EPHI, National Data Management Center for health (NDMC)
Quick update on COVID-19, 030

This update summarizes	**Ethiopia's COVID-19 situation update**
	Global and regional buden of COVID 19
	Understanding COVID-19 vaccine efficacy
	The need for confronting antimicrobial resistance during the era of COVID-19 pandemic

Ethiopia's COVID-19 situation updates

As of November 5, 2020, there were a total of 97,881COVID-19 cases and 1,503 deaths across the country. Compared to the cases and deaths reported a week ago, the cumulative cases have increased by 2% and deaths by 3%. So far 56,156cases have recovered from COVID-19 (Fig 1). Of the 40,563 active cases, 343 are critical. The total number of tests stands at 1,504,300 showing a 2% increase compared to last week.

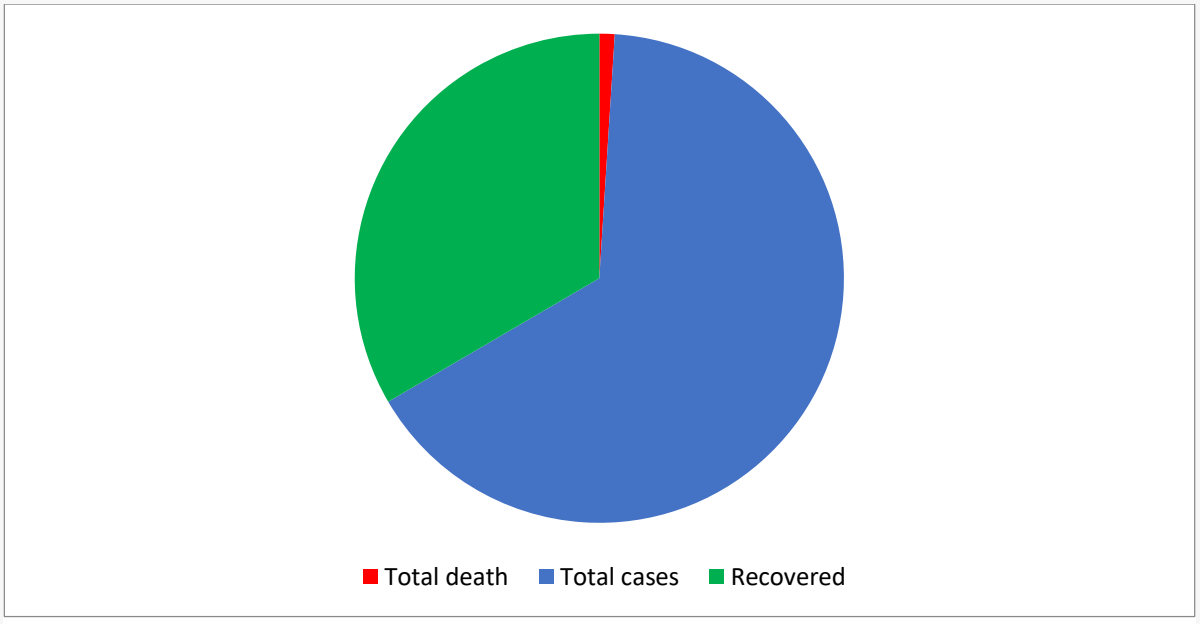

Fig. 1. Showing cumulative COVID-19 cases, recoveries and death as of November 05, 2020.

EPHI and FMOH COVID 19 response highlights of the week

- Since Home Based Isolation and Care (HBIC) have started in Ethiopia, a total **27, 368** COVID-19 confirmed cases have been followed as of November 5, 2020. Of which, **20,977** recovered and 6,536 cases are currently on follow up. Five COVID-19 related deaths have been reported 251 cases have been transferred to treatment centers while, 138 cases have been transferred from treatment centers to HBIC.
- From Oct 29-Nov 01, 2020, three days comprehensive COVID-19 training were provided for 50 health professionals from Oromia regional health bureau at Bishoftu town.
- On Nov 3 , 2020 four days COVID-19 school reopening training for were started for 135 regional health and education bureau workers working at zonal and woreda level at Hawassa and Bishoftu town.
- On Oct 29, 2020 COVID-19 Risk Communication and Community Engagement (RCCE) related supportive supervision were conducted at Gambella region.

