Ethiopia

This document is a compilation of all questions, justifications, and sources used to determine the 2021 Global Health Security Index scores for Ethiopia. For a category and indicator-level summary, please see the Country Profile for Ethiopia.

Category 1: Preventing the emergence or release of pathogens with potential for international concern

1.1 ANTIMICROBIAL RESISTANCE (AMR)

1.1.1 AMR surveillance, detection, and reporting

1.1.1a

Is there a national AMR plan for the surveillance, detection, and reporting of priority AMR pathogens?

Yes, there is evidence of an AMR plan, and it covers surveillance, detection, and reporting = 2, Yes, there is evidence of an AMR plan, but there is insufficient evidence that it covers surveillance, detection, and reporting = 1, No evidence of an AMR plan = 0

Current Year Score: 2

There is publicly available evidence of a national antimicrobial resistance (AMR) plan that covers surveillance, detection and reporting of priority AMR pathogens in Ethiopia.

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, the country produced its National Action Plan AMR in 2009, and an updated publication was released in 2015 as the National Strategic Framework for Prevention and Containment of Antimicrobial Resistance. [1, 2] The JEE notes that a multisectoral advisory committee comprised of the Ministry of Health and Ministry of Livestock and Fisheries amongst others, was convened to revise the plan in order to align it with the Global Action Plan on Antimicrobial Resistance [1].

In March 2017, the 'Ethiopia Antimicrobial Resistance Surveillance Plan' was published and includes AMR surveillance, detection and reporting. For example, the plan entails surveillance site preparation using a standardized tool developed by the Ethiopian Public Health Institute (EPHI), which includes standards for data management and reporting, organization, personnel, facility and safety, equipment, purchasing /inventory, quality control/quality assurance, and bacteriology (isolation and identification. In terms of detection, the plan states that one of the primary steps of the implementation plan is "to build the AMR testing capacity by filling the gaps identified for each site". The plan also provides AMR surveillance standards, including laboratory standards, clinical specimen submission standards, pathogen isolations, cinical isolates transportation standards and data reporting standards. As for reporting, AMR surveillance data is entered into a computerized database at the site level, also saved as hard copy and entered into the WHO database. [3]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[2] Food, Medicine and Health Care Administration and Control Authority of Ethiopia (FMHACA). 2015. "National Strategic Framework for Prevention and Containment of Antimicrobial Resistance." [http://www.fmhaca.gov.et/wp-content/uploads/2019/03/Strategy-for-the-Prevention-and-Containment-of-AMR-in-Ethiopia-Oct-2015.pdf]. Accessed 10 January 2021.
[3] Ethiopian Public Health Institute. 2017. "Ethiopia Antimicrobial Resistance Surveillance Plan: The Surveillance of Antimicrobial Resistance Using Public Health Laboratory-Based Sentinel Sites in Ethiopia2016-2020." [https://www.ephi.gov.et/images/pictures/download2010/Ethiopia-AMR-Surveillance-Plan_Final.pdf]. Accessed 10 January 2021.

1.1.1b

Is there a national laboratory/laboratory system which tests for priority AMR pathogens?

All 7 + 1 priority pathogens = 2 , Yes, but not all 7+1 pathogens = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that the Ethiopian national laboratory system can test for several of the 7+1 priority antimicrobial resistance (AMR) pathogens.

The Ethiopia Antimicrobial Resistance Surveillance Plan, published in March 2017, states that the country tests for several 7+1 priority AMR pathogens including E. coli, K. pneumonia, S. aureus, acinetobacter baumannii, and pseudomonas aeruginosa. The document also indicates testing capacity for shigella dysentriae, S. pneumoniae, and salmonella. [1] The annual review of the plan published in 2018 indicates similar testing capabilities. [2] Neither document indicates evidence of testing capacity for mycobacterium tuberculosis or N. gonorrhea.

The Joint External Evaluation assessment of Ethiopia published in March 2016, reports that "there is ongoing culture and sensitivity testing for more than eight human pathogens throughout the country based on [World Health Organization] WHO recommendations;" however the report does not elaborate on the specific pathogens that are tested for. [3] The Ministry of Health website does not provide further evidence [4].

[1] Ethiopian Public Health Institute. 2017. "Ethiopia Antimicrobial Resistance Surveillance Plan: The Surveillance of Antimicrobial Resistance Using Public Health Laboratory-Based Sentinel Sites in Ethiopia2016-2020." [https://www.ephi.gov.et/images/pictures/download2010/Ethiopia-AMR-Surveillance-Plan_Final.pdf]. Accessed 10 January 2021.
[2] Ethiopian Public Health Institute. 2018. "Ethiopia Antimicrobial Resistance Surveillance: Annual Report July 2017 - August 2018." [https://www.ephi.gov.et/images/pictures/download_2011/Ethiopia-Annual-AMR-Report-2018_FINAL.pdf]. Accessed 10 January 2021.
[3] [1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.

1.1.1c

Does the government conduct environmental detection or surveillance activities (e.g., in soil, waterways) for antimicrobial residues or AMR organisms?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that the Government of Ethiopia conducts environmental detection or surveillance activities (e.g., in soil, waterways) for antimicrobial residues or antimicrobial resistance (AMR) organisms.

The 'Ethiopia Antimicrobial Resistance Surveillance Plan', published in March 2017, states that "several published and unpublished research data have been generated from the various health sciences universities in Ethiopia. These indicate that drug-resistant bacteria, including [multidrug resistance] MDR, are also isolated from humans, animals, food, water, and other environmental samples that need a multidisciplinary intervention through a One Health approach;" however, the plan does not further elaborate on any environmental detection or surveillance activities for AMR organisms in the country. [1]

The Joint External Evaluation assessment of Ethiopia, published in March 2016, reports that "there are no functioning sentinel sites for public health antimicrobial resistance surveillance." [2] Ethiopia's national Strategic Framework for the Prevention and Containment of Antimicrobial Resistance, published in 2015, does not provide evidence on this matter. [3] The websites of the Ethiopian Public Health Institute and the Ministry of Health, do not include information relevant to environmental detection or surveillance activities for AMR organisms [4, 5]. The Ethiopian Environment Protection Authority website and the Ministry of Agriculture and Natural Resources website were both non-functional during the time of writing this report. [7]

[1] Ethiopian Public Health Institute. 2017. "Ethiopia Antimicrobial Resistance Surveillance Plan: The Surveillance of Antimicrobial Resistance Using Public Health Laboratory-Based Sentinel Sites in Ethiopia2016-2020." [https://www.ephi.gov.et/images/pictures/download2010/Ethiopia-AMR-Surveillance-Plan_Final.pdf]. Accessed 10 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[3] Food, Medicine and Health Care Administration and Control Authority of Ethiopia (FMHACA). 2015. "National Strategic Framework for Prevention and Containment of Antimicrobial Resistance." [http://www.fmhaca.gov.et/wp-content/uploads/2019/03/Strategy-for-the-Prevention-and-Containment-of-AMR-in-Ethiopia-Oct-2015.pdf]. Accessed 10 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 10 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 10 January 2021.
[7] Ethiopian Environment Protection Authority. http://www.epa.gov.et/. Accessed 10 January 2021.

1.1.2 Antimicrobial control

1.1.2a

Is there national legislation or regulation in place requiring prescriptions for antibiotic use for humans?

Yes = 2 , Yes, but there is evidence of gaps in enforcement = 1 , No = 0

Current Year Score: 1

Ethiopia has national regulations in place requiring prescriptions for antibiotic use for humans; nonetheless, there is evidence of gaps in the implementation of such regulations.

According to the Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, the country has legislation in place requiring prescriptions for antibiotic use in humans. However, the JEE also notes that "legislation governing the use of antimicrobial medicines in humans is not implemented/ enforced and these medicines are available over the counter." [1]

A study assessing the extent of inappropriate antibiotic prescriptions given to children, published in the Journal of Pediatric Health, Medicine and Therapeutics in 2017, states that 86% of prescriptions administered are inappropriate, while 8% prescribe wrong antibiotics. Self-medication of antibiotics is also deemed to be common in Ethiopia. [2]

A more recent study on Ethiopia, published in April 2020, states that half of the prescribed antibiotics for human use are not needed. [3] The website of the Ministry of Health does not provide further evidence on regulations requiring prescriptions

for antibiotic use for humans. [4]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[2] Tekleab, AM; Asfaw ,YM; Weldetsadik, AY; and Amaru, GM. 2017. "Antibiotic Prescribing Practice in the Management of Cough or Diarrhea Among Children Attending Hospitals in Addis Ababa: a Cross-Sectional Study." [https://www.dovepress.com/antibiotic-prescribing-practice-in-the-management-of-cough-or-diarrhea-peer-reviewed-article-PHMT]. Accessed 10 January 2021.
[3] Gebremedhin, G; et al. "Half of Prescribed Antibiotics Are Not Needed: A Pharmacist-Led Antimicrobial Stewardship Intervention and Clinical Outcomes in a Referral Hospital in Ethiopia." [https://www.frontiersin.org/articles/10.3389/fpubh.2020.00109/full]. Accessed 10 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.

1.1.2b

Is there national legislation or regulation in place requiring prescriptions for antibiotic use for animals?

Yes = 2 , Yes, but there is evidence of gaps in enforcement = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence of legislation or regulation requiring a prescription for antibiotic use for animals in Ethiopia.

According to the Joint External Evaluation assessment of Ethiopia, published in March 2016, "there is currently no legal requirement for prescription of antimicrobial medicines in animals," and antibiotics are used as growth promoters in poultry, beef, and dairy production. [1]

Ethiopia's national Strategic Framework for the Prevention and Containment of Antimicrobial Resistance, published in 2015, contains strategic objectives specifically pertaining to the optimization and increased regulation of the use of antibiotics in animals, further suggesting such legislation is not yet in place. [2]

The Ethiopia Antimicrobial Resistance Surveillance Plan, published in March 2017, further confirms the "overuse and misuse of antibiotics both in humans and animals." [3] The Ministry of Health website and the Public Health Institute websites do not provide information relevant to this matter. [4, 5] The Ethiopian Ministry of Agriculture and Natural Resources website was non-functional during the time of writing this report. [6, 7]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[2] Food, Medicine and Health Care Administration and Control Authority of Ethiopia (FMHACA). 2015. "National Strategic Framework for Prevention and Containment of Antimicrobial Resistance." [http://www.fmhaca.gov.et/wp-content/uploads/2019/03/Strategy-for-the-Prevention-and-Containment-of-AMR-in-Ethiopia-Oct-2015.pdf]. Accessed 10 January 2021.
[3] Ethiopian Public Health Institute. 2017. "Ethiopia Antimicrobial Resistance Surveillance Plan: The Surveillance of Antimicrobial Resistance Using Public Health Laboratory-Based Sentinel Sites in Ethiopia2016-2020." [https://www.ephi.gov.et/images/pictures/download2010/Ethiopia-AMR-Surveillance-Plan_Final.pdf]. Accessed 10 January 2021.

[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.
[5] Ethiopian Public Health Institute. 2017. "Ethiopia Antimicrobial Resistance Surveillance Plan: The Surveillance of Antimicrobial Resistance Using Public Health Laboratory-Based Sentinel Sites in Ethiopia2016-2020." [https://www.ephi.gov.et/images/pictures/download2010/Ethiopia-AMR-Surveillance-Plan_Final.pdf]. Accessed 10 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 10 January 2021.
[7] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.2 ZOONOTIC DISEASE

1.2.1 National planning for zoonotic diseases/pathogens

1.2.1a

Is there national legislation, plans, or equivalent strategy documents on zoonotic disease?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence of a national plan on the zoonotic disease in Ethiopia.

Both the 2013 "Guidelines for Diagnosis, Treatment, and prevention of Leishmaniasis" and the "National Malaria Program for the years 2014 to 2020", contain surveillance and zoonotic disease control elements. [1, 2]

Additionally, according to a news release by the Food and Agriculture Organization of the United Nations (FAO) in November 2018, FAO initiated the development of a Memorandum of Understanding between key ministries in Ethiopia to provide a formal framework for collaborations on forming a legal mechanism to control zoonotic diseases. [3]

FAO has also been closely working with the government-led National One Health Steering Committee to put in place the National One Health Strategic Plan 2018 - 2022, and the establishment of multi-sectoral technical working groups to coordinate various One Health issues, which according to the Public Health Institute was launched in October 2018. [3, 4] FAO reports that since mid-2017, the FAO has been supporting these working groups both technically and financially to develop national multi-sectoral prevention, control and response plans for rabies, anthrax and the preparedness and highly pathogenic avian influenza. [3]

The Ethiopian Public Health Institute website including its Bacterial, Parasitic, and Zoonotic Diseases Research Directorate and the Ministry of Health website do not provide information on a national zoonotic disease plan; neither does the Joint External Evaluation assessment of Ethiopia, published in March 2016. [5, 6, 7]

The Ethiopian Ministry of Agriculture and Natural Resources website, which is included on the Ethiopian Government Portal, was non-functional during the time of writing this report. [8, 9]

[1] World Health Organization. 2013. "Guidelines for Diagnosis, Treatment and Prevention of Leishmaniasis in Ethiopia."[https://www.who.int/leishmaniasis/burden/Guideline_for_diagnosis_treatment_and_prevention_of_leishmaniasis_in_Ethiopia.pdf]. Accessed 10 January 2021.
[2] Ministry of Health. 2014 "National Malaria Program: Monitoring and Evaluation Plan 2014-2020."[https://www.vivaxmalaria.org/sites/p-vivax/files/content/attachments/2019-06-04/National%20Malaria%20Program%20Monitoring%20and%20Evaluation%20Plan%202014-2020.pdf]. Accessed 10 January

2021.
[3] Food and Agriculture Organization of the United Nations. 2nd November 2018. "Robust interactions, practical actions to boost effective One Health programming in Ethiopia". [http://www.fao.org/ethiopia/news/detail-events/fr/c/1162123/]. Accessed 10 January 2021.
[4] Ethiopian Public Health Institute. "One Health MoU Unveiled, Strategic Plan is Launched." [http://www.ephi.gov.et/index.php/news-information/704-one-health-mou-unveiled-strategic-plan-is-launched. Accessed 17th February 2019]. Accessed 10 January 2021.
[5] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 10 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.
[7] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 10 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.2.1b

Is there national legislation, plans or equivalent strategy document(s) which includes measures for risk identification and reduction for zoonotic disease spillover events from animals to humans?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence of national legislation, plans, or equivalent strategy document(s) which includes measures for risk identification and reduction for zoonotic disease spillover events from animals to humans.

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, communication and collaboration between the sectors of animal and public health is weak and takes place on an ad hoc basis only. Although surveillance systems exist for priority zoonotic diseases, such as rabies, anthrax, brucellosis, leptospirosis, and echinococcosis, both the animal and public health systems respond separately to such zoonotic diseases. The report does not mention national legislation, plans, or strategy which includes risk identification and reduction measures for zoonotic disease spillover from animals to humans, but emphasizes that "data sharing on zoonotic diseases between human health and animal health sectors is poor." [1]

Both the 2013 "Guidelines for Diagnosis, Treatment, and prevention of Leishmaniasis", and the "National Malaria Program for the years 2014 to 2020", do not contain measures for risk identification and reduction of zoonotic disease spillover events from animals to humans. [2, 3]

A paper published in December 2016 on the prioritization of zoonotic diseases in Ethiopia using a single health approach, does not refer to existing plans or strategies for risk identification and reduction of zoonotic diseases spillover from animals to humans, however, the paper recommends forming one health-focused zoonotic disease unit to facilitate multi-sectoral collaborations to strengthen disease surveillance for both humans and animals, which in turn, implicitly suggests the lack of such national plan/mechanism. [4]

The Ministry of Health website does not provide further evidence; [5] and The Ethiopian Ministry of Agriculture and Natural Resources website, which is included on the Ethiopian Government Portal, was non-functional during the time of writing this report. [6, 7]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[2] World Health Organization. 2013. "Guidelines for Diagnosis, Treatment and Prevention of Leishmaniasis in Ethiopia."[https://www.who.int/leishmaniasis/burden/Guideline_for_diagnosis_treatment_and_prevention_of_leishmaniasis_in_Ethiopia.pdf]. Accessed 10 January 2021.
[3] Ministry of Health. 2014 "National Malaria Program: Monitoring and Evaluation Plan 2014-2020."[https://www.vivaxmalaria.org/sites/p-vivax/files/content/attachments/2019-06-04/National%20Malaria%20Program%20Monitoring%20and%20Evaluation%20Plan%202014-2020.pdf]. Accessed 10 January 2021.
[4] Pieracci, E; Hall, A; Gharpure, R; Haile, A; Walelign, E; Deressa, A; Bahiru, G; Kibebe, M; Walke, H; Belay, E. 2016. "Prioritizing Zoonotic Diseases in Ethiopia Using a One Health Approach." [https://www.sciencedirect.com/science/article/pii/S2352771416300155]. Accessed 10 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 10 January 2021.
[7] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.2.1c

Is there national legislation, plans, or guidelines that account for the surveillance and control of multiple zoonotic pathogens of public health concern?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that Ethiopia has national plans that account for the surveillance and control of multiple zoonotic pathogens of public health concern.

The Ethiopian Public Health Institute's Bacterial, Parasitic and Zoonotic Diseases Research Directorate is mandated to conduct surveillance on a number of diseases including meningitis, rabies, malaria and other neglected tropical diseases such as leishmaniasis, lymphatic filariasis, onchocerciasis, and soil-transmitted helmenthiasis/schistosomiasis. [1] The Directorate's webpage also reports that there is a Zoonotic Disease Research team in place without further elaboration on the team's work. [1]

The Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, notes that surveillance systems are in place for at least five zoonotic diseases; rabies, anthrax, brucellosis, leptospirosis and echinococcosis; these diseases were agreed upon as priority diseases in late 2015 by both public health and animal health officials. The JEE report also notes that the country has contingency and preparedness and/or response plans for rift valley fever (2009), avian influenza (2006), and pandemic influenza (2010). [2]

The Ministry of Agriculture's Animal Health Strategy, published in 2013, similarly notes that " disease surveillance and reporting is poor and irregular" and that "there are no well-developed, adequately funded and coordinated emergency preparedness and contingency plans for exotic, emerging and re-emerging diseases. The prevention and control of zoonoses and food-borne diseases is poorly addressed and the veterinary service is not providing front-line services." [3]

Additionally, the Ministry of Health's 2013 Guidelines for the "Diagnosis, Treatment and prevention of Leishmaniasis", and the "National Malaria Program 2014 -2020", both contain surveillance and disease control elements. [4, 5]

Furthermore, according to press releases by both FAO and the Ethiopian Public Health Institute (EPHI), Ethiopia's One Health Strategic Plan was launched in 2018, which aims to protect animal and human health by controlling disease outbreaks; [6, 7] however, this plan is not publicly available. Another news release by the EPHI suggests that an anthrax research project was launched in March of 2018 and a rabies surveillance training course was held in December 2018; [8, 9] while the respective plans for the diseases do not yet appear to be in place, another press release by EPHI suggests that drafted documents were ready as of April 2018. [10, 11]

[1] Ethiopian Public Health Institute. "Bacterial, Parasitic and Zoonotic Diseases Research Directorate." [http://www.ephi.gov.et/index.php/services/bacterial-parasitic-and-zoonotic-diseases-research-directorate]. Accessed 10 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[3] Ministry of Agriculture International Livestock Research Institute. 2013. "Animal health Strategy and Vision for Ethiopia." [https://cgspace.cgiar.org/bitstream/handle/10568/67247/LMP_animalhealth_2013.pdf?sequence=1]. Accessed 10 January 2021.
[4] World Health Organization. 2013. "Guidelines for Diagnosis, Treatment and Prevention of Leishmaniasis in Ethiopia." [https://www.who.int/leishmaniasis/burden/Guideline_for_diagnosis_treatment_and_prevention_of_leishmaniasis_in_Ethiopia.pdf].Accessed 10 January 2021.
[5] Ministry of Health. 2014 "National Malaria Program: Monitoring and Evaluation Plan 2014-2020."[https://www.vivaxmalaria.org/sites/p-vivax/files/content/attachments/2019-06-04/National%20Malaria%20Program%20Monitoring%20and%20Evaluation%20Plan%202014-2020.pdf]. Accessed 10 January 2021.
[6] Food and Agriculture Organization of the United Nations. 2nd November 2018. "Robust Interactions, Practical Actions to Boost Effective One Health Programming in Ethiopia." [http://www.fao.org/ethiopia/news/detail-events/fr/c/1162123/]. Accessed 10 January 2021.
[7] Ethiopian Public Health Institute. "One Health MoU Unveiled, Strategic Plan is Launched." [http://www.ephi.gov.et/index.php/news-information/704-one-health-mou-unveiled-strategic-plan-is-launched]. Accessed 10 January 2021.
[8] Ethiopian Public Health Institute. "Anthrax Research Project Launched."[http://www.ephi.gov.et/index.php/news-information/656-anthrax-research-project-launched]. Accessed 10 January 2021.
[9] Ethiopian Public Health Institute. "Rabies Surveillance Training was Conducted." [https://www.ephi.gov.et/index.php/news-information/722-rabies-surveillance-training-was-conducted]. Accessed 10 January 2021.
[10] Ethiopian Public Health Institute. "Anthrax and Rabies Validation Workshop Conducted." [http://www.ephi.gov.et/index.php/news-information/662-anthrax-and-rabies-validation-workshop-conducted]. Accessed 10 January 2021.
[11] Ethiopian Public Health Institute. "Annual Action Plan for Anthrax Prevention & Control is Drafted." [https://www.ephi.gov.et/index.php/news-information/764-annual-action-plan-for-anthrax-prevention-control-is-drafted]. Accessed 10 January 2021.

