid-19 presents much the same way as TB, with a fever, cough and general malaise. Patients co-infected with TB and HIV are disproportionately at risk of presenting with more severe and atypical forms of the disease. This in itself has resulted in reluctance among health workers to care for these patients. Ugandan healthcare providers have also been affected by the global shortage of personal protective equipment, which has further hindered provision of care. Efforts have been made to improve the availability of these items, though slow in coming. For this reason, utmost importance should be placed on building competence among health workers to be able to identify these cases early and put in place the basic necessary personal protective equipment to use at health facility level. Serendipitously, TB programme structures have provided a reliable platform for Covid-19 case management: employing screening and triage for patients with a cough and quickly separating them from the rest of the patients, and the potential use of Genexpert platform for diagnosis of Covid-19. These synergies should be encouraged to support rational use of the limited resources available. However, though GeneXpert provides an opportunity to decentralise Covid-19 testing, caution should be employed to ensure testing for TB is also prioritised.

Weekly health surveillance reports have shown drops in reporting rates for TB, HIV and malaria, making monitoring of programmes difficult. This could be due in part to reduction in facilities reporting but also to reduced access to health facilities. Uganda, like many countries, has seen patients shy away from health facilities due to fear of being infected at the facility.

Restrictions in movement and mass gatherings have also reduced out-reach activities geared towards sensitisation of communities about non-communicable diseases, HIV/AIDS and cancer screening. The actual impact of Covid-19 on these key priority health conditions has not been assessed. Fortunately, media houses and national telecommunication companies have joined in the fight against Covid-19 with messages re-echoing the

Solome Okware MD, MPH, Stephen Ian Walimbwa MD, MFPM, both are medical doctors at the Infectious Diseases Institute, College of Health Sciences, Makerere University, Kampala, Uganda.

public health interventions developed and promoted by the Ministry of Health, including reminding the population of the existence of other diseases.

In lieu of these restrictions, Covid-19 provides an opportunity for innovation and building the capacity of other structures, such as the community health care provision. Leveraging differentiated models of care for HIV and TB programmes, patient-centred approaches to provision of health care services are feasible for Covid-19. These approaches aim to increase access to and improve the quality of prevention, testing and treatment methods. The patient-centred approach recognises the different needs across different population groups and reduces the unnecessary burden on the already stretched health system. It is evident that in order to achieve universal health coverage goals during this pandemic, Uganda's health care system will have to be innovative to cater for the needs of all patients.

HIV/TB programmes have used innovations like community-based programming, provision of drugs for longer periods of time and use of peer-to-peer psychosocial support services. The successes registered with HIV/TB community-based programmes have provided platforms for community based Covid-19 testing, tracking and isolating of suspect cases.

Covid-19 also brings new challenges for monitoring patients on life saving antiretroviral therapies (ART) and anti-TB medication. Adherence to treatment guidelines and best practices following initiation of ART and anti-TB are not feasible during this pandemic. Telemedicine platforms provide a cost-effective alternative to in-person patient reviews. Based on the 2017/2018 Uganda National Information Technology Survey Report, individual mobile phone ownership stands at 70.9%. This provides an opportunity for development of automated symptom-based applications and call centre phone reviews. Call for Life, a mobile health platform with interactive voice response and SMS functionalities, has been repurposed to provide Covid-19 tracking services. (6) Due to the limited availability of Smart Phones and internet access across the country, virtual monitoring with mobile phone applications would have limited impact on treatment outcomes for the majority of patients. However, virtual monitoring allows for real-time in-person reviews of patients with no risks of disease transmission to the healthcare providers and patients.

Efforts to combat Covid-19 have disrupted trade and caused significant economic hardships globally. In the current economic downturn, gains made to achieve Sustainable Development Goals in developing countries might be reversed. Biweekly reports from Global Fund, the largest funder for HIV, TB and malaria, indicate widespread disruption in service delivery across the countries it supports.⁷ There have been disruptions in testing and case finding for both HIV and TB, cancellations or delays in prevention activities and reassignment of medical and laboratory staff and equipment to support the Covid-19 response. This is in addition to dysfunctions of supply chain where resources are prioritised for emergency supply to support Covid-19. Drug supply disruptions to patients could increase drug resistance and emergence of MDR-TB and drug-resistant

HIV, especially in resource-limited settings where there are limited options for ART and anti-TB therapies.

