

# COVID-19 response in Ethiopia: Challenges and opportunities

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## Abstract

Ethiopia implemented public health measures to curve COVID pandemics earlier than many countries. Airport screening, followed by partial closure of international flights and quarantine of all international travelers have slowed the trajectory of COVID-19 pandemics in its early phase. Early adoption of Public health measures including hand hygiene and use of facemask have also contributed to the slow trajectory seen in the early days of the pandemics. Unfortunately, early gains have been beset by slow scale-up of public health measures, recent lifting of the state of emergency and public fatigue. Hospitals are already at capacity and not equipped to handle even the lowest estimate the country expects at the peak of the pandemic. To mitigate the impact of the pandemics, Ethiopia must return to the basics of public health measures: increase testing, upscale contact tracing, social distancing and universal use of face mask quickly and across the country.

Following the emergence of the COVID-19 pandemic, Ethiopia’s Ministry of Health established the Ethiopian COVID-19 Taskforce in late January 2020. Since then, the taskforce has been guiding the country’s response to the pandemic. Early on, the taskforce clearly underlined that Ethiopia’s response would be heavy on prevention and mitigation of the disease. The pillars of the strategy were: quarantining travelers who entered the country; contact tracing community cases; isolating positive cases; and encouraging hand washing, social distancing and the wearing of face masks among the general public. Arguably, thanks to these interventions, Ethiopia did a remarkable job of slowing the spread of COVID-19 during the initial period.

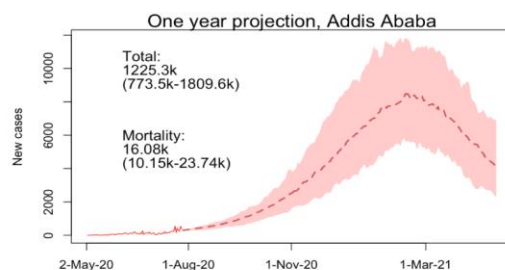
Five months after the reporting of the first case in Ethiopia, the progress of the COVID-19 epidemic continues at an alarming rate. The rate of doubling (albeit with limited testing and contact tracing) remains staggering. Contact tracing is at its lowest level since Ethiopia started documenting cases, and recent increases in testing have been short lived. International travel and the movement of people along the borders is slowly

returning to pre-pandemic levels, and the five-month state of emergency to curb COVID-19 transmission has expired. Schools are set to open, and religious gatherings at pre-COVID-19 levels of attendance are now permitted. Looking at these recent changes, one might feel that Ethiopia has ‘dodged the bullet’ and passed the peak of the pandemic. Unfortunately, the predicted trajectory indicates otherwise.

Based on a recently published modeling prediction, Addis Ababa’s peak is likely to be around mid-March 2021, with over 1 million cases and possibly as many as 16,000 deaths (1,2) (see Figure 1). This, of course, is a modeling prediction that can change depending on interventions implemented from now onwards. However, with the relaxation of the restrictions on gatherings of one sort or another, it is difficult to see how the number of infections and deaths can be avoided. We could not create a reliable model for other Ethiopian cities and rural neighborhoods, as we do not have reliable data, but suffice to say that the peaks will be months behind the peak in Addis Ababa.

Figure 1: One-year estimate modeling of COVID 19 cases and mortality in Addis Ababa

### Long-term reported cases projection 2<sup>nd</sup> May, 2020 – 1<sup>st</sup> May, 2021, Addis Ababa



$r$	: 0.042 (average to date)
$R_{\text{eff}}$	: 1.57 (average to date)

Social distancing:	from $R$
Contact tracing:	<b>fitted to data</b>
Facemask:	from $R$

Source: Projected number of COVID-19 cases in Addis Ababa City from May 2020 to March 2021. Data are based on daily Ethiopian case reports using the modeling by Siraj *et al.* (1)

The best way to produce a realistic model is by doing massive testing, collecting data on interventions, and using the data to re-calibrate the model. Even so, Ethiopia still has some of the lowest testing per capita

(see Figure 2 and Table 1). The Community-Based Actions and Testing (ComBAT) campaign was a good start, but short lived, and had little impact on the overall strategy.