1.2.1d

Is there a department, agency, or similar unit dedicated to zoonotic disease that functions across ministries?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that Ethiopia has a department dedicated to zoonotic diseases that functions across ministries.

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, "there is no linkage between public health and animal health surveillance systems and no mechanisms or structures for sharing of zoonotic diseases information." [1]

Additionally, according to a news release by the Food and Agriculture Organization of the United Nations (FAO) in November 2018, FAO initiated the development of a Memorandum of Understanding between key ministries in Ethiopia to provide a formal framework for collaborations on forming a legal mechanism to control zoonotic diseases. [2] FAO has also been closely working with the government-led National One Health Steering Committee to put in place the National One Health Strategic Plan 2018 - 2022, and the establishment of multi-sectoral technical working groups to coordinate various One Health issues, which according to the Public Health Institute was launched in October 2018. [3, 4]

Since mid-2017, the FAO has been supporting these working groups both technically and financially to develop national multi-sectoral prevention, control, and response plans for rabies, anthrax, and the preparedness and highly pathogenic avian influenza. [3]

A paper published in December 2016 on the prioritization of zoonotic diseases in Ethiopia using a single health approach, recommends forming one health-focused zoonotic disease unit to facilitate multi-sectoral collaborations to strengthen disease surveillance for both humans and animals, which in turn, implicitly suggests the lack of such national plan/mechanism. [5]

The Ethiopian Public Health Institute website including its Bacterial, Parasitic, and Zoonotic Diseases Research Directorate and the Ministry of Health website do not provide information on a department dedicated to zoonotic diseases that functions across ministries. [6, 7] The Ministry of Health website does not provide further evidence; [5] and The Ethiopian Ministry of Agriculture and Natural Resources website, which is included on the Ethiopian Government Portal, was non-functional during the time of writing this report. [8, 9]

[1] World Health Organization. 2013. "Guidelines for Diagnosis, Treatment and Prevention of Leishmaniasis in Ethiopia."[https://www.who.int/leishmaniasis/burden/Guideline_for_diagnosis_treatment_and_prevention_of_leishmaniasis_in_Ethiopia.pdf]. Accessed 10 January 2021.
[2] Ministry of Health. 2014 "National Malaria Program: Monitoring and Evaluation Plan 2014-2020."[https://www.vivaxmalaria.org/sites/p-vivax/files/content/attachments/2019-06-04/National%20Malaria%20Program%20Monitoring%20and%20Evaluation%20Plan%202014-2020.pdf]. Accessed 10 January 2021.
[3] Food and Agriculture Organization of the United Nations. 2nd November 2018. "Robust interactions, practical actions to boost effective One Health programming in Ethiopia". [http://www.fao.org/ethiopia/news/detail-events/fr/c/1162123/]. Accessed 10 January 2021.
[4] Ethiopian Public Health Institute. "One Health MoU Unveiled, Strategic Plan is Launched." [http://www.ephi.gov.et/index.php/news-information/704-one-health-mou-unveiled-strategic-plan-is-launched. Accessed 17th February 2019]. Accessed 10 January 2021.
[5] Pieracci, E; Hall, A; Gharpure, R; Haile, A; Walelign, E; Deressa, A; Bahiru, G; Kibebe, M; Walke, H; Belay, E. 2016. "Prioritizing Zoonotic Diseases in Ethiopia Using a One Health Approach." [https://www.sciencedirect.com/science/article/pii/S2352771416300155]. Accessed 10 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 10 January 2021.
[7] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.

[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 10 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.2.2 Surveillance systems for zoonotic diseases/pathogens

1.2.2a

Does the country have a national mechanism (either voluntary or mandatory) for owners of livestock to conduct and report on disease surveillance to a central government agency?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia has a national mechanism for owners of livestock to conduct and report on disease surveillance to a central government agency.

The Ethiopian Public Health Institute's Bacterial, Parasitic, and Zoonotic Diseases Research Directorate is mandated to conduct surveillance on a number of diseases including meningitis, rabies, malaria, and neglected tropical diseases such as leishmaniasis, lymphatic filariasis, onchocerciasis, and soil-transmitted helmenthiasis/schistosomiasis. The Directorate's webpage also reports that there is a Zoonotic Disease Research team in place without further elaboration on the team's work. [1]

The Ministry of Agriculture's Animal Health Strategy, published in 2013, similarly makes no mention of a reporting system. [2] The Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, states that "diseases in animals are often not reported by farmers/owners to community health workers or veterinarians" and that "there is no plan to encourage reporting of animal diseases or address factors which might prevent farmers/owners from reporting." [3]

An academic study published in 2018 by Frontiers suggests that a paper-based reporting system is in place, however it is not clear that owners of livestock themselves engage directly in the reporting process. [4]

Furthermore, according to a report published by the French embassy in Addis Ababa in 2003, Ethiopia is divided into administrative unities called woreda, where a number of woredas fall within a region. There are woreda clinics owned by the government, with a veterinary or an animal health assistant, and a total of 515 veterinaries and 703 animal health posts across the country. The woreda animal health personnel are responsible for monthly passive reporting to the regional veterinary service, which then transfers the compiled information to the federal veterinary service who presents this information to the World Organization for Animal Health (OIE). [5] However, it is unclear whether animal owners themselves engage directly in this reporting process.

The Ethiopian Public Health Institute including its Bacterial, Parasitic, and Zoonotic Diseases Research Directorate and the Ministry of Health websites do not provide information relevant to this matter. [6, 7] The Ethiopian Ministry of Agriculture and Natural Resources website, which is included on the Ethiopian Government Portal, was non-functional during the time of writing this report. [8, 9]

[1] Ethiopian Public Health Institute. "Bacterial, Parasitic and Zoonotic Diseases Research Directorate." [http://www.ephi.gov.et/index.php/services/bacterial-parasitic-and-zoonotic-diseases-research-directorate]. Accessed 10 January 2021.
[2] Ministry of Agriculture International Livestock Research Institute. 2013. "Animal health Strategy and Vision for Ethiopia." [https://cgspace.cgiar.org/bitstream/handle/10568/67247/LMP_animalhealth_2013.pdf?sequence=1]. Accessed 10 January

2021.
[3] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 10 January 2021.
[4] Frontiers in Veterinary Science. 2018. "A Smartphone-Based Application Improves the Accuracy, Completeness, and Timeliness of Cattle Disease Reporting and Surveillance in Ethiopia." [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5776010/pdf/fvets-05-00002.pdf]. Accessed 10 January 2021.
[5] French Embassy in Addis Ababa, Ethiopia. 2003. "The Surveillance System in Ethiopia and its Different Actors."[http://www.sciquest.org.nz/elibrary/download/63238/The_surveillance_system_in_Ethiopia_and_its_differ.pdf]. Accessed 10 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 10 January 2021.
[7] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.
[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 10 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.2.2b

Is there legislation and/or regulations that safeguard the confidentiality of information generated through surveillance activities for animals (for owners)?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that Ethiopia has laws or guidelines that safeguard the confidentiality of information generated through surveillance activities for animal owners.

The country has multiple laws related to data privacy and security, however, there is no explicit mention of health-related data in general and health-data for animal owners specifically. Article 26 of Ethiopia's Constitution, published in 1995, acknowledges the right to privacy, however, explicit reference is made only with regards to personal property and personal correspondences; there is no mention of health data, and it is unclear if animals fall under personal property or not. [1]

The country's 2005 Criminal Code does not include relevant information either. [2] Both the Computer Crime proclamation and freedom of the Mass Media and Access to Information proclamation do not contain any provisions that specifically safeguard data generated by surveillance activities. [3, 4]

African Data Privacy Laws book, published in 2016, states that Ethiopia "does not have a legally binding comprehensive data protection law", and the fragmented pieces of legislation that do exist are "inadequate to address the challenges of privacy-threatening information technologies." [5]

The websites of the Ministry of Health, the Ethiopian Public Health Institute do not include evidence of laws or guidelines that safeguard the confidentiality of information generated through surveillance activities for animal owners. [6, 7] The Ethiopian Ministry of Agriculture and Natural Resources website, which is included on the Ethiopian Government Portal, was non-functional during the time of writing this report. [8, 9]

[1] Government of Ethiopia. 1995. "Constitution of the Federal Democratic Republic of Ethiopia."[https://policehumanrightsresources.org/content/uploads/2017/09/Proc-No.-1-1995-Constitution-of-the-Federal-Democratic-Repu.pdf?x96812]. Accessed 11 January 2021.
[2] Government of Ethiopia. 2005. "Criminal Code of the Federal Democratic Republic of Ethiopia."

[https://www.wipo.int/edocs/lexdocs/laws/en/et/et011en.pdf]. Accessed 11 January 2021.
[3] Government of Ethiopia. 2016. "Computer Crime Proclamation No. 958/2016." [https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/103967/126636/F1922468791/ETH103967.pdf]. Accessed 11 January 2021.
[4] Federal Democratic Republic of Ethiopia. 2008. "Proclamation No. 590/2008 - Freedom of the Mass Media and Access to Information Proclamation." [https://www.refworld.org/docid/4ba7a6bf2.html]. Accessed 11 January 2021.
[5] Alebachew Birhanu Enyew. 2016. "African Data Privacy Laws." [https://link.springer.com/chapter/10.1007/978-3-319-47317-8_7]. Accessed 11 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.
[7] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 11 January 2021.
[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 11 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.2.2c

Does the country conduct surveillance of zoonotic disease in wildlife (e.g., wild animals, insects, other disease vectors)?
Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia conducts surveillance of zoonotic diseases in wildlife.

The Bacterial, Parasitic, and Zoonotic Diseases Research Directorate within the Public Health Institute is mandated to conduct surveillance on meningitis and rabies. The Directorate maps, surveys, monitors and evaluates the impact of interventions on neglected tropical diseases such as leishmaniasis, lymphatic filariasis, onchocerciasis, and soil-transmitted helmenthiasis/schistosomiasis; and studies the genetic diversity of malaria parasites amongst other things, however, there is no mention that the Directorate conducts surveillance of zoonotic diseases in wildlife. [1]

The websites of the Ethiopian Public Health Institute and the Ministry of Health do not include information relevant to surveillance of zoonotic diseases in wildlife; [2, 3] neither does the Joint External Evaluation assessment for Ethiopia, published in March 2016 [4]. The Ethiopian Environment Protection Authority website and the Ethiopian Ministry of Agriculture website were not working during the time time of writing this report. [5, 6]

[1] Ethiopian Public Health Institute. "Bacterial, Parasitic and Zoonotic Diseases Research Directorate." [http://www.ephi.gov.et/index.php/services/bacterial-parasitic-and-zoonotic-diseases-research-directorate]. Accessed 11 January 2021.
[2] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 11 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 10 January 2021.
[4] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 11 January 2021.
[5] Ethiopian Environment Protection Authority. [http://www.epa.gov.et/]. Accessed 11 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 11 January 2021.

1.2.3 International reporting of animal disease outbreaks

1.2.3a

Has the country submitted a report to OIE on the incidence of human cases of zoonotic disease for the last calendar year?

Yes = 1 , No = 0

Current Year Score: 0

2019

OIE WAHIS database

1.2.4 Animal health workforce

1.2.4a

Number of veterinarians per 100,000 people

Input number

Current Year Score: 0.95

2017

OIE WAHIS database

1.2.4b

Number of veterinary para-professionals per 100,000 people

Input number

Current Year Score: 9.51

2017

OIE WAHIS database

1.2.5 Private sector and zoonotic

1.2.5a

Does the national plan on zoonotic disease or other legislation, regulations, or plans include mechanisms for working with the private sector in controlling or responding to zoonoses?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia has a national plan, legislation, or regulation on zoonotic diseases that includes a mechanism for working with the private sector in controlling or responding to zoonoses.

The Bacterial, Parasitic, and Zoonotic Diseases Research Directorate within the Public Health Institute states that the Directorate adopts a partnership approach to strengthen national health research capacity. The Directorate collaborates with

the World Health Organization (WHO), the Carter Center, United States Agency for International Development (USAID), the US Centers for Disease Control and Prevention and various academic institutions including the Addis Continental Institute of Public Health, Aklilu-Lemma Institute of Pathobiology/Addis Ababa University, Arba Minch University, University of Gondar and Jimma University. There are also ongoing collaborative projects with international partners including Columbia, the Norwegian Institute of Public Health, and the Imperial College of London. However, there is no mention of a national plan, legislation, or regulation on zoonotic diseases that includes a mechanism for working with the private sector in controlling or responding to zoonoses. [1]

The Ministry of Agriculture's Animal Health Strategy, published in 2013, lists expanding private animal health services and strengthening public-private partnerships as challenges as well as strategic objectives, which alludes to the lack of existing public-private partnership mechanisms. [2]

The Ethiopian 2013 "Guidelines for Diagnosis, Treatment and Prevention of Leishmaniasis", and the "National Malaria Program" for the years 2014 to 2020, do not mention any existing public-private partnership mechanisms. [3, 4] The Malaria control plan notes a low level of private and NGO involvement in its health management information system. [4]

According to The Food and Agriculture Organization (FAO), Ethiopia put in place its One Health Strategic Plan for the years 2018 to 2022; [5] the plan is not publicly available as of yet and it is unknown it includes mechanisms for working with the private sector in controlling and responding to zoonoses. The Ethiopian Public Health Institute and the Ministry of Health websites do not provide further information, neither does the Joint External Evaluation assessment of Ethiopia, published in March 2016. [6, 7, 8] The Ethiopian Ministry of Agriculture and Natural Resources website, which is included on the Ethiopian Government Portal, was non-functional during the time of writing this report. [9, 10]

[1] Ethiopian Public Health Institute. "Bacterial, Parasitic and Zoonotic Diseases Research Directorate." [http://www.ephi.gov.et/index.php/services/bacterial-parasitic-and-zoonotic-diseases-research-directorate]. Accessed 11 January 2021.
[2] Ministry of Agriculture International Livestock Research Institute. 2013. "Animal health Strategy and Vision for Ethiopia." [https://cgspace.cgiar.org/bitstream/handle/10568/67247/LMP_animalhealth_2013.pdf?sequence=1]. Accessed 11 January 2021.
[3] World Health Organization. 2013. "Guidelines for Diagnosis, Treatment and Prevention of Leishmaniasis in Ethiopia."[https://www.who.int/leishmaniasis/burden/Guideline_for_diagnosis_treatment_and_prevention_of_leishmaniasis_in_Ethiopia.pdf]. Accessed 11 January 2021.
[4] Ministry of Health. 2014 "National Malaria Program: Monitoring and Evaluation Plan 2014-2020."[https://www.vivaxmalaria.org/sites/p-vivax/files/content/attachments/2019-06-04/National%20Malaria%20Program%20Monitoring%20and%20Evaluation%20Plan%202014-2020.pdf]. Accessed 11 January 2021.
[5] Food and Agriculture Organization of the United Nations. 2nd November 2018. "Robust interactions, practical actions to boost effective One Health programming in Ethiopia." [http://www.fao.org/ethiopia/news/detail-events/fr/c/1162123/]. Accessed 11 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 11 January 2021.
[7] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 11 January 2021.
[8] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 11 January 2021.
[9] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 11 January 2021.
[10] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.3 BIOSECURITY

1.3.1 Whole-of- government biosecurity systems

1.3.1a

Does the country have in place a record, updated within the past five years, of the facilities in which especially dangerous pathogens and toxins are stored or processed, including details on inventories and inventory management systems of those facilities?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia maintains a record, updated within the past five years, of the facilities in which especially dangerous pathogens and toxins are stored or processed, including details on inventories and inventory management systems of those facilities.

The Ethiopian Public Health Institute's Directorate of Laboratories webpage and the Ministry of Health websites do not provide an indication of a record for facilities in which especially dangerous pathogens and toxins are stored or processed. [1, 2]

The Joint External Evaluation assessment of Ethiopia, published in March 2016, recommends identifying agents and pathogens of concern in addition to facilities housing these agents in order to develop regulations for inventory control and personnel reliability. The report also recommends registering all laboratories housing dangerous pathogens with the Government of Ethiopia. This in turn, implicitly suggests the lack of record for facilities in which especially dangerous pathogens and toxins are stored. [3]

The VERTIC database for Ethiopia does not provide further evidence of such facilities record. [4] Although Ethiopia is a party to the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available. [5] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [6, 7, 8]

[1] Ethiopian Public Health Institute. "Laboratories Services." [https://www.ephi.gov.et/index.php/services/2014-07-21-08-11-24/different-labratory-services]. Accessed 11 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 11 January 2021.
[3] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 11 January 2021.
[4] VERTIC Database. "Ethiopia." [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/e/]. Accessed 11 January 2021.
[5] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 11 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 11 January 2021.
[7] Ministry of Defense. [http://www.fdredefenceforce.gov.et]. Accessed 11 January 2021.
[8] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.3.1b

Does the country have in place legislation and/or regulations related to biosecurity which address requirements such as physical containment, operation practices, failure reporting systems, and/or cybersecurity of facilities in which especially dangerous pathogens and toxins are stored or processed?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has national biosecurity legislation or regulations in place.

The Ethiopian Public Health Institute's (EPHI) Regional Laboratories Capacity Building Directorate is mandated to strengthen biosafety and biosecurity systems, however, the EPHI website does not provide further information on whether national biosecurity legislation or regulations are in place or not. [1]

The Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, states that national biosecurity regulation is lacking in Ethiopia, and there is limited implementation of biosecurity concepts. [2]

The Master Plan for the Public Health Laboratory System in Ethiopia for the years 2009 to 2013 does not contain any biosecurity regulations. [3] Similarly, the Ethiopian Health and Nutrition Research Institute's Five Year Plan for the years 2010 to 2015 states that it is mandated to improve the national public health laboratory system; however, the plan also does not provide evidence of existing biosecurity regulations. [4]

Furthermore, the Ethiopian Medical Laboratory Association (EMLA) is responsible for ensuring and promoting quality laboratory service in Ethiopia, protecting professionals working in medical laboratories, monitoring and evaluating medical laboratories, developing laboratory policy and guidelines, in addition to licensing and registrating medical laboratory professionals. However, EMLA's website does not suggest that the country has biosecurity legislation is in place. [5]

The World Health Organization's (WHO) biosecurity assessment and training missions in Ethiopia, conducted in June 2015, showed that biosafety and biosecurity procedures and practices in the country "were generally adequate to the risk of procedures performed, though there was still room for improvement." The assessment results did not contain any indication of biosecurity regulations in place. [6]

Neither the websites of the Ministry of Health nor the VERTIC database for Ethiopia provide further evidence on biosecurity regulations in the country. [7, 8] Although Ethiopia is a party to the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available [9]. The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, which are both mentioned on the Ethiopian Government Portal, were non-functional during the time of writing this report. [10, 11, 12]

[1] Ethiopian Public Health Institute. "Regional Laboratories Capacity Building Directorate." [http://www.ephi.gov.et/index.php/services/regional-laboratories-capacity-building-directorate]. Accessed 12 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[3] Federal Ministry of Health. 2009. "Master Plan for the Public Health Laboratory System in Ethiopia - Second Edition (2009-2013)." [http://www.ephi.gov.et/images/downloads/Ethiopia%20Lab%20Master%20Plan_2nd%20Edition.pdf]. Accessed 12 January 2021.
[4] Ethiopian Health and Nutrition Research Institute. 2010. "A Five Year, Balanced Score Card Based Strategic Plan (2010-

2015 G.C)." [https://www.ephi.gov.et/images/downloads/final-spm.pdf]. Accessed 12 January 2021.
[5] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[6] World Health Organization. 2015. "Biosafety/biosecurity: national veterinary laboratories assessed in four African countries." [http://www.fao.org/ag/againfo/programmes/en/empres/news_150715b.html]. Accessed 12 January 2021.
[7] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 11 January 2021.
[8] VERTIC Database. "Ethiopia." [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/e/]. Accessed 11 January 2021.
[9] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 11 January 2021.
[10] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 11 January 2021.
[11] Ministry of Defense. [http://www.fdredefenceforce.gov.et]. Accessed 11 January 2021.
[12] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.3.1c

Is there an established agency (or agencies) responsible for the enforcement of biosecurity legislation and regulations?
Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has an established agency or committee responsible for the enforcement of biosecurity legislation and regulations. There is no evidence that biosecurity legislations are in place in the country; therefore, there is no evidence of an established agency or committee responsible for the enforcement of biosecurity legislation and regulations.