Uganda lies in the Congo basin hotspot, this means it is prone to multiple other outbreaks like viral haemorrhagic fevers (Ebola, Marburg) and anthrax while at the same time dealing with poverty related illnesses such as cholera. Without adequate responses, viral haemorrhagic fever outbreaks could result in public health emergencies of international concern. In 2018, Democratic Republic of Congo (DRC) reported its 10th Ebola virus disease (EVD) outbreak to-date. The epicentre remains Ituri and North Kivu provinces, which are approximately 100km from Uganda's western border. As a consequence of the EVD outbreak in DRC, Uganda is faced with combating two potentially deadly diseases. During the West Africa Ebola outbreak, an estimated 11,900 people died due to tuberculosis⁸ and there was an increase of 3.5 million untreated cases of malaria, pushing these two programmes back in terms of achieving SDGs.⁹ Evidence from this outbreak suggests that the healthcare systems across West Africa were overwhelmed with increased infections among health workers, increased hospitalisation exerting pressure on an already fragile health system, and decreased provision of routine care. With the spread of Covid-19, we are beginning to see a similar picture in presentation and efforts to contain this outbreak in Uganda will require drawing on experiences in management of viral haemorrhagic fevers.

The current gains against Covid-19 should not overturn the progress in achieving SDGs. Innovative methods will have to be developed to ensure continuum of care for all. Patients with non-Covid-19 diseases should not be forgotten during this pandemic.

References

1. World Health Organization. Coronavirus disease 2019 (Covid-19): situation report, 182.
2. Adams JG, Walls RM. Supporting the health care workforce during the Covid-19 global epidemic. *Jama*. 2020 Apr 21;323(15):1439-40.
3. Dara M, Sotgiu G, Reichler MR, Chiang CY, Chee CB, Migliori GB. New diseases and old threats: lessons from tuberculosis for the Covid-19 response. *Int J Tuberc Lung Dis*. 2020 May 1;24(5):544-5.
4. Nkengasong JN, Mankoula W. Looming threat of Covid-19 infection in Africa: act collectively, and fast. *The Lancet*. 2020 Mar 14;395(10227):841-2.
5. Cabore JW, Karamagi HC, Kipruto H, Asamani JA, Droti B, Seydi AB, Titi-Ofei R, Impouma B, Yao M, Yoti Z, Zawaira F. The potential effects of widespread community transmission of SARS-CoV-2 infection in the World Health Organization African Region: a predictive model. *BMJ Global Health*. 2020 May 1;5(5):e002647.
6. Parkes-Ratanshi, R., Oseku, E., Nabaggala, M., Naggirinya, A., Ahumuza, T., & Musinguzi, F. USING INTERACTIVE VOICE RESPONSE FOR PLHIV ON ART: PATIENT INTERACTION WITH MHEALTH. Proceedings of the 12th Health Informatics in Africa Conference <https://doi.org/10.17863/CAM.53922>
7. Global Fund qualitative survey on Covid-19, 1 June 2020.
8. Ansumana R, Keitell S, Roberts GM, Ntoumi F, Petersen E, Ippolito G, Zumla A. Impact of infectious disease epidemics on tuberculosis diagnostic, management, and prevention services: experiences and lessons from the 2014–2015 Ebola virus disease outbreak in West Africa. *International Journal of Infectious Diseases*. 2017 Mar 1;56:101-4.
9. Walker PG, White MT, Griffin JT, Reynolds A, Ferguson NM, Ghani AC. Malaria morbidity and mortality in Ebola-affected countries caused by decreased health-care capacity, and the potential effect of mitigation strategies: a modelling analysis. *The Lancet Infectious Diseases*. 2015 Jul 1;15(7):825-32.