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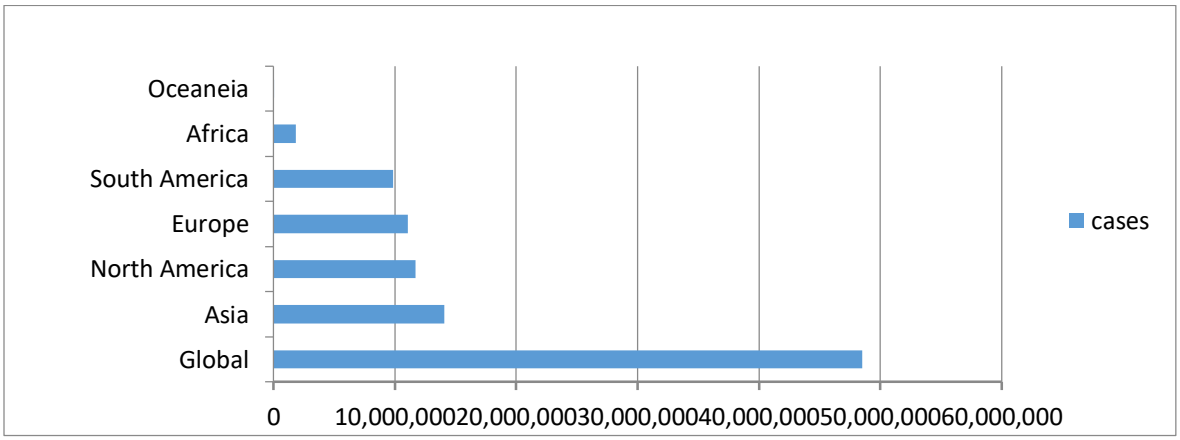
- https://twitter.com/lia_tadesse

Global and regional burden of COVID-19

- Globally the total number of cases extends to 48,539,698 as of November 05, 2020. A total of 34,777,346 cases recovered and 1,232,786 people have died since the beginning of the outbreak. Globally, in a week time, from October 29, 2020 to November 05, 2020, COVID-19 cases increased by 8.25% and deaths by 4.4%. Asia is the leading in terms of cases followed by North America and Europe. North America leads the number of deaths followed by South America and Europe (Fig 2).



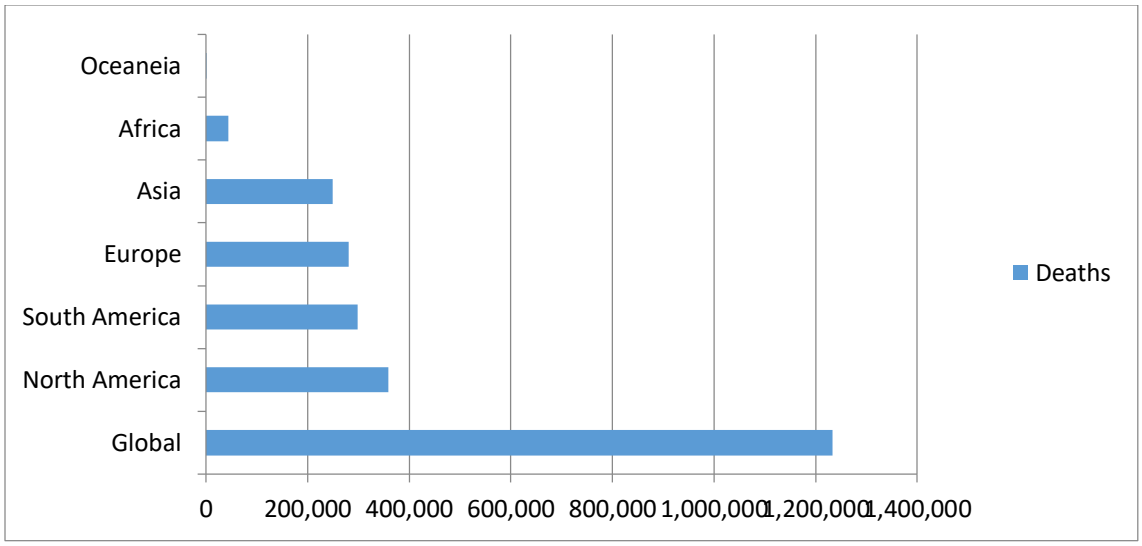
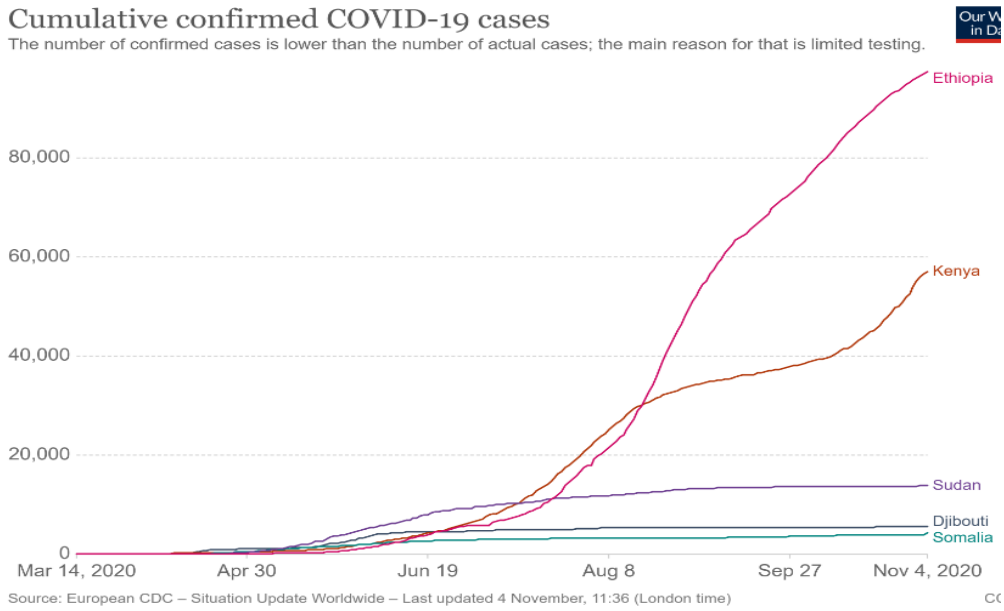