Figure 2: COVID-19 tests per 1,000 people in selected countries in Africa (8)

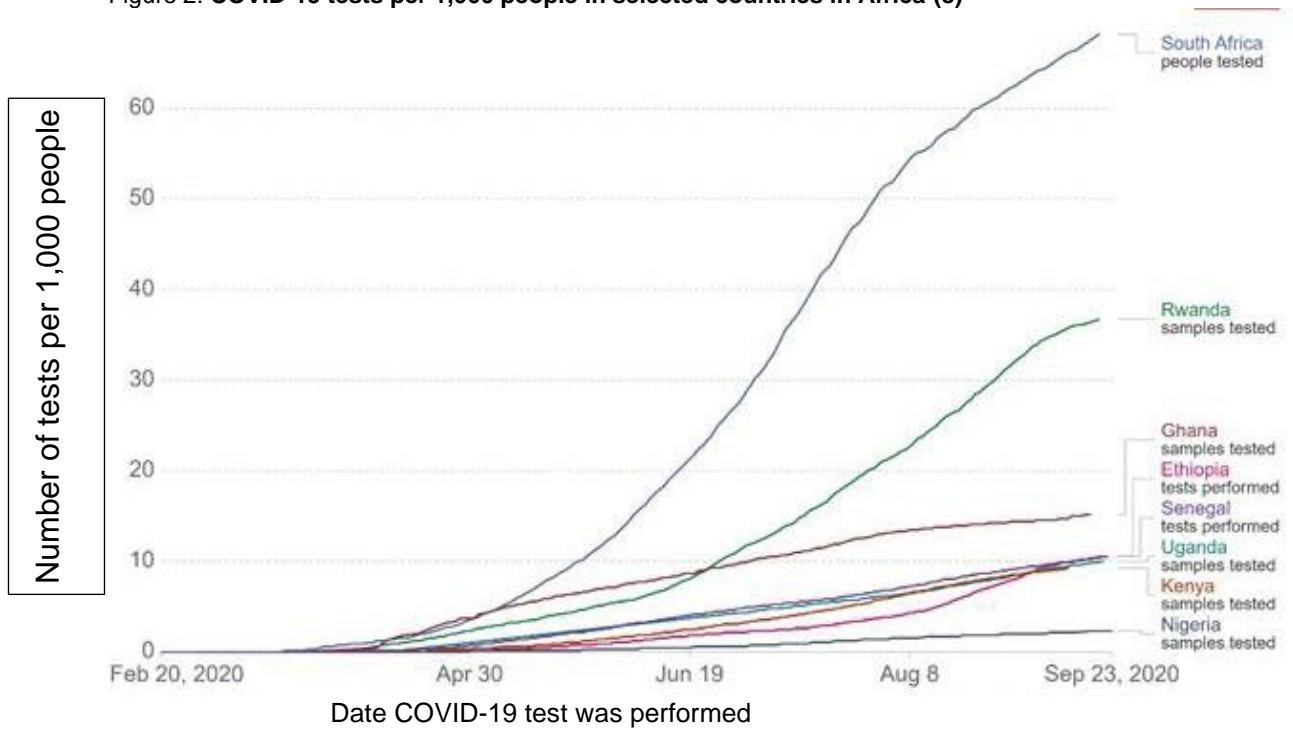


Table 1: COVID-19 tests per 1,000 people in selected African countries\*

Country	COVID-19 tests per 1,000 people
South Africa	66.07
Rwanda	35.74
Ghana	14.71
Senegal	9.97
Ethiopia	9.90
Uganda	9.49
Kenya	9.26
Nigeria	2.14

Note: In the USA, testing per 1,000 people in September the 13<sup>th</sup> was 320