The Ethiopian Public Health Institute's (EPHI) Regional Laboratories Capacity Building Directorate is mandated to strengthen biosafety and biosecurity systems, however, the EPHI website does not provide further information on whether national biosecurity legislation or regulations are in place or not; neither there is evidence of an established agency responsible for biosecurity regulations. [1]

The Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, states that national biosecurity regulation is lacking in Ethiopia, and there is limited implementation of biosecurity concepts. [2]

The Master Plan for the Public Health Laboratory System in Ethiopia for the years 2009 to 2013 does not contain any biosecurity regulations or establishments responsible for such regulations. [3] Similarly, the Ethiopian Health and Nutrition Research Institute's Five Year Plan for the years 2010 to 2015 states that it is mandated to improve the national public health laboratory system; however, the plan also does not provide evidence of existing biosecurity regulations or establishment responsible for such regulations. [4]

The Ethiopian Medical Laboratory Association (EMLA) is responsible for ensuring and promoting quality laboratory service in Ethiopia, protecting professionals working in medical laboratories, monitoring and evaluating medical laboratories, developing laboratory policy and guidelines, in addition to licensing and registrating medical laboratory professionals. However, EMLA's website does not suggest that the country has biosecurity legislation is in place. [5]

The World Health Organization's (WHO) biosecurity assessment and training missions in Ethiopia, conducted in June 2015, showed that biosafety and biosecurity procedures and practices in the country "were generally adequate to the risk of procedures performed, though there was still room for improvement." The assessment results did not contain any indication of biosafety regulations in place. [6] Neither the websites of the Ministry of Health nor the VERTIC database for Ethiopia

provide further evidence on biosecurity regulations or establishment responsible for such regulations in the country. [7, 8]

Although Ethiopia is a party to the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available [9]. The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, which are both mentioned on the Ethiopian Government Portal, were non-functional during the time of writing this report. [10, 11, 12]

[1] Ethiopian Public Health Institute. "Regional Laboratories Capacity Building Directorate." [http://www.ephi.gov.et/index.php/services/regional-laboratories-capacity-building-directorate]. Accessed 12 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12January 2021.
[3] Federal Ministry of Health. 2009. "Master Plan for the Public Health Laboratory System in Ethiopia - Second Edition (2009-2013)." [http://www.ephi.gov.et/images/downloads/Ethiopia%20Lab%20Master%20Plan_2nd%20Edition.pdf]. Accessed 12 January 2021.
[4] Ethiopian Health and Nutrition Research Institute. 2010. "A Five Year, Balanced Score Card Based Strategic Plan (2010-2015 G.C)." [https://www.ephi.gov.et/images/downloads/final-spm.pdf]. Accessed 12 January 2021.
[5] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[6] World Health Organization. 2015. "Biosafety/biosecurity: national veterinary laboratories assessed in four African countries." [http://www.fao.org/ag/againfo/programmes/en/empres/news_150715b.html]. Accessed 12 January 2021.
[7] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 11 January 2021.
[8] VERTIC Database. "Ethiopia." [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/e/]. Accessed 11 January 2021.
[9] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 11 January 2021.
[10] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 11 January 2021.
[11] Ministry of Defense. [http://www.fdredefenceforce.gov.et]. Accessed 11 January 2021.
[12] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.3.1d

Is there public evidence that shows that the country has taken action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities?

Yes = 1 , No = 0

Current Year Score: 0

There is no public evidence suggesting that Ethiopia has taken action to consolidate its inventories of dangerous pathogens and toxins into a minimum number of facilities.

There is no publicly available evidence that Ethiopia maintains a record of the facilities in which especially dangerous pathogens and toxins are stored. The Ethiopian Public Health Institute's Directorate of Laboratories webpage and the Ministry of Health websites do not provide an indication of a record for inventories of dangerous pathogens and toxins, neither does it provide evidence of any efforts to consolidate such inventories into a minimum number of facilities. [1, 2]

The Joint External Evaluation assessment of Ethiopia, published in March 2016, recommends identifying agents and pathogens of concern in addition to facilities housing these agents in order to develop regulations for inventory control and personnel reliability. The report also recommends registering all laboratories housing dangerous pathogens with the

Government of Ethiopia. This in turn, implicitly suggests the lack of record for facilities in which especially dangerous pathogens and toxins are stored. The report does not mention any information on efforts to consolidate inventories housing dangerous pathogens into a minimum number of facilities [3]

The VERTIC database for Ethiopia does not provide further evidence of such facilities record. [4] Although Ethiopia is a party to the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available. [5] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [6, 7, 8]

[1] Ethiopian Public Health Institute. "Laboratories Services." [https://www.ephi.gov.et/index.php/services/2014-07-21-08-11-24/different-labratory-services]. Accessed 11 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 11 January 2021.
[3] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 11 January 2021.
[4] VERTIC Database. "Ethiopia." [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/e/]. Accessed 11 January 2021.
[5] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 11 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 11 January 2021.
[7] Ministry of Defense. [http://www.fdredefenceforce.gov.et]. Accessed 11 January 2021.
[8] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 11 January 2021.

1.3.1e

Is there public evidence of in-country capacity to conduct Polymerase Chain Reaction (PCR)–based diagnostic testing for anthrax and/or Ebola, which would preclude culturing a live pathogen?

Yes = 1 , No = 0

Current Year Score: 1

There is public evidence that Ethiopia has an in-country capacity to conduct Polymerase Chain Reaction (PCR) diagnostic testing for anthrax and Ebola.

The Ethiopian Public Health Institute's (EPHI) Guidelines for Specimen Referral System in Ethiopia, published in January 2018, lists the types of laboratory tests that should be conducted for a range of specimens along with referral laboratories. Ebola and Anthrax are listed as causative agents under the disease category for viral hemorrhagic fever (VHF), for which real-time PCR is one of seven laboratory tests that should be conducted. [1]

A release by the World Health Organization (WHO) states that in 2014 the WHO Ethiopia Country Office facilitated and supported the training of five senior laboratory technologists from EPHI in real-time PCR testing to build their capacity in necessary skills for laboratory testing of Ebola. [2]

The Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, states that Ethiopia is "proficient in classical diagnostic techniques including bacteriology, serology and polymerase chain reaction in selected laboratories," however it does not specify if the PCR is specifically for Ebola or anthrax. The JEE also notes that since the Ebola outbreak, the Ministry of Health and Ministry of Livestock and Fisheries have collaborated to tests Ebola samples. [3]

The Ministry of Health website does not provide further evidence on PCR testing capacity in the country. [4] The Ethiopian

Ministry of Agriculture and Natural Resources and the Ministry of Livestock and Fisheries websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [5, 6, 7]

[1] Ethiopian Public Health Institute (EPHI). 2018. "Guidelines for Specimen Referral System in Ethiopia - First Edition." [https://www.ephi.gov.et/images/pictures/download_2011/Guideline-for-Specimen-Referral.pdf]. Accessed 12 January 2021.
[2] World Health Organization. "Ethiopia Heightens Ebola Preparedness." [https://www.afro.who.int/news/ethiopia-heightens-ebola-preparedness]. Accessed 12 January 2021.
[3] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[5] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[6] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 12 January 2021.
[7] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.3.2 Biosecurity training and practices

1.3.2a

Does the country require biosecurity training, using a standardized, required approach, such as through a common curriculum or a trainthe-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has in place a standardized approach to biosecurity training for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential.

The Ethiopian Public Health Institute's (EPHI) "Strategic Management Plan for the years 2015-2020", states that between 2010 and 2015, EPHI trained 4198 laboratory professionals in laboratory management and biosafety to strengthen the capacity of both regional and hospital laboratories. However, the plan does not mention that biosecurity was included in this training. [1] The EPHI's "Public Health Training Schedule for 2017 and 2018" states that laboratory biosafety and biosecurity training was held in November 2017 and April 2018, however, no further information is provided on the training material or curriculum. [2]

Also, in 2016, The EPHI's Regional Laboratories Capacity Building Directorate in collaboration with the Ethiopian Public Health Laboratory Association held a training of trainers training session on biosafety and biosecurity. However, there is no publicly available information on the curriculum or any standardized training approaches. [3]

The Ethiopian Health and Nutrition Research Institute's (EHNRI) "Five Year Plan 2010-2015", also indicates that laboratory trainings were held, including training of trainers programs for regional laboratories; the plan does not specifically mention that biosecurity was covered in these trainings. [4]

The websites of the Ministry of Health, the Ethiopian Medical Laboratory Association, and the Ethiopian Public Health Laboratory Association do no provide further evidence of a standardized approach to biosecurity training for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic

potential in Ethiopia; [5, 6, 7] neither does the VERTIC database for the country. [8]

Although Ethiopia is a member of the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available [9]. The websites of the Ethiopian Ministry of Agriculture and Natural Resources, the Ministry of Livestock and Fisheries, and the Ministry of Defense, all included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [10, 11, 12, 13]

[1] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 12 January 2021.
[2] Ethiopian Public Health Institute. "EPHI-public Health Training Schedule for 2017/18." [http://www.ephi.gov.et/index.php/bid-announcement-new]. Accessed 12 January 2021.
[3] Ethiopian Public Health Institute. "Training of trainers held on Bio-safety and Bio-security." [http://www.ephi.gov.et/index.php/news-information/564-training-of-trainers-held-on-bio-safety-and-bio-security]. Accessed 12 January 2021.
[4] Ethiopian Health and Nutrition Research Institute. 2010. "A Five Year, Balanced Score Card Based Strategic Plan (2010-2015 G.C)." [https://www.ephi.gov.et/images/downloads/final-spm.pdf]. Accessed 12 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 11 January 2021.
[6] Ethiopian Medical Laboratory Association. [https://www.emlaeth.org]. Accessed 12 January 2021.
[7] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 12 January 2021.
[8] VERTIC Database. "Ethiopia." [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/e/]. Accessed 12 January 2021.
[9] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 11 January 2021.
[10] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[11] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 12 January 2021.
[12] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 11 January 2021.
[13] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.3.3 Personnel vetting: regulating access to sensitive locations

1.3.3a

Do regulations or licensing conditions specify that security and other personnel with access to especially dangerous pathogens, toxins, or biological materials with pandemic potential are subject to the following checks: drug testing, background checks, and psychological or mental fitness checks?

Personnel are subject to all three of these checks = 3, Personnel are subject to two of these checks = 2, Personnel are subject to one of these checks = 1, Personnel are not subject to any of these checks = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia has regulations or licensing conditions specifying that security and other personnel with access to especially dangerous pathogens, toxins, or biological materials with pandemic potential are subject to the following checks: drug testing, background checks, and psychological or mental fitness checks.

While the Ethiopian Public Health Institute's (EPHI) Regional Laboratories Capacity Building Directorate is mandated to strengthen biosafety and biosecurity systems, the institute's website does not provide information on such regulations or licensing conditions. [1]

The Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, states that the country lacks national biosecurity regulations, with limited implementation of biosecurity concepts.[2]

The Ministry of Health's Master "Plan for Public Health Laboratory System in Ethiopia 2009 to 2013", lists introducing national training programs to ensure that laboratories are staffed with qualified people in a standardized manner, as one of its planned activities. However, the plan does not provide information or any indication on licensing conditions for laboratory personnel. [3]

Although licensing and registration of medical laboratory professionals is one of the Ethiopian Medical Laboratory Association (EMLA) key functions, the Association's website does not provide evidence of regulations or licensing conditions regarding background checks required for laboratory personnel with access to especially dangerous pathogens, toxins, or biological materials with pandemic potential. [4]

Neither the websites of the Ministry of Health nor the VERTIC database for Ethiopia provide further evidence on such regulations or licensing conditions in the country. [5, 6] Although Ethiopia is a party to the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available [7]. The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, which are both mentioned on the Ethiopian Government Portal, were non-functional during the time of writing this report. [8, 9, 10]

[1] Ethiopian Public Health Institute. "Regional Laboratories Capacity Building Directorate." [http://www.ephi.gov.et/index.php/services/regional-laboratories-capacity-building-directorate]. Accessed 12 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[3] Federal Ministry of Health. 2009. "Master Plan for the Public Health Laboratory System in Ethiopia - Second Edition (2009-2013)." [http://www.ephi.gov.et/images/downloads/Ethiopia%20Lab%20Master%20Plan_2nd%20Edition.pdf]. Accessed 12 January 2021.
[4] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[6] VERTIC Database. "Ethiopia." [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/e/]. Accessed 12 January 2021.
[7] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 11 January 2021.
[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[9] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 11 January 2021.
[10] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.3.4 Transportation security

1.3.4a

Does the country have publicly available information on national regulations on the safe and secure transport of infectious substances (specifically including Categories A and B)?

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that Ethiopia has publicly available information on national regulations on the safe and secure transport of infectious substances specifically including Categories A and B.

The Ethiopian Public Health Institute's (EPHI) "Guidelines for Specimen Referral System in Ethiopia", published in January 2018, includes protocols for specimen collection, preparation, and transportation for a range of specimens, including Category A and B substances. The guidelines also contain a specific section on packaging and labeling instructions for category A and category B substances. [1]

The VERTIC database for Ethiopia and the Ministry of Health website do not provide further evidence regarding the transport of infectious substances. [2, 3] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [4, 5, 6]

[1] Ethiopian Public Health Institute (EPHI). 2018. "Guidelines for Specimen Referral System in Ethiopia - First Edition." [https://www.ephi.gov.et/images/pictures/download_2011/Guideline-for-Specimen-Referral.pdf]. Accessed 12 January 2021.
[2] VERTIC Database. "Ethiopia." [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/e/]. Accessed 12 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[4] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[5] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.
[6] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.3.5 Cross-border transfer and end-user screening

1.3.5a

Is there legislation and/or regulations in place to oversee the cross-border transfer and end-user screening of especially dangerous pathogens, toxins, and pathogens with pandemic potential?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia has a national legislation, regulation or other form of guidance to oversee the cross-border transfer and end-user screening of especially dangerous pathogens.

The Ethiopian Public Health Institute's (EPHI) "Guidelines for Specimen Referral System in Ethiopia", published in January 2018, contains instructions on following the triple packaging system for cross-border transfers of dangerous pathogens based on national and international regulations; however, there is no indication of guidance to oversee the cross-border transfer and end-user screening of especially dangerous pathogens. [1]

The VERTIC database for Ethiopia, the Ethiopian Public Health Institute website and the Ministry of Health website do not provide evidence of legislation, regulation or guidelines regarding oversight for the cross-border transfer and end-user screening of dangerous pathogens [2, 3, 4]. The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [5, 6, 7] Although Ethiopia is a party to the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available. [8]

[1] Ethiopian Public Health Institute (EPHI). 2018. "Guidelines for Specimen Referral System in Ethiopia - First Edition." [https://www.ephi.gov.et/images/pictures/download_2011/Guideline-for-Specimen-Referral.pdf]. Accessed 12 January 2021.

[2] VERTIC Database. "Ethiopia." [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/e/]. Accessed 12 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 12 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[5] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[6] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.
[7] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.
[8] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 11 January 2021.

1.4 BIOSAFETY

1.4.1 Whole-of-government biosafety systems

1.4.1a

Does the country have in place national biosafety legislation and/or regulations?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence of national biosafety regulations in Ethiopia.

Ethiopia's Joint External Evaluation (JEE) assessment, published in March 2016, reports that Ethiopia has biosafety regulations in place, and all laboratories are required to be registered with the government; the registration process, according to the same source, entails compliance with biosafety measures and regulation. [1]

Although the Ethiopian Public Health Institute's (EPHI) Regional Laboratories Capacity Building Directorate is mandated to strengthening national biosafety and biosecurity systems, the Directorate's webpage or EPHI's website do not provide information on any biosafety legislation or regulations existing in the country. [2, 3]

EPHI's "Strategic Management Plan 2015 to 2020", published in 2015, states that the country developed and disseminated more than 20 different laboratory guidelines, manuals, and formats to standardize laboratory diagnostic and operational procedures. This includes the malaria diagnostic manuals, the epidemic prone diseases manual, and a national bio-safety manual. The plan, nonetheless, does not specify who the manuals were distributed to, and the manuals do not appear to be publicly available. [4] The plan also includes a number of biosafety-related goals, such as establishing a BSL-3 Laboratory system, and ensuring that laboratory workers are properly vaccinated, and providing preventative laboratory equipment [4, 5].

The Ethiopian Medical Laboratory Association (EMLA) is responsible for ensuring and promoting quality laboratory service in Ethiopia which includes protecting professionals working in medical laboratories, monitoring and evaluating medical laboratories, developing laboratory policy and guidelines, in addition to licensing and registering medical laboratory professionals. EMLA's website, nonetheless, does not contain any indication of national biosafety regulations. [6]

The World Health Organization's (WHO) biosecurity assessment and training missions in Ethiopia, conducted in June 2015, showed that biosafety and biosecurity procedures and practices in the country "were generally adequate to the risk of procedures performed, though there was still room for improvement." The assessment results did not contain any indication of, or reference to, biosafety regulations. [7]

The VERTIC database published Ethiopia's Biosafety Proclamation of 2009; however, the proclamation focuses more on the protection of human, animal, and environmental safety from genetically modified organisms and does not contain any regulations related to laboratory biosafety standards. [8]

Neither the websites of the Ministry of Health nor the Ethiopian Medical Laboratory Association provide further evidence on biosafety regulations in the country. [9, 10] Although Ethiopia is a party of the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available [11]. The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, which are both mentioned on the Ethiopian Government Portal, were non-functional during the time of writing this report. [12, 13, 14]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[2] Ethiopian Public Health Institute. "Regional Laboratories Capacity Building Directorate." [http://www.ephi.gov.et/index.php/services/regional-laboratories-capacity-building-directorate]. Accessed 12 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 12 January 2021.
[4] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 12 January 2021.
[5] Ethiopian Public Health Institute. "EPHI has secured a Biosafety Level Three Laboratory (BSL3)." [http://www.ephi.gov.et/index.php/news-information/577-phi-has-secured-a-biosafety-level-three-laboratory-bsl3]. Accessed 12 January 2021.
[6] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[7] World Health Organization. 2015. "Biosafety/biosecurity: national veterinary laboratories assessed in four African countries." [http://www.fao.org/ag/againfo/programmes/en/empres/news_150715b.html]. Accessed 12 January 2021.
[8] VERTIC Database. "Ethiopia's Biosafety Proclamation." 2009. [https://www.vertic.org/media/National%20Legislation/Ethiopia/ET_Biosafety_Proclamation.pdf]. Accessed 12 January 2021.
[9] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[10] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[11] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 12 January 2021.
[12] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[13] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.
[14] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.4.1b

Is there an established agency responsible for the enforcement of biosafety legislation and regulations?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that Ethiopia has an established agency responsible for the enforcement of biosafety legislation and regulations.

According to Ethiopia's Joint External Evaluation (JEE) assessment, published in March 2016, the country has biosafety regulations in place, and all laboratories are required to be registered with the government; the registration process,

according to the same source, entails compliance with biosafety measures and regulation. [1] However, the extent of the government's regulatory and enforcement capacity for these regulations beyond registration remains unclear.