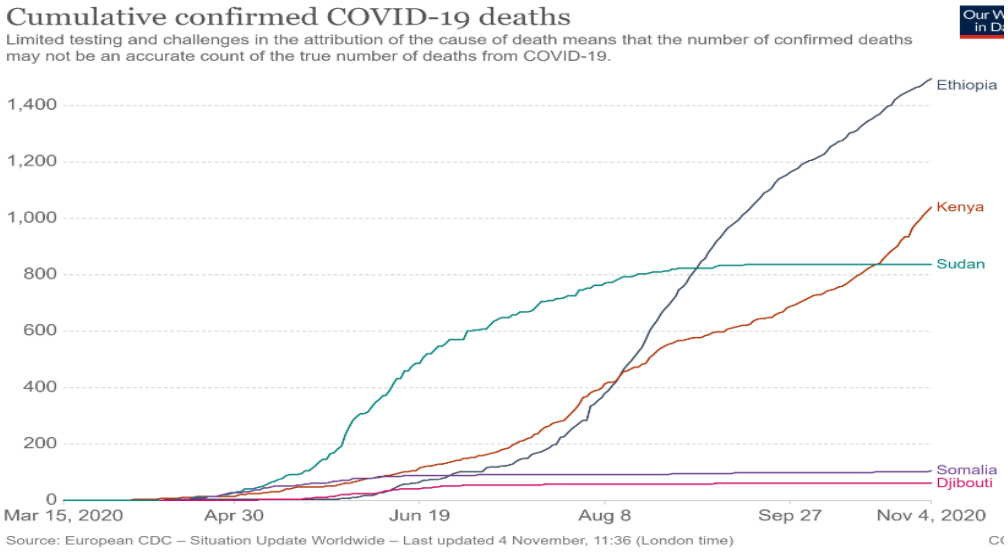
Fig 2. Global cases (top) and deaths (bottom) reported as of November 05, 2020.

- USA has recorded the highest number of cases (9,802,374 cases, 239,842 deaths) that accounts 20.2% of the total global cases and carried 19.45% of global deaths as of November 05, 2020.
- India became the 2nd in terms of cases following USA. The number of cases in India has increased in a week time by 4.01% (8,041,051 to 8,364,086) and deaths by 3.12% (120,583 to 124,354).
- The number of cases in Brazil has increased by 2.2% (5,469,755 to 5,590,941) and deaths by 1.7% (158,468 to 161,170) in a week time.
- Russia has continued reporting the highest number of cases in Europe, with 1,712,858 cases.
- France ranked 5th in the world with 1,543,321 cases.
- The line share of Africa to the global COVID-19 pandemic was 3.8% and 3.6% of the global cases and deaths as of November 05). The number of cases in the continent has increased by 4.72% in a week time (1,759,578 to 1,842,709 cases). Similarly, the total number of deaths in Africa has increased from 42,202 to 44,084 showing a 4.46% increase in a week time. Total recoveries stand at 1,530,077.
- Africa is the leading in the continent with 730,548 cases and 19,585 deaths. Morocco (235,310 cases, 3,982 deaths), Egypt (108,329 cases, 6,318 deaths), Ethiopia (97,881 cases, 1,503 deaths), and Tunisia (66,334 cases, 1577 deaths) are the most four leading countries next to South Africa in reporting COVID-19 cases in Africa. (See table below).