As the disease remains highly infectious, testing, isolating and contact tracing remain the time-tested components of the strategy to mitigate the disease. For the strategy to be effective, the ongoing de-escalation of physical distancing must be offset by increased contact tracing via conventional methods or mobile app technology. Using testing as a tool to improve contact tracing is not, in itself, a goal that countries should try to achieve. Increasing testing without coupling with contact tracing will not bring any benefit in controlling the pandemic. Ethiopia’s contact tracing as a ratio of the positive cases remains very low and continues to drop, despite the increasing number of cases (see Table 2). There is an important point to be made here – the

turnaround time of testing also significantly affects the usefulness of contact tracing (3). If Ethiopia’s turnaround time remains a week or more, the benefit in mitigating the pandemic will be limited because cases remain in the community for a long time, potentially exposing more individuals to the disease. Despite this well-recognized limitation, as long as the testing turnaround time remains shorter than a week, there is a benefit from upscaling contact tracing. With the improvement of testing technology, we should aim for a turnaround time of less than 48 hours. This will ultimately increase the significance of contact tracing in controlling the pandemic.

**Table 2: Number of exposed individuals in Ethiopia contact traced per number of cases reported on specific dates**

Date	May 01	May 22	May 28	June 04	June 11	June 18	June 26	July 02	July 16	July 22	July 30	Aug 06	Aug 13	Aug 20	Sept 03	Sept 10	Sept 17	Sept 24
Contact traced/ case*	30	20	11	9.75	8	7.58	6.6	6.29	5.98	5.66	5.4	5.13	4.76	3.4	3.9	3.7	3.57	3.44

\*The Centers for Disease Control and Prevention (CDC) recommends around 30 contacts traced for each COVID-19 case identified. Based on the daily COVID-19 epidemiology report by the Ethiopian Public Health Institute (EPHI)

Despite this bleak picture, there is one silver lining that we need to aware of, namely that mortality as a fraction of those infected remains low. This has been true in almost all African countries. The case fatality rate (CFR) for Africa as a region stands at around 2.3%; Ethiopia’s is even lower at around 1.7%. A number of potential reasons have been put forward for the relatively low rates across most of Africa. We will not go into depth on this issue here, although it is worth noting that the relatively high proportion of young people in Africa could account for this.

Other explanations proposed for the low CFR are immunity by virtue of prior introduction of the disease, and cross-immunity from other coronaviruses. However, the former was put to rest following a country-wide representative survey conducted in Ethiopia, which showed that antibody positivity ranged from 2% to 9% (4). Even New York State, with 22% serologic positivity, has decided that herd immunity is not a good strategy to follow to control the disease, and has increased its prevention interventions (5). So, with a herd immunity strategy not being a viable option for New York, it is equally not an option for Ethiopia. As for the latter proposal, that there is some protective cross-immunity from other benign coronaviruses, hopes for this were dashed following the publication of a paper by Sariol & Perlman (6).

Of course, the low reported CFR could well be because of poor data collection. There is a well-placed concern that African countries lack the capacity to account for and document all deaths in their territories. For example, a BBC report on Somalia’s COVID-19 numbers is suggestive of this (7). Even at a low CFR of 1.6%, if we have 1 million cases of infection, the expected number of deaths is 16,000. It is important to remember that the CFR in the USA is only around 2.9%, and yet because of the high level of testing and quality of the data collection on mortality, over 200,000 COVID-related deaths have been reported.

Our hospitals, at least in Addis Ababa, are already operating at full capacity. Ethiopia has fewer than 1,000 ventilators for over 110 million people, and essentially all ICU beds are taken and private hospitals are charging staggering premiums for COVID-suspected patients. Treatment as a strategy is an expensive alternative and, even when implemented, has never worked well at a population level.

Ethiopia needs to re-examine its strategy as soon as possible. Despite the rising number of COVID-19 cases

in Addis Ababa and a few regional capital cities, the country by and large seems, so far, to be well protected, and the epidemic has yet to march to rural Ethiopia. Even so, strong public health measures that anchor on social distancing (closure of non-essential gatherings, political gatherings, religious gatherings), minimizing in-person schooling, mandatory use of face masks (with penalties for non-compliance), up-scaled testing with quick turnarounds, contact tracing, and isolation informed by testing, must be the priority.

We must hope that there is something as yet unidentified that has tamed COVID-19 as it has marched across Africa. To date, there is no evidence to suggest this, and with the limited testing and poor quality of data collected, it is very difficult to rely on the numbers that have been reported across the continent.

**References**

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