The Ethiopian Public Health Institute's (EPHI) Regional Laboratories Capacity Building Directorate's listed key functions include evaluating and validating laboratory equipment and supplies, implementing laboratory quality assurance, laboratory infrastructure, and system development, and strengthening biosafety and biosecurity systems. [2] While this implicitly suggests that the Directorate within the EPHI is responsible for the enforcement of biosafety regulations, the Directorate's page under EPHI's website and EPHI's website per se do not provide information relevant to biosafety regulations enforcement. [2, 3]

The Ethiopian Medical Laboratory Association (EMLA) is responsible for ensuring and promoting quality laboratory service in Ethiopia which includes protecting professionals working in medical laboratories, monitoring and evaluating medical laboratories, developing laboratory policy and guidelines, in addition to licensing and registering medical laboratory professionals. Although this implicitly indicates that EMLA may also be responsible for the enforcement of biosafety regulations, EMLA's website does not contain information on national biosafety regulations enforcement. [4]

Ethiopia's Biosafety Proclamation of 2009, published on the VERTIC database, does not include information on the agency responsible for the enforcement of biosafety legislation and regulations. Also, the proclamation focuses more on the protection of human, animal, and environmental safety from genetically modified organisms without including regulations related to laboratory biosafety standards. [5]

Neither the websites of the Ministry of Health, nor the Ethiopian Medical Laboratory Association provide further evidence on the enforcement of biosafety regulations in the country. [6, 7] Although Ethiopia is a party of the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public, and is not publicly available [8]. The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, which are both mentioned on the Ethiopian Government Portal, were non-functional during the time of writing this report. [9, 10, 11]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[2] Ethiopian Public Health Institute. "Regional Laboratories Capacity Building Directorate." [http://www.ephi.gov.et/index.php/services/regional-laboratories-capacity-building-directorate]. Accessed 12 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 12 January 2021.
[4] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[5] VERTIC Database. "Ethiopia's Biosafety Proclamation." 2009. [https://www.vertic.org/media/National%20Legislation/Ethiopia/ET_Biosafety_Proclamation.pdf]. Accessed 12 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[7] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[8] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 12 January 2021.
[9] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[10] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.
[11] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.4.2 Biosafety training and practices

1.4.2a

Does the country require biosafety training, using a standardized, required approach, such as through a common curriculum or a trainthe-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that Ethiopia requires biosafety trainings using a standardized, required approach, such as through a common curriculum or a train-the trainer program for personnel working in facilities housing or working with especially dangerous pathogens, toxins or biological material with pandemic potential.

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, The Ministry of Health and the National Animal Health Diagnostic and Investigation Center provide biosafety trainings for the federal and regional laboratories; in addition to other biosafety trainings that are also provided as a part of medical school education. The report, however, does not present biosafety training as a requirement and does not elaborate on whether there is a standard approach or a common curriculum or program. [1]

The Ethiopian Public Health Institute's (EPHI) "Strategic Management Plan for the years 2015-2020", states that between 2010 and 2015, EPHI trained 4198 laboratory professionals in laboratory management and biosafety to strengthen the capacity of both regional and hospital laboratories. [2] The plan also elaborates that dealing with known deadly and life-threatening exotic pathogens or agents with unknown risk of transmission requires the highest level of safety, and activities dealing with these pathogens should be undertaken at the National Reference Laboratories of the EPHI and selected Regional Reference Laboratories, where Biological Safety Level (BSL)-3 laboratories are in place. [2, 3] While this implicitly suggests that trainings meet certain biosafety requirements for laboratories dealing with especially dangerous pathogens, there is no clear statement on a standard approach or a common curriculum or program.

The EPHI's Public Health Training Schedule for 2017 and 2018 states that laboratory biosafety and biosecurity trainings were held in November 2017 and April 2018, however, no further information is provided on the training material or curriculum. [4] Also, in 2016, The EPHI's Regional Laboratories Capacity Building Directorate in collaboration with the Ethiopian Public Health Laboratory Association held a training of trainers training session on biosafety and biosecurity. However, there is no publicly available information on the curriculum or any standardized training approaches. [5]

The websites of the Ministry of Health, the Ethiopian Medical Laboratory Association, and the Ethiopian Public Health Laboratory Association do no provide further evidence of required biosafety training using a standardized, required approach, for personnel working in facilities housing especially dangerous pathogens, toxins, or biological material in Ethiopia; [6, 7, 8] neither does Ethiopia's Biosafety Proclamation of 2009, published on the VERTIC database. [9] Although Ethiopia is a member of the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public and is not publicly available [10]. The websites of the Ethiopian Ministry of Agriculture and Natural Resources, and the Ministry of Defense, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [11, 12, 13]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[2] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)."

[https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 12 January 2021.
[3] Ethiopian Public Health Institute. "EPHI has secured a Biosafety Level Three Laboratory (BSL3)." [http://www.ephi.gov.et/index.php/news-information/577-phi-has-secured-a-biosafety-level-three-laboratory-bsl3]. Accessed 12 January 2021.
[4] Ethiopian Public Health Institute. "EPHI-public Health Training Schedule for 2017/18." [http://www.ephi.gov.et/index.php/bid-announcement-new]. Accessed 12 January 2021.
[5] Ethiopian Public Health Institute. "Training of trainers held on Bio-safety and Bio-security." [http://www.ephi.gov.et/index.php/news-information/564-training-of-trainers-held-on-bio-safety-and-bio-security]. Accessed 12 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 11 January 2021.
[7] Ethiopian Medical Laboratory Association. [https://www.emlaeth.org]. Accessed 12 January 2021.
[8] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php].Accessed 12 January 2021.
[9] VERTIC Database. "Ethiopia's Biosafety Proclamation." 2009. [https://www.vertic.org/media/National%20Legislation/Ethiopia/ET_Biosafety_Proclamation.pdf]. Accessed 12 January 2021.
[10] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 12 January 2021.
[11] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[12] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.
[13] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.5 DUAL-USE RESEARCH AND CULTURE OF RESPONSIBLE SCIENCE

1.5.1 Oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research

1.5.1a

Is there publicly available evidence that the country has conducted an assessment to determine whether ongoing research is occurring on especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research?
Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has conducted an assessment to determine whether ongoing research is occurring on especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research.

The Ethiopian Public Health Institute's Directorate of Laboratories webpage, the Ministry of Health website, and the Ethiopian Medical Laboratory Association website do not provide evidence of the existence of such an assessment; [1, 2, 3] neither does Ethiopia's Biosafety Proclamation of 2009, published on the VERTIC database. [4]

The Joint External Evaluation assessment for Ethiopia, published in March 2016, recommends identifying agents and pathogens of concern and facilities housing those agents. The report also suggests developing regulations for inventory control, personnel reliability, and registration of all laboratories housing dangerous pathogens with the Government of Ethiopia, which indicates that such assessments have not yet taken place. [5]

Although Ethiopia is a member of the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public, and is not publicly available [6]. The websites of the Ethiopian Ministry of Agriculture and Natural Resources, and the Ministry of Defense, both included in the Ethiopian

Government Portal, were non-functional during the time of writing this report. [7, 8, 9]

[1] Ethiopian Public Health Institute. "Laboratories Services." [https://www.ephi.gov.et/index.php/services/2014-07-21-08-11-24/different-labratory-services]. Accessed 12 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[3] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[4] VERTIC Database. "Ethiopia's Biosafety Proclamation." 2009. [https://www.vertic.org/media/National%20Legislation/Ethiopia/ET_Biosafety_Proclamation.pdf]. Accessed 12 January 2021.
[5] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[6] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 12 January 2021.
[7] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[8] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.5.1b

Is there legislation and/or regulation requiring oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence of a national policy that requires oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research in Ethiopia.

The Ethiopian Public Health Institute's Directorate of Laboratories webpage, the Ministry of Health website and the Ethiopian Medical Laboratory Association website do not provide indication of a national policy requiring oversight of research with especially dangerous pathogens and/or other dual-use research; [1, 2, 3] neither does Ethiopia's Biosafety Proclamation of 2009, published on the VERTIC database. [4]

Although Ethiopia is a member of the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public, and is not publicly available [5]. The websites of the Ethiopian Ministry of Agriculture and Natural Resources, and the Ministry of Defense, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [6, 7, 8]

[1] Ethiopian Public Health Institute. "Laboratories Services." [https://www.ephi.gov.et/index.php/services/2014-07-21-08-11-24/different-labratory-services]. Accessed 12 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[3] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[4] VERTIC Database. "Ethiopia's Biosafety Proclamation." 2009. [https://www.vertic.org/media/National%20Legislation/Ethiopia/ET_Biosafety_Proclamation.pdf]. Accessed 12 January 2021.
[5] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 12 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[7] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.

[8] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.5.1c

Is there an agency responsible for oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that Ethiopia has an agency responsible for oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research.

According to the VERTIC database, article 19 of Ethiopia's Biosafety Proclamation, published in 2009, states that "any inspector may, for the purpose of ensuring compliance with provisions of this Proclamation and regulations and directives to be issued pursuant to this Proclamation... [the inspector can] take free of charge samples of any material or substance as required and carry out or cause to be carried out tests he considers appropriate." However, the Proclamation does not elaborate further on the inspector or the agency of inspection. [1]

The Joint External Evaluation assessment of Ethiopia, published in March 2016, recommends identifying agents and pathogens of concern and facilities housing those agents, in addition to registering all laboratories housing dangerous pathogens with the Government of Ethiopia. This in turn implicitly suggests the lack of such regulatory oversight capacity in the country. [2]

Although Ethiopia is a member of the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public, and is not publicly available [3]. The websites of the Ethiopian Ministry of Agriculture and Natural Resources, and the Ministry of Defense, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [4, 5, 6]

[1] VERTIC Database. "Ethiopia's Biosafety Proclamation." 2009. [https://www.vertic.org/media/National%20Legislation/Ethiopia/ET_Biosafety_Proclamation.pdf]. Accessed 12 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[3] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 12 January 2021.
[4] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[5] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.
[6] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.5.2 Screening guidance for providers of genetic material

1.5.2a

Is there legislation and/or regulation requiring the screening of synthesized DNA (deoxyribonucleic acid) against lists of known pathogens and toxins before it is sold?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence of legislation and/or regulation requiring the screening of synthesized DNA (deoxyribonucleic acid) against lists of known pathogens and toxins before it is sold in Ethiopia.

Published on the VERTIC database, Ethiopia's Biosafety Proclamation, 2009, seeks to protect human and animal health, biological diversity, and the environment "by preventing or at least managing down to levels of insignificance the adverse effects of modified organisms." The proclamation, nevertheless, does not elaborate on how this prevention or reduction is carried out, neither does it require screening of synthesized deoxyribonucleic acid (DNA) against lists of known pathogens and toxins before it is sold in the country. [1]

The Proclamation further states that those who intend to engage in teaching, production, import, export, transit, release, contained production, transport, placing on the market, or use as pharmaceutical, as food, as a feed, or for processing is required to submit to the Authority an application prepared in accordance with this Proclamation and regulations. The Proclamation also provides details about packaging and labeling requirements for products containing modified organisms, noting that the import of modified organisms requires prior approval. While synthesized DNA is not explicitly mentioned, the Proclamation addresses non-plant life and there is a strong indication of regulatory oversight over synthesized organisms prior to selling them in the country; however, no additional information is available regarding end-user screening of synthesized DNA prior to selling them. [1]

The website of the Ministry of Health and the Ethiopian Public Health Laboratory Association website do not provide further evidence. [2, 3] Although Ethiopia is a member of the Biological Weapons Convention, it has not submitted Confidence Building Measures since 2011. Access to its most recent CBM report is restricted to the public, and is not publicly available. [4] The websites of the Ethiopian Ministry of Agriculture and Natural Resources, and the Ministry of Defense, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [5, 6, 7]

[1] VERTIC Database. "Ethiopia's Biosafety Proclamation." 2009. [https://www.vertic.org/media/National%20Legislation/Ethiopia/ET_Biosafety_Proclamation.pdf]. Accessed 12 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 11 January 2021.
[3] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 12 January 2021.
[4] Biological Weapons Convention. "Ethiopia." [https://bwc-ecbm.unog.ch/state/ethiopia]. Accessed 12 January 2021.
[5] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[6] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 12 January 2021.
[7] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

1.6 IMMUNIZATION

1.6.1 Vaccination rates

1.6.1a

Immunization rate (measles/MCV2)

Immunization rate (measles/MCV2), 95% or greater = 2, 80-94.9% = 1, Less than 80%, or no data = 0

Current Year Score: 0

2019

World Health Organization

1.6.1b

Are official foot-and-mouth disease (FMD) vaccination figures for livestock publicly available through the OIE database?

Yes = 1 , No = 0

Current Year Score: 1

2020

OIE WAHIS database

Category 2: Early detection and reporting for epidemics of potential international concern

2.1 LABORATORY SYSTEMS STRENGTH AND QUALITY

2.1.1 Laboratory testing for detection of priority diseases

2.1.1a

Does the national laboratory system have the capacity to conduct diagnostic tests for at least 5 of the 10 WHO-defined core tests?

Evidence they can conduct 5 of the 10 core tests and these tests are named = 2, Evidence they can conduct 5 of the 10 core tests and the tests are not named = 1, No evidence they can conduct 5 of the 10 core tests = 0

Current Year Score: 1

Ethiopia's national laboratory system has the capacity to conduct diagnostic tests for at least 5 of the 10 World Health Organization (WHO) defined core tests, although the tests are not named.

According to the Joint External Evaluation (JEE) assessment, published in March 2016, Ethiopia's national laboratory system has a demonstrated level of capacity (score 4 out of 5) when it comes to testing for detection of priority diseases. The national laboratory system is able to conduct six of the core ten tests, while "the remaining four core tests need to be identified based on the major national public health concerns of the country." [1] The JEE reports that Ethiopia is capable of conducting core tests on several priority diseases including HIV, tuberculosis, polio, influenza, Salmonella, and Plasmodium without specifying which tests are conducted for these diseases. Besides the point-of-care diagnostics that is conducted for HIV and tuberculosis, the JEE does not elaborate on or specify the exact core tests available in the country. [1]

The Ethiopian Public Health Institute's (EPHI) Guidelines for Specimen Referral System in Ethiopia, published in January 2018, lists the types of laboratory tests that should be conducted for a range of specimens along with referral laboratories. The required tests for specific diseases include PCR testing for avian influenza, cell cultures for poliovirus, serology tests for HIV, rapid diagnostic testing for Malaria, and blood cultures and stool cultures for typhoid. [2] The website of the Ministry of Health does not provide further evidence. [3]

The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Livestock and Fisheries websites, both

included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [4, 5, 6]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[2] Ethiopian Public Health Institute (EPHI). 2018. "Guidelines for Specimen Referral System in Ethiopia - First Edition." [https://www.ephi.gov.et/images/pictures/download_2011/Guideline-for-Specimen-Referral.pdf]. Accessed 12 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 12 January 2021.
[4] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[5] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 12 January 2021.
[6] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.

2.1.1b

Is there a national plan, strategy or similar document for conducting testing during a public health emergency, which includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing?

Yes, there is evidence of a plan, and it includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing = 2, Yes, there is evidence of a plan, but there is insufficient evidence that it includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing = 1, No evidence of a plan = 0

Current Year Score: 0

There is no publicly available evidence of a national plan, strategy, or similar document for conducting testing during a public health emergency, which includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing in Ethiopia.

The Public Health Emergency Management Center under the Ethiopian Public Health Institute (EPHI) is responsible for "establishing strong and effective public health emergency management [PHEM] system through robust early warning, preparedness, and recovery from various public health emergencies throughout the country." According to the PHEM webpage, while the system takes into account mobilizing the government health resources to effectively and rapidly respond to health emergencies, it is unclear if this includes testing for novel pathogens, scaling capacity, or goals for testing. [1]

According to the Centers for Disease Control and Prevention (CDC) website and a fact sheet published in 2019, CDC in Ethiopia works with partners including the Ministry of Health to maintain programs in training, treatment, counseling, and testing, as well as laboratory capacity building. CDC further establishes and utilizes the government information systems, monitor and integrate the national laboratory services to respond to public health emergencies and epidemics. The CDC addresses several infectious diseases including HIV, tuberculosis, and malaria. However, both the CDC website and factsheet do not provide an indication of a national plan in place for testing during health emergencies. [2, 3]

The websites of the Ethiopian Medical Laboratory Association (EMLA), Ethiopian Public Health Laboratory Association (EPHLA), and the Ministry of Health do not provide evidence of a national plan strategy or similar document for conducting testing during a public health emergency that includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing. [4, 5, 6] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [7, 8, 9]

[1] Ethiopian Public Health Institute (EPHI). "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 14 January 2021.
[2] Centers for Disease Control and Prevention (CDC). [https://www.cdc.gov/globalhealth/countries/ethiopia/default.htm].

Accessed 14 January 2021.
[3] Centers for Disease Control and Prevention (CDC). "CDC in Ethiopia Fact Sheet." 2019. [https://www.cdc.gov/globalhealth/countries/ethiopia/pdf/Ethiopia_Factsheet-p.pdf]. Accessed 14 January 2021.
[4] Ethiopian Medical Laboratory Association. [https://www.emlaeth.org]. Accessed 14 January 2021.
[5] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 14 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[7] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 14 January 2021.
[8] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 14 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 14 January 2021.

2.1.2 Laboratory quality systems

2.1.2a

Is there a national laboratory that serves as a reference facility which is accredited (e.g., International Organization for Standardization [ISO] 15189:2003, U.S. Clinical Laboratory Improvement Amendments [CLIA])?

Yes = 1 , No = 0

Current Year Score: 1

Ethiopia has several national laboratories that serve as reference facilities and are accredited.

According to the Ethiopian Public Health Institute (EPHI), the HIV Molecular Reference Laboratory, the National TB Reference Laboratory, the National Clinical Chemistry Reference Laboratory, and the National Clinical Bacteriology and Mycology Reference Laboratory have all achieved ISO15189:2012 accreditation in 2017.[1]

The Ethiopian National Accreditation Office (ENAO) also maintains a list of local laboratories that have received ENAO accreditation, which includes the four aforementioned reference laboratories. [2]

The Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, notes that as of 2016, one laboratory was certified by the World Health Organization (WHO) and other laboratories were being prepared for ISO 15189 and 17025 accreditations. [3]

[1] Ethiopian Public Health Institute. "Staffs Certified for Laboratories Accreditations Contribution." [https://www.ephi.gov.et/index.php/news-information/664-staffs-certified-for-laboratories-accreditations-contribution]. Accessed 12 January 2021.
[2] Ethiopian National Accreditation Office. "Accredited Testing Laboratories." [https://enao-eth.org/testing-laboratories/]. Accessed 12 January 2021.
[3] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.

2.1.2b

Is there a national laboratory that serves as a reference facility which is subject to external quality assurance review?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that Ethiopia has a national laboratory that serves as a reference facility which is subject to external quality assurance (EQA) review.

The Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, states that laboratory quality management systems are being implemented in most health facilities, and "existing external quality assessments exist for all of the six core tests." [1]

The Master Plan for the Public Health Laboratory System in Ethiopia for the years 2009 to 2013, published by the Ministry of Health, notes that the National External Quality Assessment Scheme, launched in 2007, aimed at covering all national-level referral laboratories. According to the same source, international EQA schemes exist for HIV (HIV rapid testing, CD4, clinical chemistry, hematology, DNA PCR), tuberculosis, bacteriology, and malaria. [2]

The former Ethiopian Health and Nutrition Research Institute, which has merged into the Ethiopian Public Health Institute (EPHI), published a five-year strategic plan for the years 2010 to 2015, which had the objective of including all national laboratories in external quality assessment schemes. [3, 4]

EPHI's "Strategic Management Plan 2015 to 2020", published in 2015, states that as of 2015, 80 laboratories were participating in EQA schemes, and a total of 175 laboratories had participated in one or more EQA tests including DNA-PCR and tuberculosis cultures. [5]

A study published in the African Journal of Laboratory Medicine in 2016, states that as of 2016, Ethiopia had over 285 laboratories participating in the Oneworld Accuracy EQA system. There is also a national EQA scheme in place for the National Reference Laboratories for HIV, tuberculosis, and malaria. The study adds that the Reference Laboratories also "coordinate, conduct and monitor blind rechecking of tests and site supervision within their respective regions" and that there are over 900 facilities with more than 3542 testing points enrolled in the regional EQA scheme for HIV. [6]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 14 January 2021.
[2] Federal Ministry of Health. 2009. "Master Plan for the Public Health Laboratory System in Ethiopia - Second Edition (2009-2013)." [http://www.ephi.gov.et/images/downloads/Ethiopia%20Lab%20Master%20Plan_2nd%20Edition.pdf]. Accessed 14 January 2021.
[3] Ethiopian Health and Nutrition Research Institute. 2010. "A Five Year, Balanced Score Card Based Strategic Plan (2010-2015 G.C)." [https://www.ephi.gov.et/images/downloads/final-spm.pdf]. Accessed 14 January 2021.
[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 14 January 2021.
[5] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 14 January 2021.
[6] Adisu Kebede, Yenew Kebede, Adino Desale, Achamyeleh Mulugeta, Zelalem Yaregal, Atsbeha Gebreegziabxier, Yared Tedla, Clement Zeh, Gonfa Ayana. 2016. "Quality Assurance for Point-of-Care Testing: Ethiopia's Experience." African Journal of Laboratory Medicine Vol 5
[2]. [https://ajlmonline.org/index.php/ajlm/article/view/452/626]. Accessed 14 January 2021.