Africa	October 29		November 05	
	Cases	Death	Cases	Deaths
South Africa	719,714	19,111	730,548	19,585
Morocco	207,718	3,506	235,310	3,982
Egypt	107,030	6,234	108,329	6,318
Ethiopia	94,820	1,451	97,881	1,503
Tunisia	54,278	1,153	66,334	1,577

- In East African, COVID-19 cases and deaths have shown fast progress. In a week time, COVID-19 cases and deaths were 2% and 3% in Ethiopia and 13% and 12.5% in Kenya. As of November, Ethiopia and Kenya continued to be the major drivers of the COVID 19 burden in east African countries. The epidemic appears plateauing in Sudan showing only 1.3% cases and zero deaths and in Djibouti 0.5% cases and zero deaths. Similarly, 7.3% cases and 2.9% deaths reported in Somalia in a week time.





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Understanding COVID-19 vaccine efficacy

- Determining the efficacy, or how well a vaccine works in a randomized, controlled trial, gives a sense of how much a vaccine could help alleviate the suffering caused by COVID-19. The World Health Organization has set a minimum target of 50 percent efficacy for vaccines tested against COVID-19, but its "preferred efficacy" is at least 70 percent. That means at least a 50 percent reduction in cases of COVID-19 disease in those who are vaccinated compared with those who receive the placebo.
- The elderly and people with comorbidities are at greatest risk of severe coronavirus disease 2019 (COVID-19). A safe and effective vaccine could help to protect these groups in two distinct ways: direct protection, where high-risk groups are vaccinated to prevent disease, and indirect protection, where those in contact with high-risk individuals are vaccinated to reduce transmission. This consideration mirrors the way influenza vaccine campaigns initially targeted the elderly, in an effort at direct protection, but more recently have focused on the general population, in part to enhance indirect protection. Because influenza vaccines induce weaker, shorter-lived immune responses in the elderly than in young adults, increasing indirect protection may be a more effective strategy. It is unknown whether the same is true for COVID-19 vaccines.
- For COVID-19, age-structured mathematical models with realistic contact patterns are being used to explore different vaccination plans, with the recognition that vaccine doses may be limited at first and so should be deployed strategically. But as supplies grow large enough to contemplate an indirect protection strategy, the recommendations of these models depend on the details of how, and how well, these vaccines work and in which groups of people. How can the evidence needed to inform strategic decisions be generated for COVID-19 vaccines?
- Phase 3 vaccine trials are designed to assess individual level efficacy and safety. These trials typically focus on a primary endpoint of virologically confirmed, symptomatic disease to capture the direct benefit of the vaccine that forms the basis for regulatory decisions. Secondary endpoints, such as infection or viral shedding, provide supporting data, along with analyses of vaccine efficacy in subgroups. Nonetheless, unanswered questions about COVID-19 vaccine characteristics are likely to remain even after trials are completed. First, trials are typically not powered to establish subgroup-specific efficacy, yet the performance of the vaccine in high-risk groups affects the success of a direct-protection strategy. Second, can vaccines prevent infection or reduce contagiousness? This matters for achieving indirect protection. Expanding ongoing efforts or planning new studies may generate the data needed to address these questions.
- Ideally the phase 3 trials in progress will identify more than one safe, effective vaccine for regulatory approval and deployment. Post approval studies will then take on an important role for continued assessment of vaccine effectiveness. These may include individual or community-level randomized trials to compare different active vaccines without a control arm. Another approach to a mass evidence on subgroup-specific efficacy is post approval observational studies and this includes active surveillance of high-priority cohorts from. This also includes test-negative designs, which are routinely used to assess vaccine effectiveness. Symptomatic individuals that test negative for severe acute respiratory syndrome coronavirus

2 (SARS-CoV-2) function as controls for test-positive cases, and their vaccination status is compared, adjusting for selected confounders.