2.2 LABORATORY SUPPLY CHAINS

2.2.1 Specimen referral and transport system

2.2.1a

Is there a nationwide specimen transport system?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence of a nationwide transport system in Ethiopia.

The Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, states that specimen transportation mechanism is in place only for HIV through courier contracts supported by the Ministry of Health. This in turn indicates that Ethiopia does have a specimen transport system, however, the system is not comprehensive and it is unclear if it covers 80% of the country. [1]

The Ethiopian Public Health Institute's (EPHI) "Guidelines for Specimen Referral System in Ethiopia", published in January 2018, contains a section on specimen collection and preparation for transportation of different forms of blood samples, stool samples, urine samples, urogenital tract specimens, respiratory tract samples, discharge samples, wound samples, body fluid samples, tissue samples, dermatological samples and bacterial isolates. The transportation guidelines suit the specific disease being tested for. [2]

The guidelines also state that when a national referral-based laboratory network is used for the testing of a specimen, "specimens are collected from any health facility and transported via a suitable courier system to referral laboratories where the testing service is available. The result is then returned back to the referring laboratory through an appropriate transportation route." This suggests that a nation-wide system is indeed in place. The guidelines, however, do not elaborate on couriers used, and it is unclear if it covers 80% of the country. [2]

No further evidence is provided through the website of the Ministry of Health. [3] The Ethiopian Ministry of Agriculture and Natural Resources website was non-functional during the time of writing this report. [4]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 14 January 2021.
[2] Ethiopian Public Health Institute (EPHI). 2018. "Guidelines for Specimen Referral System in Ethiopia - First Edition." [https://www.ephi.gov.et/images/pictures/download_2011/Guideline-for-Specimen-Referral.pdf]. Accessed 14 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[4] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 14 January 2021.

2.2.2 Laboratory cooperation and coordination

2.2.2a

Is there a plan in place to rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak?

Yes = 2 , Yes, but there is evidence of gaps in implementation = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence of a plan in place to rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak in Ethiopia. The Ethiopian Advanced Medical Laboratory Requirements document provides the detailed laboratory licensing and authorization procedures in the country, including new and renewed licenses. However, the document does not elaborate on the duration needed for issuing licenses, and does not provide indication of any expedited licensure processes during health outbreaks. [1] The Ministry of Health's Master Plan for Public Health Laboratory System in Ethiopia 2009 to 2013, lists introducing national training programs to ensure that laboratories are staffed with qualified people in a standardized manner, as one of its planned activities. However, the plan does not provide any indication on licensing conditions to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak. [2] Although supporting the Ministry of Health in the accreditation of medical laboratories is one of the Ethiopian Medical Laboratory Association's (EMLA) key functions, the Association's website does not provide evidence of expedited licensing and authorization procedures to scale-up testing during an outbreak in Ethiopia. [3] The Public Health Emergency Management Center under the Ethiopian Public Health Institute (EPHI) is responsible for "establishing strong and effective public health emergency management [PHEM] system through robust early warning, preparedness and recovery from various public health emergencies throughout the country." While the system takes into account mobilizing the government health resources to effectively and rapidly respond health emergencies, the PHEM webpage does not provide indication of any rapid authorization mechanism for laboratories during health outbreaks. [4] The Ethiopian Public Health Laboratory Association (EPHLA) website, and the Ministry of Health website do not provide evidence of a national plan on laboratory licensing procedures in the country during health emergencies. [5, 6] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [7, 8, 9]

[1] Ethiopian Standard Agency. "The Ethiopian Advanced Medical Laboratory Requirements." [https://www.forsslund.org/StandardHealthFaclitiy/Advanced%20Medical%20Laboratory.pdf]. Accessed 14 January 2021.
[2] Federal Ministry of Health. 2009. "Master Plan for the Public Health Laboratory System in Ethiopia - Second Edition (2009-2013)." [http://www.ephi.gov.et/images/downloads/Ethiopia%20Lab%20Master%20Plan_2nd%20Edition.pdf]. Accessed 14 January 2021.
[3] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[4] Ethiopian Public Health Institute (EPHI). "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 14 January 2021.
[5] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 14 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[7] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 14 January 2021.
[8] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 14 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 14 January 2021.

2.3 REAL-TIME SURVEILLANCE AND REPORTING

2.3.1 Indicator and event-based surveillance and reporting systems

2.3.1a

Is there evidence that the country is conducting ongoing event-based surveillance and analysis for infectious disease?

Yes, there is evidence of ongoing event-based surveillance and evidence that the data is being analyzed on a daily basis = 2, Yes, there is evidence of ongoing event-based surveillance, but no evidence that the data are being analyzed on a daily basis = 1, No = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that Ethiopia conducts ongoing event-based surveillance (EBS) and analysis for infectious disease.

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, EBS systems are in place, but not fully functional. [1] A news release by the Ethiopian Public Health Institute (EPHI) in 2016 states the Institute's intention to implement the EBS system at the federal, regional, and community levels. The news release further mentions that in 2016 a training on EBS was held by the Public Health Emergency Management Directorate of EPHI in collaboration with the US Center for Diseases Control and Prevention. However, no further information is publicly available mentioning that EBS is conducted. [2]

Also, a study published by the Food and Agriculture Organization (FAO) in 2018 states that "the Ministry of Health sources data and information on zoonotic diseases in humans largely from the Integrated Disease Surveillance and Reporting System (IDRS), which includes both an event-based reporting system and a periodic routine reporting system" for diseases including polio, anthrax, avian influenza, measles, rabies and yellow fever amongst others. This in turn, implicitly suggests that EBS is in place in the country, nonetheless, the data that the report refers to does not appear to be publicly available. [3]

The EPHI's website, including the Public Health Emergency Management Directorate's webpage, as well as the Ministry of Health website do not provide further evidence that Ethiopia conducts ongoing EBS and analysis for infectious diseases. [4, 5, 6] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [7, 8, 9]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 14 January 2021.
[2] Ethiopian Public Health Institute. "Disease Control and Prevention Training was Conducted." [http://www.ephi.gov.et/index.php/news-information/559-disease-control-and-prevention-training-was-conducted]. Accessed 14 January 2021.
[3] Food and Agriculture Organization of the United Nations (FAO). 2018. "Africa Sustainable Livestock 2050: Zoonotic Diseases Spotlight Ethiopia - The Case for an Expert Elicitation Protocol on Zoonoses." [http://www.fao.org/3/i8493en/I8493EN.pdf]. Accessed 14 January 2021.
[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 10 January 2021.
[5] Ethiopian Public Health Institute. "Public Health Emergency Directorate." [http://www.ephi.gov.et/index.php/services/public-health-emergency-management-directorate. Accessed 21st February 2019]. Accessed 14 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[7] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 14 January 2021.
[8] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 14 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 14 January 2021.

2.3.1b

Is there publicly available evidence that the country reported a potential public health emergency of international concern (PHEIC) to the WHO within the last two years?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that Ethiopia reported a potential public health emergency of international concern (PHEIC) to the World Health Organization (WHO) within the last two years.

Between 2 and 8 April 2020, six suspected human cases of dracunculiasis in Duli village, Gog district, Gambella region, Ethiopia, were reported to WHO. As of 27 April 2020, the Ethiopian Dracunculiasis Eradication Program (EDEP) had detected one additional person with an emerged worm, morphologically consistent with human guinea worm, bringing the total to seven suspected cases. This report comes after more than two consecutive years of zero reporting, as the last cases were reported in December 2017. [1]
No further evidence is found on Ethiopia's WHO country profile. [2] The website of the Ethiopian Ministry of Health does not include information relevant to this matter. [3]

[1] World Health Organization. "Dracunculiasis (Guinea worm disease) – Ethiopia" 25 May 2020. [https://www.who.int/csr/don/25-may-2020-dracunculiasis-ethiopia/en/]. Accessed 3 June 2021.
[2] World Health Organization. "Emergencies, Preparedness, Response - Ethiopia." [https://www.who.int/csr/don/archive/country/eth/en/]. Accessed 14 January 2021.
[3] World Health Organization. "Country Profile: Ethiopia." [https://www.who.int/countries/eth/en/]. Accessed 14 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 30 January 2021.

2.3.2 Interoperable, interconnected, electronic real-time reporting systems

2.3.2a

Does the government operate an electronic reporting surveillance system at both the national and the sub-national level?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that the government operates an electronic reporting surveillance system at both the national and the sub-national level

According to the Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, "reporting [in the public health sector] is still paper-based at the health facility level with telephone calls, fax and emails being used between the district and zonal levels. At the zonal level, surveillance data are entered into a database and reported to regional and state levels through email." The JEE adds that plans to transition from paper-based reporting to electronic reporting in the near future are at an advanced stage. [1] According to the same source, the Ministry of Livestock and Fisheries was "piloting a mobile apparatus-based Animal Disease Notification and Investigation System (ADNIS) for 19 diseases prioritized for immediate reporting," and the existing paper-based reporting is expected to be replaced by a web-based reporting system. Under this new system, paper reports from the district and sub-district level will be entered into computers at regional veterinary laboratories, and the data will be subsequently sent electronically to the Ministry of Agriculture and Livestock Resources. [1]

A news report published by the Food and Agriculture Organization of the United Nations (FAO) in early 2018, indicates the ADNIS system is in place and mentions that training workshops on using the system had been organized in the country, [2] however, there is no publicly available evidence of this system through the Ministry of Health, the Ethiopian Medical Laboratory Association (EMLA), Ethiopian Public Health Laboratory Association (EPHLA), and the Ethiopian Public Health Institute websites [3, 4, 5, 6]

The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Livestock and Fisheries websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [7, 8, 9]

The Public Health Emergency Management Center under the Ethiopian Public Health Institute (EPHI) is responsible for "establishing strong and effective public health emergency management [PHEM] system through robust early warning, preparedness, and recovery from various public health emergencies throughout the country." According to the PHEM webpage, while the system takes into account mobilizing the government health resources to effectively and rapidly respond health emergencies, it is unclear if this includes electronic reporting and surveillance systems. [10]

According to the Centers for Disease Control and Prevention (CDC) website and a fact sheet published in 2019, CDC in Ethiopia establishes and utilizes the government information systems, monitor and integrate the national laboratory services to respond to public health emergencies and epidemics. The CDC addresses several infectious diseases including HIV, tuberculosis and malaria. However, both the CDC website and factsheet do not provide indication of an electronic reporting or surveillance system in the country. [11, 12]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 15 January 2021.
[2] Food and Agriculture Organization of the United Nations (FAO). "News Letter: ECTAD Ethiopia Issue#2 January-March 2018." [http://www.fao.org/3/CA0020EN/ca0020en.pdf]. Accessed 15 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[4] Ethiopian Medical Laboratory Association. [https://www.emlaeth.org]. Accessed 14 January 2021.
[5] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 14 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 12 January 2021.
[7] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[8] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 12 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.
[10] Ethiopian Public Health Institute (EPHI). "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 14 January 2021.
[11] Centers for Disease Control and Prevention (CDC). [https://www.cdc.gov/globalhealth/countries/ethiopia/default.htm]. Accessed 14 January 2021.
[12] Centers for Disease Control and Prevention (CDC). "CDC in Ethiopia Fact Sheet." 2019. [https://www.cdc.gov/globalhealth/countries/ethiopia/pdf/Ethiopia_Factsheet-p.pdf]. Accessed 14 January 2021.

2.3.2b

Does the electronic reporting surveillance system collect ongoing or real-time laboratory data?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that the electronic reporting surveillance system in Ethiopia collects ongoing or real-time laboratory data.

According to the Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, "reporting [in the public health sector] is still paper-based at the health facility level with telephone calls, fax and emails being used between the district and zonal levels. At the zonal level, surveillance data are entered into a database and reported to regional and state levels through email." The JEE adds that plans to transition from paper-based reporting to electronic reporting in the near future are at an advanced stage. [1] According to the same source, the Ministry of Livestock and Fisheries was "piloting a mobile apparatus-based Animal Disease Notification and Investigation System (ADNIS) for 19 diseases prioritized for immediate reporting," and the existing paper-based reporting is expected to be replaced by a web-based reporting system. Under this new system, paper reports from the district and sub-district level will be entered into computers at regional veterinary laboratories, and the data will be subsequently sent electronically to Ministry of Agriculture and Livestock Resources. [1]

A news report published by the Food and Agriculture Organization of the United Nations (FAO) in early 2018, indicates the ADNIS system is in place and mentions that training workshops on using the system had been organized in the country, [2] however, there is no publicly available evidence of this system through the Ministry of Health, the Ethiopian Medical laboratory Association (EMLA), Ethiopian Public Health Laboratory Association (EPHLA), and the Ethiopian Public Health Institute websites, and therefore it is unknown if the system collects ongoing or real-time laboratory data. [3, 4, 5, 6]

The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Livestock and Fisheries websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [7, 8, 9]

The Public Health Emergency Management Center under the Ethiopian Public Health Institute (EPHI) is responsible for "establishing strong and effective public health emergency management [PHEM] system through robust early warning, Preparedness and recovery from various public health emergencies throughout the country." According to the PHEM webpage, while the system takes into account mobilizing the government health resources to effectively and rapidly respond health emergencies, it is unclear if this includes electronic reporting and surveillance systems that collects collects ongoing or real-time laboratory data. [10]

According to the Centers for Disease Control and Prevention (CDC) website and a fact sheet published in 2019, CDC in Ethiopia establishes and utilizes the government information systems, monitor and integrate the national laboratory services to respond to public health emergencies and epidemics. The CDC addresses several infectious diseases including HIV, tuberculosis and malaria. However, both the CDC website and factsheet do not provide indication of an electronic reporting or surveillance system collecting ongoing ongoing or real-time laboratory data in the country. [11, 12]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 15 January 2021.
[2] Food and Agriculture Organization of the United Nations (FAO). "News Letter: ECTAD Ethiopia Issue#2 January-March 2018." [http://www.fao.org/3/CA0020EN/ca0020en.pdf]. Accessed 15 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[4] Ethiopian Medical Laboratory Association. [https://www.emlaeth.org]. Accessed 14 January 2021.
[5] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 14 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 12 January 2021.
[7] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 12 January 2021.
[8] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 12January 2021.

[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 12 January 2021.
[10] Ethiopian Public Health Institute (EPHI). "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 14 January 2021.
[11] Centers for Disease Control and Prevention (CDC). [https://www.cdc.gov/globalhealth/countries/ethiopia/default.htm]. Accessed 14 January 2021.
[12] Centers for Disease Control and Prevention (CDC). "CDC in Ethiopia Fact Sheet." 2019. [https://www.cdc.gov/globalhealth/countries/ethiopia/pdf/Ethiopia_Factsheet-p.pdf]. Accessed 14 January 2021.

2.4 SURVEILLANCE DATA ACCESSIBILITY AND TRANSPARENCY

2.4.1 Coverage and use of electronic health records

2.4.1a

Are electronic health records commonly in use?

Electronic health records are commonly in use = 2, Electronic health records are not commonly in use, but there is evidence they are used = 1, No evidence electronic health records are in use = 0

Current Year Score: 1

There is publicly available evidence of electronic health records in Ethiopia, however, there is no evidence suggesting that they are commonly in use.

According to a World Health Organization (WHO) publication in 2015, Ethiopia's electronic health record (EHR) system was introduced in 2008, and it is estimated that 25-50% of primary and secondary health care facilities have EHR systems in place, in addition to 50-75% of tertiary care facilities (e.g. specialized care). [1]

The electronic medical record system page under the Ministry of Health's website does not provide information on the system or how commonly it is used; neither does the Ethiopian health analytics page. [2, 3]

According to an academic study published in the Journal of Health and Medical Informatics in 2017, Ethiopian hospitals and health centers implemented an EHR system called Smart Care. However, since its implementation there have been several problems hindering its widespread usage and successful implementation, including lack of trainings for users. [4]

Another academic study published by the National Library of Medicine in 2015 suggeststhat EHR systems are not widely used in the country because of general dissatisfaction with the system and "the poor service quality, the current practice of double documentation (EHR and paper-based), and partial departmental use of the system in the hospitals." [5]

There is no further evidence suggesting that EHR systems are commonly in use through the Ministry of Health, the Ethiopian Medical laboratory Association (EMLA), Ethiopian Public Health Laboratory Association (EPHLA), and the Ethiopian Public Health Institute websites. [6, 7, 8, 9] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [10, 11, 12]

[1] World Health Organization. 2015. "Ethiopia." [https://www.who.int/goe/publications/atlas/2015/eth.pdf]. Accessed 15 January 2021.
[2] Ministry of Health. "Electronic Medical Record System." [http://www.moh.gov.et/ejcc/en/emr]. Accessed 15 January 2021.

[3] Ministry of Health. "Ethiopian Health Analytics Platform." [http://www.moh.gov.et/ejcc/en/node/33]. Accessed 15 January 2021.
[4] Micheale Berhe; Kidane Tadesse; Gebremedhin Berhe; and Teklit Gebretsadik. 2017. "Evaluation of Electronic Medical Record Implementation from User's Perspectives in Ayder Referral Hospital Ethiopia." Journal of Health & Medical Informatics. [https://www.omicsonline.org/open-access/evaluation-of-electronic-medical-record-implementation-from-usersperspectives-in-ayder-referral-hospital-ethiopia-2157-7420-1000249.php?aid=85647#6]. Accessed 15 January 2021.
[5] Binyam Tilahun and Fleur Fritz. 2015. "Comprehensive Evaluation of Electronic Medical Record System Use and User Satisfaction at Five Low-Resource Setting Hospitals in Ethiopia." [https://pubmed.ncbi.nlm.nih.gov/26007237/]. Accessed 15 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[7] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[8] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 14 January 2021.
[9] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 12 January 2021.
[10] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 14 January 2021.
[11] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 14 January 2021.
[12] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 14 January 2021.

2.4.1b

Does the national public health system have access to electronic health records of individuals in their country?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available suggesting that the Ethiopian national public health system has access to the electronic health records (EHR) of individuals within the country.

According to a World Health Organization (WHO) publication in 2015, Ethiopia's electronic health record (EHR) system was introduced in 2008, and it is estimated that 25-50% of primary and secondary health care facilities have EHR systems in place, in addition to 50-75% of tertiary care facilities (e.g. specialized care). However, the publication does not elaborate on the government's access to the system. [1]

The electronic medical record system page under the Ministry of Health's website does not provide information on the system or how it is used; neither does the Ethiopian health analytics page. [2, 3]

According to an academic study carried out in the Addis Ababa University Health Informatics Program in 2014, Ethiopia's electronic medical record (EMR) system called Smart Care was developed by the Tulane University Technical Assistance Program to Ethiopia (TUTAPE's) and Ethiopian software developers in collaboration with Federal Ministry of Health (FMOH), and consultants from the United States. The application was adapted according to the Ethiopian Health Management Information System (HMIS) reform conducted by the FMOH. [4]

Given that the system was developed in collaboration with the Ministry of Health, it is likely the government has access to the records of patients registered in public hospitals, however this cannot be confirmed as there is no publicly available evidence of the system or how it functions. According to an academic thesis conducted in 2011 by a student at Oulu University of Applied Sciences (Finland), the country has a Smart Care electronic system that is used in public hospitals, and some private clinics have their own form of an electronic medical records. While this implicitly indicates that the Ethiopian government has access to the Smart Care system, it cannot be confirmed given the lack of publicly accessible evidence of the

system or how it functions. [5]

There is no further evidence suggesting that EHR systems are commonly in use through the Ministry of Health, the Ethiopian Medical Laboratory Association (EMLA), Ethiopian Public Health Laboratory Association (EPHLA), and the Ethiopian Public Health Institute websites. [6, 7, 8, 9] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [10, 11, 12]

[1] World Health Organization. 2015. "Ethiopia." [https://www.who.int/goe/publications/atlas/2015/eth.pdf]. Accessed 15 January 2021.
[2] Ministry of Health. "Electronic Medical Record System." [http://www.moh.gov.et/ejcc/en/emr]. Accessed 15 January 2021.
[3] Ministry of Health. "Ethiopian Health Analytics Platform." [http://www.moh.gov.et/ejcc/en/node/33]. Accessed 15 January 2021.
[4] Yeshimebet Kassahun. 2014. "Revitalizing The Smartcare System of Surgery Inpatient Department in Saint Paul Hospital Millennium Medical College." Addis Ababa University; School of Public Health and School of Information Science - Health Informatics Program.
[http://etd.aau.edu.et/bitstream/handle/123456789/14385/Yeshimebet%20Kassahun.pdf?sequence=1&isAllowed=y]. Accessed 15 January 2021.
[5] Tewodros Mengesha. 2011. "Electronic Solutions for Ethiopian Health Sector: Electronic Medical Record (EMR) System." [https://www.theseus.fi/bitstream/handle/10024/36264/Mengesha_Tewodros.pdf?sequence=1&isAllowed=y]. Accessed 15 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[7] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 12 January 2021.
[8] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 14 January 2021.
[9] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 12 January 2021.
[10] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 14 January 2021.
[11] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 14 January 2021.
[12] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 14 January 2021.

2.4.1c

Are there data standards to ensure data is comparable (e.g., ISO standards)?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence that Ethiopia has data standards to ensure data is comparable (e.g., ISO standards).

According to the World Health Organization's (WHO) African Health Observatory profile for Ethiopia, the Ministry of Health placed a strong emphasis on strengthening the national health information system to address gaps in information. It further states that the Ministry prioritized the "standardization of data collection procedures, analysis and reporting." The Ministry also regularly collects data on key epidemic-prone diseases using a standard format developed for Integrated Disease Surveillance and Response, which covers 21 epidemic-prone and notifiable diseases.Nevertheless, there is no elaboration on the standards adopted. [1]

The Ministry of Health's Annual Performance reports for the years 2019/2020 states that the Ministry continuously works on improving health data quality in the country. "The Ministry reformed the health management information system in 2008 with the core principles of simplification, standardization and integration. It also pinpointed improving quality of data to enable better decisions and thus better health outcomes at the heart of the reform." However, the document does not provide details about the standards adopted. [2]

Furthermore, in 2018 the Ethiopian Public Health Institute (EPHI) conducted a Data Quality Review on Ethiopia's HMIS data. The review states that "the proportion of facilities that had appropriately trained staff responsible for data collection and compilation, written guidelines on reporting, and routine process for checking quality of reports was (17, 37 and 39 percent respectively)." The review also found that health facilities had discrepancies in the figures between their reported and sourced documents, and that overall Ethiopia's Health Management Information System (HMIS) data quality remains low, particularly at the health facility level. [3]

Also, the Joint External Evaluation assessment of Ethiopia, published in March 2016, reports that "syndromic surveillance is not standardized and formalized in both public health and animal health sectors." [4] There is no further evidence relevant to data standards in Ethiopia through the Ministry of Health, the Ethiopian Medical Laboratory Association (EMLA), Ethiopian Public Health Laboratory Association (EPHLA), and the Ethiopian Public Health Institute websites. [5, 6, 7, 8] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [9, 10, 11]

[1] World Health Organization African Health Observatory. "Ethiopia: Health Information, Research, Evidence and Knowledge." [http://www.aho.afro.who.int/profiles_information/index.php/Ethiopia:Health_information,_research,_evidence_and_knowledge]. Accessed 15 January 2021.
[2] Ministry of Health. "Annual Performance Report 2019/2020." [http://www.moh.gov.et/ejcc/sites/default/files/2020-11/Annual_Performance_Report_2012%282019_2020%29.pdf]. Accessed 15 January 2021.
[3] Ethiopian Public Health Institute. 2018. "Data Quality Review Final Report." [https://www.ephi.gov.et/images/pictures/download_2011/Ethiopia-Data-Quality-Review-DQR-report--2018.pdf].Accessed 15 January 2021.
[4] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 15 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 14 January 2021.
[6] Ethiopian Medical Laboratory Association. "What We Do." [http://www.emlaeth.org/index.php/about-emla/what-we-do]. Accessed 15 January 2021.
[7] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 15 January 2021.
[8] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 15 January 2021.
[9] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 15 January 2021.
[10] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 15 January 2021.
[11] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 15 January 2021.

2.4.2 Data integration between human, animal, and environmental health sectors

2.4.2a

Is there evidence of established mechanisms at the relevant ministries responsible for animal, human, and wildlife surveillance to share data (e.g., through mosquito surveillance, brucellosis surveillance)?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has established mechanisms at the relevant ministries responsible for animal, human and wildlife surveillance to share data (e.g., through mosquito surveillance, brucellosis surveillance).

According to the Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, animal and human health surveillance systems operate in silos and are not interconnected or interoperable. Although there are several ongoing pilot projects throughout the country to implement and expand community-based surveillance in both public health and animal health sectors, there is no formal mechanism for aligning the respective systems or for the sharing of surveillance information between sectors. The JEE adds that "communication is personal, need-based and irregular", and that a memorandum of understanding between the public health sector and the animal health sector was developed, but not yet signed by the two parties. The JEE notes that two zoonotic diseases (rabies and anthrax) are reported in both systems, however, it is unclear if these diseases are reported separately or jointly by the two systems. [1]

The Food and Agriculture Organization of the United Nations (FAO) has been closely working with the government-led National One Health Steering Committee to put in place the National One Health Strategic Plan (2018 - 2022) and to establish the multi-sectoral technical working groups that coordinate various One Health issues, which according to the Ethiopian Public Health Institute was launched in October 2018. [2, 3] Since mid-2017, the FAO has been supporting these working groups both technically and financially to develop national multi-sectoral prevention, control and response plans for rabies, anthrax and the preparedness and highly pathogenic avian influenza, suggesting that increased cross-sectoral collaboration has recently began taking place. [2] The plans, nonetheless, are not publicly available as of yet. The website of the Ministry of Health does not provide further evidence. [4]

The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [5, 6, 7]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 15 January 2021.
[2] Food and Agriculture Organization of the United Nations. 2nd November 2018. "Robust interactions, practical actions to boost effective One Health programming in Ethiopia." [http://www.fao.org/ethiopia/news/detail-events/fr/c/1162123/]. Accessed 15 January 2021.
[3] Ethiopian Public Health Institute. "One Health MoU Unveiled, Strategic Plan is Launched." [http://www.ephi.gov.et/index.php/news-information/704-one-health-mou-unveiled-strategic-plan-is-launched]. Accessed 15 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 15 January 2021.
[5] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 15 January 2021.
[6] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 15 January 2021.

[7] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 15 January 2021.

2.4.3 Transparency of surveillance data

2.4.3a

Does the country make de-identified health surveillance data on infectious diseases publicly available via reports (or other format) on government websites (such as the Ministry of Health, Ministry of Agriculture, or similar)?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia regularly makes de-identified health surveillance data on infectious diseases publicly available via reports (or other format) on government websites (such as the Ministry of Health, Ministry of Agriculture, or similar).

The COVID-19 monitoring platform, under the website of the Ethiopian Ministry of Health, provides daily reports on the case count, mortality rate and recovery rate. Data is broken down by severity of active cases' health conditions and region. [1] However, updates about communicable diseases aside from COVID-19 statitics are not regularly updated. The Ministry of Health's fact sheets, the latest from 2015, do not include de-identified health surveillance data, although the sheet reports on the disease burden in the country. [2]

The Ministry of Health has published surveillance data on malaria outbreaks across the country, however, the latest available data is from 2013. [3] The Ministry of Health also has a disease prevention and control program in place, however, no surveillance data is made publicly available [4]. The Ethiopian Public Health Institute (EPHI) Publishes weekly epidemiological bulletins that provide weekly updates on disease outbreaks for several communicable diseases including malaria, measles, anthrax, rabies, influenza, and meningitis. The bulletin makes weekly comparisons of disease outbreaks to monitor the spread and concentration of the outbreak and provides graphs depicting the respective disease outbreak over a course of three years. However, the bulletin on EPHI's website was last updated for the week ending the 11 of March 2018. [5] EPHI also published a report in 2015 on National TB / HIV Surveillance which does contain disease outbreak information, however, no more recent updates were available on EPHI's website. [6]

No further evidence regarding de-identified health surveillance data on disease outbreaks is available through the website of the Ministry of Health, the Ethiopian Government Portal. [7, 8] The Ethiopian Ministry of Agriculture and Natural Resources, the Ministry of Livestock and Fisheries, and the Ministry of Defense websites were non-functional during the time of writing this report. [9, 10, 11]

[1] Ministry of Health. "COVID-19 Monitoring Portal." [https://www.covid19.et/covid-19/]. Accessed 16 January 2021.
[2] Ministry of Health. "Fact Sheet." [http://www.moh.gov.et/ejcc/en/node/15]. Accessed 16 January 2021.
[3] Ministry of Health. "Malaria Epidemiological Profile." [http://www.moh.gov.et/ejcc/index.php/en/malariap. Accessed 16 January 2021.
[4] Ministry of Health. "Disease Prevention and Control." [http://www.moh.gov.et/ejcc/en/dpc]. Accessed 16 January 2021.
[5] Ethiopian Public Health Institute. 11th March 2018. "Ethiopian Weekly Epidemiological Bulletin - Vol. 4 / No. 10 - Week 10 - Week Ending 11th March 2018."
[https://www.ephi.gov.et/images/pictures/download2010/Ethiopian_Weekly_Epidemiological_Bulletin_2018_10.pdf]. Accessed 16January 2021.
[6] Ethiopian Public Health Institute. 2015. "Report on National TB/HIV Sentinel Surveillance (April 2010 - June 2015)."
[https://www.ephi.gov.et/images/pictures/Final_National_TB-HIV_Sentinel_Surveillance__OCT_20_FE2015_[1] %20[1].pdf].

Accessed 16 January 2021.
[7] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 15 January 2021.
[8] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.
[9] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 15 January 2021.
[10] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 16 January 2021.
[11] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 16 January 2021.

2.4.3b

Does the country make de-identified COVID-19 surveillance data (including details such as daily case count, mortality rate, etc) available via daily reports (or other formats) on government websites (such as the Ministry of Health, or similar)?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that Ethiopia makes de-identified COVID-19 surveillance data (including details such as daily case count, mortality rate, etc) available via daily reports (or other formats) on government websites (such as the Ministry of Health, or similar).

The COVID-19 monitoring platform, under the website of the Ethiopian Ministry of Health, provides daily reports on the case count, mortality rate, and recovery rate. Data is broken down by severity of active cases' health conditions and region. [1] No further evidence is provided through the Ethiopian Government Portal. [2] The Ethiopian Ministry of Agriculture and Natural Resources, the Ministry of Livestock and Fisheries, and the Ministry of Defense websites were non-functional during the time of writing this report. [8, 9, 10]

[1] Ministry of Health. "COVID-19 Monitoring Portal." [https://www.covid19.et/covid-19/]. Accessed 16 January 2021.
[2] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.
[3] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 16 January 2021.
[4] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 16 January 2021.
[5] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 16 January 2021.

2.4.4 Ethical considerations during surveillance

2.4.4a

Is there legislation and/or regulations that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has laws, regulations, or guidelines that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities.

Ethiopia's Proclamation No. 590 of 2008 on the Freedom of the Mass Media and Access to Information includes individual and mental health under its definition of personal information, however, no provisions specifically safeguard the confidentiality of identifiable health information for individuals. [1] Article 26 of Ethiopia's Constitution, published in 1994, acknowledges the right to privacy, however, explicit reference is made only with regards to personal property and personal correspondences; there is no specific mention of health data. [2]

According to a book titled African Data Privacy Laws, published in 2016, Ethiopia "does not have a legally binding comprehensive data protection law," and the fragmented pieces of legislation that exist are "inadequate to address the challenges of privacy-threatening information technologies." [3]

The Ministry of Health website states that following the Government's reform program launched in 1994, an ethics unit was established in the MoH in 2004 to ensure adherence to the principles of public service ethics. This includes the principle of confidentiality, defined as refraining from disclosing private or confidential information. However, there are no further details about these principles of confidentiality, or any indication of relevant laws, regulations, or guidelines. [4]

The Ministry of Health website does not provide further evidence, neither does the website of the Ethiopian Public Health Institute. [5, 6] The United Nations Conference on Trade and Development UNCTAD's 'Data Protection and Privacy Legislation' database does not provide evidence regulations around confidentiality of identifiable health information in Ethiopia. [7] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [8, 9, 10]

[1] Federal Democratic Republic of Ethiopia. 2008. "Proclamation No. 590/2008 - Freedom of the Mass Media and Access to Information Proclamation." [https://www.refworld.org/docid/4ba7a6bf2.html]. Accessed 16 January 2021.
[2] Government of Ethiopia. 1994. "Constitution of the Federal Democratic Republic of Ethiopia." [https://www.wipo.int/edocs/lexdocs/laws/en/et/et007en.pdf]. Accessed 16 January 2021.
[3] Alebachew Birhanu Enyew. 2016. "African Data Privacy Laws." [https://link.springer.com/chapter/10.1007/978-3-319-47317-8_7]. Accessed 16 January 2021.
[4] Ministry of Health. "Ethics and Anticorruption." [http://www.moh.gov.et/ejcc/en/ethics-and-anticorruption]. Accessed 16 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.
[7] United Nations Conference on Trade and Development (UNCTAD). "Data Protection and Privacy Legislation Worldwide." [https://unctad.org/en/Pages/DTL/STI_and_ICTs/ICT4D-Legislation/eCom-Data-Protection-Laws.aspx]. Accessed 16 January 2021.
[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 16 January 2021.
[9] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 16 January 2021.
[10] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.

2.4.4b

Is there legislation and/or regulations safeguarding the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities, include mention of protections from cyber attacks (e.g., ransomware)?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia has legislation and/or regulations safeguarding the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities, include mention of protections from cyber attacks (e.g., ransomware).

Articles 3, 4, 5, and 6 of Proclamation No. 958 of 2016 on Computer Crimes state that illegal access to computer systems, computer data, computer networks, as well as interference with private data shall result in imprisonment of and/or a fine

which ranges depending on the severity of the crime. [1] However, the Proclamation does not specifically address health surveillance data and protections from cyber attacks.

Ethiopia's Proclamation No. 590 of 2008 on the Freedom of the Mass Media and Access to Information includes individual and mental health under its definition of personal information, however, the proclamation does not include a specific indication of health data and protections from cyber attacks. [2]

Article 26 of Ethiopia's Constitution, published in 1994, acknowledges the right to privacy, however, explicit reference is made only with regards to personal property and personal correspondences; there is no specific mention of health data or cyber-attacks. [3]

According to a book titled African Data Privacy Laws, published in 2016, Ethiopia "does not have a legally binding comprehensive data protection law," and the fragmented pieces of legislation that exist are "inadequate to address the challenges of privacy-threatening information technologies." [4]

The Ministry of Health website states that following the Government's reform program launched in 1994, an ethics unit was established in the MoH in 2004 to ensure adherence to the principles of public service ethics. This includes the principle of confidentiality, defined as refraining from disclosing private or confidential information. There are no further details about these principles of confidentiality, or any indication of relevant laws, regulations, or guidelines to protect from cyber-attacks. [5]

The Ministry of Health website does not provide further evidence, neither does the website of the Ethiopian Public Health Institute. [6, 7] The United Nations Conference on Trade and Development UNCTAD's 'Data Protection and Privacy Legislation' database does not provide evidence regulations around health data's confidentiality or protection from cyber attacks in Ethiopia. [8] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [9, 10, 11]

[1] Federal Democratic Republic of Ethiopia. 2008. "Proclamation No. 590/2008 - Freedom of the Mass Media and Access to Information Proclamation." [https://www.refworld.org/docid/4ba7a6bf2.html]. Accessed 16 January 2021.
[2] Federal Democratic Republic of Ethiopia. 2008. "Proclamation No. 590/2008 - Freedom of the Mass Media and Access to Information Proclamation." [https://www.refworld.org/docid/4ba7a6bf2.html]. Accessed 16 January 2021.
[3] Government of Ethiopia. 1994. "Constitution of the Federal Democratic Republic of Ethiopia." [https://www.wipo.int/edocs/lexdocs/laws/en/et/et007en.pdf]. Accessed 16 January 2021.
[4] Alebachew Birhanu Enyew. 2016. "African Data Privacy Laws." [https://link.springer.com/chapter/10.1007/978-3-319-47317-8_7]. Accessed 16 January 2021.
[5] Ministry of Health. "Ethics and Anticorruption." [http://www.moh.gov.et/ejcc/en/ethics-and-anticorruption]. Accessed 16 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[7] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.
[8] The United Nations Conference on Trade and Development UNCTAD's 'Data Protection and Privacy Legislation' database does not provide evidence regulations around confidentiality of identifiable health information in Ethiopia.
[9] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 16 January 2021.
[10] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 16 January 2021.
[11] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.

2.4.5 International data sharing

2.4.5a

Has the government made a commitment via public statements, legislation and/or a cooperative agreement to share surveillance data during a public health emergency with other countries in the region?

Yes, commitments have been made to share data for more than one disease, Yes, commitments have been made to share data only for one disease = 1, No = 0

Current Year Score: 0

There is insufficient publicly available evidence that Ethiopia has made a commitment via public statements, legislation and/or a cooperative agreement to share surveillance data during a public health emergency with other countries in the region for one or more diseases.

Ethiopia is a member of the African Society for Laboratory Medicine, which is headquartered in Addis Ababa, and places a strong emphasis on early disease detection and response in preventing the rise of new global health emergency threats across the region. [1] While this implicitly suggests that there is a cooperative agreement in place, there is no publicly available evidence on such agreement.

Ethiopia is also a member of the African Regional Influenza Laboratory Network which has implemented sentinel surveillance for Influenza-Like Illness and/or Severe Acute Respiratory Infection and contributing to weekly influenza surveillance reporting according to the WHO. [2] Although this could indicate that there is a cooperative agreement in place, there is no publicly available evidence on such an agreement.

Ethiopia is also a member of the African Center for Disease Control (CDC), which is also working towards strengthening regional disease surveillance. According to the African CDC's strategic plan for the years 2017 to 2020, the strategic objectives for the CDC members include facilitating and strengthening Regional Coordinating Centers (RCC) to promote inter-country and regional collaborations "on surveillance, shared data use, and engagement with laboratory networks." Also, the strategic plan aims "to collaborate with the Member States and ensure that they comply with promoting prevention, surveillance, emergency preparedness and response." [3] However, there is no evidence that Ethiopia has made a cooperative agreement to share surveillance.

The Ministry of Health website does not provide further evidence, neither does the website of the Ethiopian Public Health Institute. [4, 5] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [6, 7, 8]

[1] African Society for Laboratory Medicine. [http://www.aslm.org/]. Accessed 16 January 2021.
[2] World Health Organization Regional Office for Africa. 12th January 2017. "Influenza Surveillance in the WHO African Region - Epi Weeks 1 to 52 2016." [https://www.afro.who.int/sites/default/files/2017-06/afr-influenza-surveillance_epi-weeks-1-to-52.pdf]. Accessed 16 January 2021.
[3] Africa Centers for Disease Control and Prevention. 2017. "Strategic Plan 2017 - 2021." [http://www.ianphi.org/_includes/documents/Strategy%20Africa%20English%20CDC.PDF]. Accessed 16 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[5] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 16 January 2021.
[7] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 16 January 2021.
[8] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.

2.5 CASE-BASED INVESTIGATION

2.5.1 Case investigation and contact tracing

2.5.1a

Is there a national system in place to provide support at the sub-national level (e.g. training, metrics standardization and/or financial resources) to conduct contact tracing in the event of a public health emergency?

Yes, there is evidence that the national government supports sub-national systems to prepare for future public health emergencies = 2, Yes, there is evidence that the national government supports sub-national systems, but only in response to active public health emergencies = 1, No = 0

Current Year Score: 1

There is some publicly available evidence suggesting that Ethiopia has a national system in place to provide support at the sub-national level (e.g. training, metrics standardization and/or financial resources) to conduct contact tracing but only in response to an active public health emergency (Covid-19).