- The clearest evidence of indirect protection is from a vaccine that prevents infection entirely, thereby reducing transmission. These data will be generated in efficacy trials that include infection as a secondary endpoint. This endpoint is measured by a specialized assay to distinguish an infection induced response from a vaccine-induced antibody response. A vaccine can provide indirect protection even if it does not fully prevent infection. Vaccines that reduce disease severity can also reduce infectiousness by reducing viral shedding and/or symptoms that increase viral spread (e.g., coughing and sneezing). A worst-case scenario is a vaccine that reduces disease while permitting viral shedding; this could fail to reduce transmission or conceivably even increase transmission if it suppressed symptoms.
- To assess a vaccine's impact on infectiousness, some phase 3 trials examine the amount or duration of viral shedding in laboratory-confirmed, symptomatic participants by home collection of saliva samples and frequent polymerase chain reaction (PCR) testing. However, this would not capture any change in viral shedding for asymptomatic participants. Moreover, serology tests detect previous infection and cannot reconstruct shedding during active infection. To measure viral load in both symptomatic and asymptomatic participants, it is necessary to conduct frequent (e.g., weekly) viral testing, irrespective of symptoms, to capture participants during their period of acute infectiousness. Another strategy is to design cluster-randomized trials in which indirect effectiveness is a primary outcome. In influenza vaccine trials, health care workers at nursing homes were cluster-randomized to be offered vaccine or not, and the endpoints were mortality, influenza-like illness, or influenza infection in the patients they cared for.
- Other open questions about the rapidly developed COVID- 19 vaccines include long-term safety (indicating the critical need for pharmacovigilance activities), the duration of vaccine protection, the efficacy of a partial vaccination series or of lower doses, the vaccine's level of protection against severe infection and death, efficacy by baseline serostatus, and the potential for the virus to evolve to escape vaccine induced immunity. The answers to such questions inform the optimal use of any vaccine.
- Availability of a COVID-19 vaccine will initially be limited, and so several expert committees are exploring strategic prioritization plans. Health care workers are a common first-tier group, which in turn preserves health care systems by protecting those who run them and need them. A next priority is to directly protect those who are at highest risk of death or hospitalization when infected: specifically, those over 65 and people with certain comorbid conditions. This strategy may be optimal for reducing mortality even if the vaccine is somewhat less effective in these groups. But if a vaccine offers little to no protection in high-risk groups yet is able to reduce infection or infectiousness in younger adults, an indirect strategy could be preferred as vaccine supplies become large enough. A worst-case scenario for an effective vaccine is one that reduces disease in younger adults but provides neither direct nor indirect protection to high-risk groups, leaving the most vulnerable at risk. Knowing these vaccine characteristics is important when evaluating the relative merits of other products. Fortunately, there are many vaccine candidates in development that use a mixture of innovative and existing technologies. Although vaccines may vary in their characteristics, having reliable evidence on direct and

indirect protection can help plan how to use these vac(Ababa, 2015 #6)(Duggan, 2020 #2)cines in a coordinated way.

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The need for confronting antimicrobial resistance during the era of COVID-19 pandemic

- The rise in multidrug-resistant bacterial infections that are undetected, undiagnosed, and increasingly untreatable threatens the health of people all over the world. Bacterial infections unsuccessfully treated due to antimicrobial resistance (AMR) claim at least 700,000 lives per year worldwide and are projected to be associated with the deaths of 10 million people per year by 2050, at a huge cost to the global economy through loss of productivity.
- Even though the impact of the COVID-19 pandemic on antimicrobial resistance is remain unclear there are three views currently entertained
- The first one COVID-19 is exacerbating AMR due to the overuse of antibiotics in humans, continuing misuse and the dearth of antimicrobials in the development pipeline. Data from five countries suggest that 6·9% of COVID-19 diagnoses are associated with bacterial infections (3·5% diagnosed concurrently and 14·3% post-COVID-19), with higher prevalence in patients who require intensive critical care prolonged intensive care stays, high mortality rate, diagnostic and prognostic uncertainty and concern for secondary bacterial infections has led to frequent empiric antibacterial use. For example, many individuals presenting with mild disease without pneumonia or moderate disease with pneumonia receive antibiotics. In addition, US multicenter study reported that 72% of COVID-19 patients received antibiotics even when not clinically indicated, which can promote AMR. WHO reports that azithromycin is being widely used with hydroxychloroquine although it is not yet recommended outside of COVID-19 clinical trials.
- Second, hospital admissions increase the risk of health-care-associated infections and the transmission of multidrug-resistant organisms, which in turn lead to increased antimicrobial use.
- On the other hand, the COVID-19 pandemic has resulted in unprecedented changes in society that may actually result in decreased AMR rates. Social distancing, a focus on isolation and reductions in national and international travel may decrease the spread of AMR pathogens and associated AMR genes.

- The impact of COVID-19 on AMR rates remains to be determined and is likely to be heterogeneous due to variation in healthcare practices, such as in the specific antimicrobials used and infection prevention and control interventions during the pandemic.

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