According to Ethiopia's Digital Health Response to COVID-19, published by John Snow Inc website, the USAID Digital Health Activity (DHA) team, supported the Ethiopian Ministry of Health in "the development and implementation of a national COVID-19 surveillance and tracking system. The system supports the enrollment and tracking of suspected cases; captures symptoms, demographics, risk factors, and exposures; creates lab requests; links confirmed cases with contacts, and monitors patient outcomes." The system is intended for national and local health authorities and other relevant users like health facility and lab users. The system's "Contact Registration and Follow-up Program registers each contact of a confirmed case as a new tracked entity instance (or person) and links him/her to the case in the COVID-19 Case Surveillance Program via a 'relationship.' It has a simple repeatable follow-up function that registers symptoms and any follow-up." [1] While this is a COVID-19 ad hoc contact-tracing plan, it is unclear if similar systems exist for other disease outbreaks.

A publication by the World Health Organization states that Ethiopia is among the countries that implemented the Integrated Disease Surveillance and Response (IDSR) system. IDSR aims to "strengthen the disease surveillance system that promotes the integration of surveillance activities in Ethiopia." Several IDSR training programs were held between 2003 and 2004 for health practitioners. [2] No further information is provided on the system suggesting that there is a plan to conduct contact tracing in the event of a public health emergency.

Both the 2013 "Guidelines for Diagnosis, Treatment, and prevention of Leishmaniasis" and the "National Malaria Program for the years 2014 to 2020", do not contain evidence of a national system in place to provide support at the sub-national level to conduct contact tracing in the event of a public health emergency. [3, 4]

According to the Centers for Disease Control and Prevention (CDC) website and a fact sheet published in 2019, CDC in Ethiopia works with partners including the Ministry of Health to maintain programs in training, treatment, counseling, and testing, as well as laboratory capacity building. CDC further establishes and utilizes the government information systems, monitor and integrate the national laboratory services to respond to public health emergencies and epidemics. The CDC addresses several infectious diseases including HIV, tuberculosis, and malaria. However, both the CDC website and factsheet do not provide an indication of a national plan in place for conducting contact tracing in the event of a public health emergency. [5, 6]

The websites of the Ethiopian Medical Laboratory Association (EMLA), Ethiopian Public Health Laboratory Association (EPHLA), and the Ministry of Health do not provide evidence on this matter. [7, 8, 9]The Ethiopian Ministry of Agriculture and

Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [10, 11, 12]

[1] John Snow Inc. (JSI). "Ethiopia's Digital Health Response to COVID-19." [https://www.jsi.com/ethiopias-digital-health-response-to-covid-19/]. Accessed 16 January 2021.
[2] World Health Organization. "Update: Integrated Diseases Surveillance and Response implementation in Ethiopia." [https://www.who.int/countries/eth/areas/surveillance/en/idsr_implementation.pdf]. Accessed 16 January 2021.
[3] World Health Organization. 2013. "Guidelines for Diagnosis, Treatment and Prevention of Leishmaniasis in Ethiopia."[https://www.who.int/leishmaniasis/burden/Guideline_for_diagnosis_treatment_and_prevention_of_leishmaniasis_in_Ethiopia.pdf]. Accessed 16 January 2021.
[4] Ministry of Health. 2014 "National Malaria Program: Monitoring and Evaluation Plan 2014-2020."[https://www.vivaxmalaria.org/sites/p-vivax/files/content/attachments/2019-06-04/National%20Malaria%20Program%20Monitoring%20and%20Evaluation%20Plan%202014-2020.pdf]. Accessed 16 January 2021.
[5] Centers for Disease Control and Prevention (CDC). [https://www.cdc.gov/globalhealth/countries/ethiopia/default.htm]. Accessed 16 January 2021.
[6] Centers for Disease Control and Prevention (CDC). "CDC in Ethiopia Fact Sheet." 2019. [https://www.cdc.gov/globalhealth/countries/ethiopia/pdf/Ethiopia_Factsheet-p.pdf]. Accessed 16 January 2021.
[7] Ethiopian Medical Laboratory Association. [https://www.emlaeth.org]. Accessed 16 January 2021.
[8] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php]. Accessed 16 January 2021.
[9] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 202.
[10] Ministry of Agriculture and Natural

2.5.1b

Does the country provide wraparound services to enable infected people and their contacts to self-isolate or quarantine as recommended, particularly economic support (paycheck, job security) and medical attention?

Yes, both economic support and medical attention are provided = 2, Yes, but only economic support or medical attention is provided = 1, No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia provides wraparound services to enable infected people and their contacts to self-isolate or quarantine as recommended, particularly economic support (paycheck, job security) and medical attention.

In response to COVID-19, the Ministry of Health issued the "National Comprehensive COVID-19 Management Handbook" which includes self-isolation and quarantine guidelines for the suspected and confirmed cases to contain the spread of the virus; confirmed cases get the necessary medical attention. The handbook, nonetheless, does not mention any economic support provided neither for confirmed nor suspected cases. [1]

Both the 2013 Guidelines for Diagnosis, Treatment and prevention of Leishmaniasis and the National Malaria Program for the years 2014 to 2020, do not contain evidence of such wraparound services enabling suspected cases to self-isolate and while receiving medical and economic support. [2, 3] There is no evidence of wraparound services to enable cases and suspected cases to self-isolate as recommended particularly economic support and medical attention through the website of the Ministry of Health, the Ethiopian Medical Laboratory Association (EMLA) website, and Ethiopian Public Health Laboratory Association (EPHLA) website. [4, 5, 6] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of

Defense websites were non-functional during the time of writing this report. [7, 8, 9]

[1] Ministry of Health. 2020. "National Comprehensive COVID-19 Management Handbook." [http://www.moh.gov.et/ejcc/sites/default/files/2020-04/COVID%2019%20Handbook%20for%20health%20professionals%20FMOH%202020.pdf]. Accessed 16 January 2021.
[2] World Health Organization. 2013. "Guidelines for Diagnosis, Treatment and Prevention of Leishmaniasis in Ethiopia."[https://www.who.int/leishmaniasis/burden/Guideline_for_diagnosis_treatment_and_prevention_of_leishmaniasis_in_Ethiopia.pdf]. Accessed 16 January 2021.
[3] Ministry of Health. 2014 "National Malaria Program: Monitoring and Evaluation Plan 2014-2020."[https://www.vivaxmalaria.org/sites/p-vivax/files/content/attachments/2019-06-04/National%20Malaria%20Program%20Monitoring%20and%20Evaluation%20Plan%202014-2020.pdf]. Accessed 16 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 202.
[5] Ethiopian Medical Laboratory Association. [https://www.emlaeth.org]. Accessed 16 January 2021.
[6] Ethiopian Public Health Laboratory Association. [http://etphla.org/index.php].Accessed 16 January 2021.
[7] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 16 January 2021.
[8] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 16 January 2021.
[9] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.

2.5.1c

Does the country make de-identified data on contact tracing efforts for COVID-19 (including the percentage of new cases from identified contacts) available via daily reports (or other format) on government websites (such as the Ministry of Health, or similar)?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia makes de-identified data on contact tracing efforts for COVID-19 (including the percentage of new cases from identified contacts) available via daily reports (or other format) on government websites (such as the Ministry of Health, or similar).

The COVID-19 monitoring platform, under the website of the Ethiopian Ministry of Health, provides daily reports on the case count, mortality rate and recovery rate. Data is broken down by severity of active cases' health conditions and region. The platform, however, does not include contact tracing information. [1]

According to the National Comprehensive COVID-19 Management Handbook, published by the Ministry of Health, the country conducts several contact-tracing mechanisms for COVID-19 such as engaging with local communities and seek their support in contacts identification, in addition to hiring local contact tracers and volunteers from local communities. [2] The contact tracing, nonetheless, is not publicly available.

No further evidence is provided through the Ministry of Health website and the Ethiopian Government Portal. [3, 4] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of writing this report. [5, 6]

[1] Ministry of Health. "COVID-19 Monitoring Portal." [https://www.covid19.et/covid-19/]. Accessed 16 January 2021.
[2] Ministry of Health. 2020. "National Comprehensive COVID-19 Management Handbook." [http://www.moh.gov.et/ejcc/sites/default/files/2020-

04/COVID%2019%20Handbook%20for%20health%20professionals%20FMOH%202020.pdf]. Accessed 16 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[4] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.
[5] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 16 January 2021.
[6] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 16 January 2021.

2.5.2 Point of entry management

2.5.2a

Is there a joint plan or cooperative agreement between the public health system and border control authorities to identify suspected and potential cases in international travelers and trace and quarantine their contacts in the event of a public health emergency?

Yes, plan(s)/agreement(s) are in place to prepare for future public health emergencies = 2, Yes, but plan(s)/agreement(s) are in place only in response to active public health emergencies = 1, No = 0

Current Year Score: 1

There is publicly available evidence that Ethiopia has a joint plan or cooperative agreement between the public health system and border control authorities to identify suspected and potential cases in international travelers and trace and quarantine their contacts but only in response to active public health emergencies (Covid-19).

The "Quarantine and Border Control Implementation Guide" published in July 2020 by the Ethiopian Public Health Institute of the Ministry of Health, includes the country's border control measures adopted in response to COVID-19. Among other restrictions, the document states that passengers should quarantine at one of the government centers for a week, where a specimen is collected on the sixth day. People with positive results are treated according to the country's protocol. Also, according to the same source, health desks at the airports are established to facilitate testing and dealing with symptomatic passengers. However, besides COVID-19, there is no reference to any other existing cooperation between the Ministry of Health and the border authorities; and it is unclear if similar procedures are followed during other health outbreaks. [1]

There is no evidence of such border crossing agreement in Ethiopia through the websites of the Ministry of Health, the Ministry of Transportation, and the Ethiopian Government Portal. [2, 3, 4] The website of the Ministry of Defense was non-functional during the time of writing this report. [5]

[1] Ethiopian Public Health Institute. 2020 "COVID-19 Prevention and Control: The Quarantine and Border Control Implementation Guide." [https://www.ephi.gov.et/images/novel_coronavirus/EPHI_PHEOC_COVID-19_Quarantine_Implementation_Guide_English.pdf].
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[3] Ministry of Transportation. [http://www.motr.gov.et/web/guest/home].Accessed 16 January 2021.
[4] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.
[5] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 16 January 2021.

2.6 EPIDEMIOLOGY WORKFORCE

2.6.1 Applied epidemiology training program, such as the field epidemiology training program, for public health professionals and veterinarians (e.g., Field Epidemiology Training Program [FETP] and Field Epidemiology Training Program for Veterinarians [FETPV])

2.6.1a

Does the country meet one of the following criteria?
- Applied epidemiology training program (such as FETP) is available in country
- Resources are provided by the government to send citizens to another country to participate in applied epidemiology training programs (such as FETP)

Needs to meet at least one of the criteria to be scored a 1 on this measure. , Yes for both = 1 , Yes for one = 1 , No for both = 0

Current Year Score: 1

Ethiopia does have an established Field Epidemiology Training Program (FETP) available in the country, as well as regional and international partnerships related to FETP, however, there is no evidence of resources provided by the government to send citizens to other countries to participate in applied epidemiology training programs.

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, the Ethiopian Field Epidemiology Training Program (EFETP) started in 2009. Eight universities and 41 field bases had enrolled 198 EFETP residents. These universities and field bases provide basic and advanced FETPS, including a public health master's program focused on infectious disease fieldwork; for example, the advanced FETP is in place since 2011 and had trained over 100 epidemiologists from different backgrounds such as medical doctors, veterinarians, and biologists. The JEE also notes that "there is a strong international commitment for EFETPs in Ethiopia" and that there is a strong international collaboration in the area of public health training with the United States Centers for Disease Control and Prevention (CDC) through the Ethiopian CDC. [1]

Ethiopia is also a member of the African Field Epidemiology Network and the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET). [2, 3] In 2018, the TEPHINET reported that over 1,000 people have graduated from the three-month Frontline program. [2] However, there is no evidence of resources provided by the government to send citizens to other countries to participate in such applied epidemiology training programs. The websites of the Ethiopian Public Health Institute (EPHI), the website of the Ministry of Health, and the Ethiopian Government Portal do not provide further evidence [4, 5, 6]. The Ethiopian Ministry of Agriculture and Natural Resources website was non-functional during the time of writing this report. [7]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[2] Training Programs in Epidemiology and Public Health Interventions Network. "Ethiopia Field Epidemiology and Laboratory Training Program." [https://www.tephinet.org/training-programs/ethiopia-field-epidemiology-and-laboratory-training-program]. Accessed 16 January 2021.
[3] United States Embassy in Ethiopia. June 2018. "U.S. Government, Partners Organize Second Annual Ethiopian Field Epidemiology & Laboratory Training Program Conference in Addis Ababa." [https://et.usembassy.gov/u-s-government-partners-organize-second-annual-ethiopian-field-epidemiology-laboratory-training-program-conference-in-addis-ababa/]. Accessed 16 January 2021.

[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[6] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.
[7] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 16 January 2021.

2.6.1b

Are the available field epidemiology training programs explicitly inclusive of animal health professionals or is there a specific animal health field epidemiology training program offered (such as FETPV)?

Yes = 1 , No = 0

Current Year Score: 1

Ethiopia's Field Epidemiology Training Programme (FETP) is inclusive of animal health professionals.

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, the Ethiopian Field Epidemiology Training Program (EFETP) started in 2009. Eight universities and 41 field bases had enrolled 198 EFETP residents. These universities and field bases provide basic and advanced FETPS, including a public health master's program focused on infectious disease fieldwork; for example, the advanced FETP is in place since 2011 and had trained over 100 epidemiologists from different backgrounds including veterinarians, medical doctors, and biologists. [1]

Additionally, in 2018, both the Food and Agriculture Organization of the United Nations (FAO) and the Institute for Infectious Animal Diseases (IIAD) at Texas A&M AgriLife Research, launched the In-Service Applied Veterinary Epidemiology (ISAVET) program in 14 countries, including Ethiopia. [2, 3] The program is a four-month frontline field epidemiology program to train veterinary field epidemiologists. [4]

The websites of the Ethiopian Public Health Institute (EPHI), the website of the Ministry of Health, and the Ethiopian Government Portal do not provide further evidence [5, 6, 7]. The Ethiopian Ministry of Agriculture and Natural Resources website was non-functional during the time of writing this report. [8]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[2] Food and Agriculture Organisation (FAO) of the United Nations. October 2018. "New training for veterinarians in 14 African countries to help combat infectious diseases." [http://www.fao.org/emergencies/fao-in-action/stories/stories-detail/en/c/1161401]. Accessed 16 January 2021.
[3] Institute for Infectious Animal Diseases. "Frontline ISAVET." [https://iiad.tamu.edu/frontline-isavet]. Accessed 16 January 2021.
[4] Food and Agriculture Organisation (FAO) of the United Nations. October 2019. "First FAO ISAVET training programme held in Uganda." [http://www.fao.org/resilience/news-events/detail/en/c/1171750]. Accessed 16 January 2021.
[5] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[7] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 16 January 2021.
[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 16 January 2021.

2.6.2 Epidemiology workforce capacity

2.6.2a

Is there public evidence that the country has at least 1 trained field epidemiologist per 200,000 people?

Yes = 1 , No = 0

Current Year Score: 0

2020

Completed JEE assessments; Economist Impact analyst qualitative assessment based on official national sources, which vary by country

Category 3: Rapid response to and mitigation of the spread of an epidemic

3.1 EMERGENCY PREPAREDNESS AND RESPONSE PLANNING

3.1.1 National public health emergency preparedness and response plan

3.1.1a

Does the country have an overarching national public health emergency response plan in place which addresses planning for multiple communicable diseases with epidemic or pandemic potential?

Evidence that there is a plan in place, and the plan is publicly available = 2, Evidence that the plan is in place, but the plan is not publicly available OR, Disease-specific plans are in place, but there is no evidence of an overarching plan = 1, No evidence that such a plan or plans are in place = 0

Current Year Score: 2

Ethiopia has an overarching national public health emergency response plans in place which address planning for multiple communicable diseases with epidemic or pandemic potential.

In 2015, the Ethiopian Public Health Institute (EPHI) published its overarching strategic plan for the years 2015 to 2020, which among its other thematic areas is public health emergency management. The plan discusses Ethiopia's progress and objectives regarding public health surveillance, public health emergency risk mapping, and health emergency preparedness. The plan also includes performance measures. For example, by the end of 2020 EPHI seeks to increase the proportion of affected people provided with rehabilitation services from 36% to 95% and avert 95% of public health risks amongst other objectives. [1]

While the 2015 strategic plan is the most recent overarching national document, EPHI, in 2012, have also published the "Public Health Emergency Management Guidelines," which includes overarching detailed guidelines pertaining to health emergency preparedness, logistics and capacity building, early warning and surveillance, response, recovery, monitoring, and evaluation. [2]

Additionally, in 2013 Ethiopia adopted an overarching national policy and strategy on disaster risk management (DRM), which

includes general directions and major implementation strategies, including a decentralized DRM system, early warning and risk assessment, information management, and capacity building. [3, 4] According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, a DRM Steering Committee and several task forces were established, along with the development of guidelines and operational documents to operationalize the DRM policy. The JEE also notes that a multisectoral "Emergency Preparedness and Response Plan (EPRP) is developed on a yearly basis and all relevant ministries are required to prepare their own EPRPs. The JEE adds that a Humanitarian Requirements Document, which is updated annually with the support of international partners, captures the humanitarian needs in the country, including the needs of the health sector. [4]

According to a news release by EPHI, the Ministry of Health in collaboration with EPHI and several line ministries such as the Ministry of Agriculture and Livestock Resources, the Ethiopian Environmental Protection Authority and the Ethiopian Wildlife Conservation Authority, began developing a National Action Plan for Health Security in November 2017; [5] however, the plan does not seem to be available online.

[1] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 16 January 2021.
[2] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 16 January 2021.
[3] Government of the Federal Democratic Republic of Ethiopia. 2013. "National Policy and Strategy on Disaster Risk Management." [http://www.dppc.gov.et/downloadable/Documentation/Ethiopia_National%20Policy%20And%20Strategy%20on%20DRM%202014.pdf]. Accessed 16 January 2021.
[4] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[5] Ethiopian Public Health Institute. "National Action Plan for Health Security Being Developed." [https://www.ephi.gov.et/index.php/news-information/633-national-action-plan-for-health-security-being-developed]. Accessed 16 January 2021.

3.1.1b

If an overarching plan is in place, has it been updated in the last 3 years?

Yes = 1 , No /no plan in place= 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia's overarching national public health response plan have been updated in the past three years.

In 2015, the Ethiopian Public Health Institute (EPHI) published its overarching strategic plan for the years 2015 to 2020, which among its other thematic areas is public health emergency management. The plan discusses Ethiopia's progress and objectives regarding public health surveillance, public health emergency risk mapping, and health emergency preparedness. The plan also includes performance measures. [1]

The EPHI's website does not include evidence suggesting that the overarching strategic plan was updated during the past three years. [2]

EPHI also published its overarching Public Health Emergency Management Guidelines in 2012, which includes overarching

detailed guidelines pertaining to health emergency preparedness, logistics and capacity building, early warning and surveillance, response, recovery, monitoring, and evaluation. There is no evidence of an updated version since then. [3]

Additionally, in 2013 Ethiopia adopted an overarching national policy and strategy on disaster risk management (DRM), which includes general directions and major implementation strategies, including a decentralized DRM system, early warning and risk assessment, information management, and capacity building. [4, 5]

However, there is no evidence suggesting that the strategy was updated in the past three years. According to a news release by EPHI, the Ministry of Health in collaboration with EPHI and several line ministries such as the Ministry of Agriculture and Livestock Resources, the Ethiopian Environmental Protection Authority and the Ethiopian Wildlife Conservation Authority, began developing a National Action Plan for Health Security in November 2017; [6] however, the plan does not seem to be available online.

[1] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 16 January 2021.
[2] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 12 January 2021.
[3] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 16 January 2021.
[4] Government of the Federal Democratic Republic of Ethiopia. 2013. "National Policy and Strategy on Disaster Risk Management." [http://www.dppc.gov.et/downloadable/Documentation/Ethiopia_National%20Policy%20And%20Strategy%20on%20DRM%202014.pdf]. Accessed 16 January 2021.
[5] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[6] Ethiopian Public Health Institute. "National Action Plan for Health Security Being Developed." [https://www.ephi.gov.et/index.php/news-information/633-national-action-plan-for-health-security-being-developed]. Accessed 16 January 2021.

3.1.1c

If an overarching plan is in place, does it include considerations for pediatric and/or other vulnerable populations?
Yes = 1 , No /no plan in place= 0

Current Year Score: 1

There is publicly available evidence that Ethiopia's national overarching health emergency response plans include considerations for pediatric and/or other vulnerable populations

The Ethiopian Public Health Institute (EPHI) overarching strategic plan for the years 2015 to 2020 outlines its national objective of improving health emergency responses and rehabilitation services with consideration of the needs of "vulnerable populations with limited access to health services such as displaced or nomadic groups." [1]

The EPHI's Public Health Emergency Management Guidelines, published in 2012, also includes several overarching national considerations for vulnerable populations defined as young children, pregnant mothers, nomads, pastoralists, displaced persons, or refugees. For example, under the vulnerability assessment and risk mapping section, there are contextualization guidelines that entail identifying if there are vulnerable groups in the community including young children, pregnant mothers, nomads, pastoralists, displaced persons, or refugees, as well as their location and geographical distribution. The

guidelines also include a Recovery from Public Health Emergency section stating that there will be a parallel plan in place and activities aimed at protecting lives and reducing disease, malnutrition, and disabilities among the vulnerable populations in affected areas. Furthermore, the guidelines contain roles and responsibilities of different actors at different levels in the country, where officials at the regional, zonal and wordea (district) levels are required to ensure that the needs of vulnerable groups are well covered, including those with limited access to government services. [2]

No further evidence is provided through the website of the Ministry of Health. [3]

[1] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 16 January 2021.
[2] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 16 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.

3.1.1d

Does the country have a publicly available plan in place specifically for pandemic influenza preparedness that has been updated since 2009?

Yes = 1 , No = 0

Current Year Score: 0

2020

WHO Strategic Partnership for IHR and Health Security (SPH)

3.1.2 Private sector involvement in response planning

3.1.2a

Does the country have a specific mechanism(s) for engaging with the private sector to assist with outbreak emergency preparedness and response?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence that Ethiopia has a specific mechanism for engaging with the private sector to assist with outbreak emergency preparedness and response.

The Ministry of Health's Health Sector Development Programme for the years 2010 to 2015 aims at promoting inter-sectoral collaboration, including the involvement of NGOs and the private sector, as well as promoting public-private partnerships in the health sector. [1] However, there is no specific mention of a mechanism to engage with the private sector such as an established agreement or a strategy document.

The Ethiopian National Policy and Strategy on Disaster Risk Management, published in 2013, states that "disaster risk management shall be mainstreamed into development plans of government institutions and private sector organizations" and places an emphasis on the "continued improvement in participation and contribution of the private sector and media as far as the implementation of Disaster Risk Management Policy and Strategy is concerned", however, no further details are provided on an agreement or a strategy to engage with the private sector. [2] No further evidence through the websites of

the Ministry of Health and the Ethiopian Public Health Institute. [3, 4]

[1] Ministry of Health. 2010. "Health Sector Development Program IV 2010/11 - 2014/15". [https://www.healthynewbornnetwork.org/hnn-content/uploads/HSDP-IV-Final-Draft-October-2010-2.pdf]. Accessed 16 January 2021.
[2] The Federal Democratic Republic of Ethiopia. 2013. "The Ethiopian National Policy and Strategy on Disaster Risk Management." [https://www.refworld.org/docid/5a2689ea4.html]. Accessed 17 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.

3.1.3 Non-pharmaceutical interventions planning

3.1.3a

Does the country have a policy, plan and/or guidelines in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic?

Yes, a policy, plan and/or guidelines are in place for more than one disease= 2, Yes, but the policy, plan and/or guidelines exist only for one disease = 1, No = 0

Current Year Score: 0

There is insufficient publicly available evidence that Ethiopia has a policy, plan and/or guidelines in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic for one or more diseases.

The "Quarantine and Border Control Implementation Guide" published in July 2020 by the Ethiopian Public Health Institute of the Ministry of Health, includes the country's border control measures adopted in response to COVID-19. Among other restrictions, the document states that passengers should quarantine at one of the government centers for a week, where a specimen is collected on day six. People with positive results are treated according to the country's protocol. Besides that, there are no NPIs included in the guide. [1] The guide is crafted specifically in response to COVID-19 and there is no mention that the same procedures could be used in response to other pandemics.

Additionally, a study published by MedRXIV in November 2020 on NPIs impact during the COVID-19 pandemic in Ethiopia, recommends that "the government should give attention to the strict implementation of the existing NPIs [like hand washing, wearing face coverings or social distancing] or impose additional public health measures." This implicitly suggests the lack of policies, plans, and/or guidelines to implement NPIs during an epidemic or pandemic. [2]

The Ethiopian Public Health Institute (EPHI) published disease-specific emergency preparedness and response plans, such as Ebola, measles, and cholera plans, which provide detailed risk-reduction strategies for the respective pandemics. However, these plans do not include information on NPIs. [3, 4, 5] The EPHI's strategic plan for the years 2015 to 2020, published in 2015, although includes a section on public health emergency management, the guidelines do not touch upon NPIs; [6] neither does the EPHI's Public Health Emergency Management Guidelines, published in 2012. [7] The website of the Ministry of Health, the Ethiopian Government Portal and the EPHI website do not provide further evidence. [8, 9, 10] The website of the Ministry of Defense was non-functional during the time of writing this report. [11]

[1] Ethiopian Public Health Institute. 2020 "COVID-19 Prevention and Control: The Quarantine and Border Control Implementation Guide." [https://www.ephi.gov.et/images/novel_coronavirus/EPHI_PHEOC_COVID-19_Quarantine_Implementation_Guide_English.pdf]. Accessed 20 January 2021.
[2] Ejigu, B.; Asfaw, M.; Cavalerie, L.; Abebaw, T.; Nanyingi, M.; Baylis, M. 2020. "Assessing the impact of non-pharmaceutical

interventions (NPI) on the dynamics of COVID-19: A mathematical modelling study in the case of Ethiopia." [https://www.medrxiv.org/content/10.1101/2020.11.16.20231746v1.full]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute. 2014. "Ebola Viral Disease: Interim Guideline." [http://www.ephi.gov.et/images/pictures/Gudeline%20Ebola%20latest%20final%20combined.pdf]. Accessed 20 January 2021.
[4] Ethiopian Public Health Institute. 2012. "Guidelines on Measles Surveillance and Outbreak Management - 3rd Edition." [https://www.ephi.gov.et/images/guidelines/guideline-on-measles-surveillance-and-outbreak-management2012.pdf]. Accessed 20 January 2021.
[5] Ethiopian Public Health Institute. 2011. "Guideline on Cholera Outbreak Management - Ethiopia." [https://www.ephi.gov.et/images/guidelines/national-cholera-guideline.pdf]. Accessed 20 January 2021.
[6] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 16 January 2021.
[7] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 16 January 2021.
[8] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[9] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[10] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.
[11] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.

3.2 EXERCISING RESPONSE PLANS

3.2.1 Activating response plans

3.2.1a

Does the country meet one of the following criteria?
- Is there evidence that the country has activated their national emergency response plan for an infectious disease outbreak in the past year?
- Is there evidence that the country has completed a national-level biological threat-focused exercise (either with WHO or separately) in the past year?
Needs to meet at least one of the criteria to be scored a 1 on this measure. , Yes for both = 1 , Yes for one = 1 , No for both = 0

Current Year Score: 1

There is insufficient evidence that Ethiopia activated their national emergency response plan for an infectious disease outbreak in the past year; however, there is evidence that the country completed a national-level biological threat-focused exercise (either with WHO or separately) in the past year.

The websites of the Ministry of Health and the Ethiopian Public Health Institute do not provide evidence suggesting that the country activated the national emergency response plan due to a disease outbreak in the past year. [1, 2]

According to the World Health Organization's (WHO) biological exercises page, Ethiopia conducted a simulation exercise in March 2020. The exercise objectives are: Review the operation management process for a suspected case of COVID-19; Confirm arrangements for notification, coordination and internal communications before and after the confirmation of a COVID-19 case; Confirm procedures related to the management of a suspected cases before and after laboratory confirmation; Review plans to clarify lines of accountability (roles & responsibilities) and communication to enable a timely, well-coordinated and effective response; Review risk and media communications plans. [3]

No further evidence is provided through the website of the Ethiopian Government Portal. [4] The website of the Ministry of Defense was were non-functional during the time of writing this report. [5]

[1] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[2] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 31 January 2021.
[3] World Health Organization. Ethiopia - Simulation Exercise. [https://extranet.who.int/sph/simulation-exercise?region=All&country=133]. Accessed 20 January 2021.
[4] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.
[5] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.

3.2.1b

Is there evidence that the country in the past year has identified a list of gaps and best practices in response (either through an infectious disease response or a biological-threat focused exercise) and developed a plan to improve response capabilities?

Yes, the country has developed and published a plan to improve response capacity = 2 , Yes, the country has developed a plan to improve response capacity, but has not published the plan = 1 , No = 0

Current Year Score: 1

There is evidence that in the past year Ethiopia identified a list of gaps and best practices in response (either through an infectious disease response or a biological-threat-focused exercise).

The list of the after-action reviews on the World Health Organization's (WHO) Strategic Partnership Portal, indicated that an after-action review for Cholera was conducted in October 2019. However, there is no evidence this was followed by publishing and development of a plan. [1] No further evidence is provided through the Ministry of Health's recent press releases, the Ethiopian Public Health Institute website, and the Ethiopian Government Portal. [2, 3, 4]

[1] WHO Strategic Partnership Portal. "After Action Review." [https://extranet.who.int/sph/after-action-review]. Accessed 20 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[4] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.

3.2.2 Private sector engagement in exercises

3.2.2a

Is there evidence that the country in the past year has undergone a national-level biological threat-focused exercise that has included private sector representatives?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that in the past year Ethiopia has undergone a national-level biological threat-focused exercise that has included private sector representatives.

Neither the list of the after-action reviews on the World Health Organization's (WHO) Strategic Partnership Portal, nor the

WHO simulation exercise page indicate that Ethiopia has ever conducted or planned for an after-action review. According to the World Health Organization's (WHO) biological exercises page, Ethiopia conducted a simulation exercise in March 2020. However, there is no evidence of private sector participation in this exercise. [1, 2] No further evidence is provided through the Ministry of Health's recent press releases, the Ethiopian Public Health Institute website, and the Ethiopian Government Portal. [3, 4, 5]

[1] WHO Strategic Partnership Portal. "After Action Review." [https://extranet.who.int/sph/after-action-review]. Accessed 20 January 2021.
[2] World Health Organization. Ethiopia - Simulation Exercise. [https://extranet.who.int/sph/simulation-exercise?region=All&country=133]. Accessed 20 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[5] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.

3.3 EMERGENCY RESPONSE OPERATION

3.3.1 Emergency response operation

3.3.1a

Does the country have in place an Emergency Operations Center (EOC)?

Yes = 1 , No = 0

Current Year Score: 1

Ethiopia does have an Emergency Operations Center (EOC) in place.

Ethiopia's EOC is in the Public Health Emergency Management Center (PHEM), under the leadership of a Deputy Director-General of the Ethiopian Public Health Institute (EPHI). [1, 2] According to EPHI, the EOC has been activated twice; once in August 2017 in response to an Acute Watery Diarrhea outbreak and another time in May 2018 as a preemptive measure in response to the Ebola outbreak in the Democratic Republic of the Congo. [3, 4]

According to the Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, during the Ebola outbreak, the EOC was activated to collect information and disseminate it to relevant experts in the EPHI and the Ministry of Health. Nonetheless, the JEE states that the EOC's incident management system for health emergency management is not well defined, and the EOC plans and procedures need to be further developed and tested to ensure that the EOC performs its core functions. The EOC, the JEE adds, is not linked with other offices or systems, and further development of communications technology and information system is needed. [2]

Furthermore, according to a news release published by the U.S. embassy in Ethiopia, in June of 2018 Ethiopia opened its first regional EOC in the Amhara region, to "serve as a springboard for an expanded EOC network across Ethiopia to ensure better coordination and responses between regional and national health institutions." [5] In November and December 2018, the U.S. Centers for Disease Control and Prevention facilitated a public health emergency management training in coordination with the EPHI, which included training on managing virtual emergency operations centers (vEOC), that allows users to share data, track resources, maintain communication and provide reports in real-time through computers and mobile devices at any location. [6]

[1] Ethiopian Public Health Institute. "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 16 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[3] Ethiopian Public Health Institute. "Ebola Virus Disease Information." [http://www.ephi.gov.et/index.php/public-health-emergency/ebola-viral-disease-information]. Accessed 16 January 2021.
[4] Ethiopian Public Health Institute. 13th August 2017. "Ethiopian Weekly Epidemiological Bulletin: Vol. 3 / No. 32."[https://www.ephi.gov.et/images/pictures/download2009/Ethiopian_Weekly_Epidemiological_Bulletin_2017_32.pdf. Accessed 16 January 2021.
[5] United States Embassy in Ethiopia. 22nd June 2018. "U.S. Ambassador Inaugurates first Regional Public Health Institute, Launches Emergency Operation Center in Amhara Region." [https://et.usembassy.gov/u-s-ambassador-inaugurates-first-regional-public-health-institute-launches-emergency-operation-center-in-amhara-region/]. Accessed 16 January 2021.
[6] United States Embassy in Ethiopia. 18th December 2018. "CDC Partners with EPHI to Build Capacity at Public Health Emergency Operation." [https://et.usembassy.gov/cdc-partners-with-ethiopian-public-health-institute-to-build-capacity-at-public-health-emergency-operation/]. Accessed 16 January 2021.

3.3.1b

Is the Emergency Operations Center (EOC) required to conduct a drill for a public health emergency scenario at least once per year or is there evidence that they conduct a drill at least once per year?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia's Emergency Operations Center (EOC) is required to conduct a drill at least once per year.

The Public Health Emergency Management page on the Ethiopian Public Health Institute (EPHI) website, which the EOC is part of, does not provide an indication of an annual drill or a drill requirement. [1] The Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, does not indicate that Ethiopia's EOC conducts or is required to conduct a drill at least once per year. [2] The websites of the Ministry of Health and EPHI do not provide further evidence. [3, 4]

[1] Ethiopian Public Health Institute. "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 16 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.

3.3.1c

Is there public evidence to show that the Emergency Operations Center (EOC) has conducted within the last year a coordinated emergency response or emergency response exercise activated within 120 minutes of the identification of the public health emergency/scenario?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that within the last year Ethiopia's Emergency Operations Center (EOC) has conducted a coordinated emergency response or emergency response exercise activated within 120 minutes of the identification of the public health emergency/scenario.

The Public Health Emergency Management section of the Ethiopian Public Health Institute (EPHI) website, which the EOC part of, does not provide such evidence. [1]

According to the Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, there is no specific training program for Ethiopia's Public Health Emergency Operations Center (PHEOC) staff and no regular exercises to test PHEOC plans, procedures, or response capabilities. The JEE, however, notes that "exercises have been conducted in the context of Ebola virus disease preparedness and avian influenza at the airport." [2]

The websites of the Ministry of Health and EPHI do not provide further evidence. [3, 4]

[1] Ethiopian Public Health Institute. "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 16 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.

3.4 LINKING PUBLIC HEALTH AND SECURITY AUTHORITIES

3.4.1 Public health and security authorities are linked for rapid response during a biological event

3.4.1a

Does the country meet one of the following criteria?
- Is there public evidence that public health and national security authorities have carried out an exercise to respond to a potential deliberate biological event (i.e., bioterrorism attack)?
- Are there publicly available standard operating procedures, guidelines, memorandums of understanding (MOUs), or other agreements between the public health and security authorities to respond to a potential deliberate biological event (i.e., bioterrorism attack)?

Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 0

There is insufficient publicly available evidence suggesting that the Ethiopian public health and national security authorities have carried out an exercise to respond to a potential deliberate biological event; there is also insufficient publicly available evidence that standard operating procedures (SOPs), guidelines or other agreements between the public health and security authorities to respond to a potential deliberate biological attack are in place.

The Public Health Emergency Management Center (PHEM) within the Ethiopian Pubic Health Institute (EPHI) is mandated to coordinate and assist all efforts to improve the preparedness of the health sector to prevent or reduce the public health

consequences of outbreaks of diseases, including conflicts or acts of terrorism. The PHEM Center is thus required to "coordinate and ensure the formulation of preparedness plans for all types of public health emergencies at national, regional or Woreda [district] levels." [1] However, these plans are not publicly available.

According to the Joint External Evaluation (JEE) assessment of Ethiopia, published in March 2016, public health is linked with the security sector only at points of country entry, through guidelines and SOPs. The JEE adds that while the public health and security sectors have working day-to-day relationships, memorandums of understanding although although are being prepared, they have not been finalized or signed. [2]

In October of 2018, Ethiopia launched its National One Health Strategic Plan for the years 2018 to 2022 and established multi-sectoral technical working groups as well as a National One Health Steering Committee that are formed to coordinate various One Health issues. [3, 4] While this plan could include formalized mechanisms for coordinating public health and security officials, they are not available online and it is unclear if there are signed agreements in place. The website of the Ministry of Health and the EPHI's website do not provide further evidence. [5, 6]

[1] Ethiopian Public Health Institute. "Public Health Emergency Management Center and its Functions." [http://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 16 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[3] Food and Agriculture Organization of the United Nations. 2nd November 2018. "Robust interactions, practical actions to boost effective One Health programming in Ethiopia." [http://www.fao.org/ethiopia/news/detail-events/fr/c/1162123/]. Accessed 16 January 2021.
[4] Ethiopian Public Health Institute. "One Health MoU Unveiled, Strategic Plan is Launched." [http://www.ephi.gov.et/index.php/news-information/704-one-health-mou-unveiled-strategic-plan-is-launched]. Accessed 16 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 16 January 2021.

3.5 RISK COMMUNICATIONS

3.5.1 Public communication

3.5.1b

Does the risk communication plan (or other legislation, regulation or strategy document used to guide national public health response) outline how messages will reach populations and sectors with different communications needs (eg different languages, location within the country, media reach)?

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that Ethiopia's public health emergency response plan outlines how messages will reach populations and sectors with different communications needs (e.g. different languages, location within country, media reach).

The Ethiopian Public Health Institute (EPHI) published the Public Health Emergency Management Guidelines in 2012, which includes general guidelines pertaining to outbreak risk communication. For example, it states that risk communication messages should use local terminology, be culturally sensitive and address beliefs about the disease. It also states that

communication methods that are appropriate for and present within the 'wordea' (district) should be used. The guidelines provide a list of examples including radio, television, meetings with community, religious and political leaders, and presentations at community centers. [1]

Also, according to Ethiopia's Joint External Evaluation (JEE) assessment, published in March 2016, "communication strategies are diverse and include communication through traditional media (television, radio, press), social media and community engagement." The JEE adds that engagement with communities is done through disease prevention and health promotion directorates at both the national and regional levels, while at the 'kebele' (neighborhood) level it is done through health care extension workers.[2]

The website of the Ministry of Health and the website of the Public Health Institute do not provide further evidence. [3]

[1] Ethiopian Public Health Institute (EPHI). "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 18 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 18 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 18 January 2021.
[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 18 January 2021.

3.5.1 Risk communication planning

3.5.1a

Does the country have in place, either in the national public health emergency response plan or in other legislation, regulation, or strategy documents, a section detailing a risk communication plan that is specifically intended for use during a public health emergency?

Yes = 1 , No = 0

Current Year Score: 1

Ethiopia has specific regulations in place within its national public health emergency response plans and other strategy documents detailing a risk communication plan that is specifically intended for use during a public health emergency.

According to Ethiopia's Joint External Evaluation (JEE) assessment, published in March 2016, risk communication capacity exists in the public health sector within the Ministry of Health (MoH) and the Ethiopian Public Health Institute (EPHI). More specifically, risk communication is included in national emergency preparedness and response plans, with activities, budget requirements, and responsible bodies; also, dedicated units have been established at both the Ministry of Health and EPHI to engage in communication outreach.
The JEE also adds that Ethiopia's "communication strategies (including the establishment of a communication committee and collaboration with other agencies) have been tested in real-time during the Ebola outbreak and other emergencies." [1]

Additionally, in 2015, the EPHI published its strategic plan for the years 2015 to 2020, which notes that its Public Health Emergency Management (PHEM) Center is working to strengthen public health emergency communication, response, rehabilitation, and recovery for early verification outbreaks and epidemics. [2] No further clarification is provided on the center.

The EPHI also published the Public Health Emergency Management Guidelines in 2012, which include general guidelines

pertaining to outbreak risk communication. [3] Furthermore, EPHI also publishes disease-specific emergency preparedness and response plans, such as those for Ebola and cholera, which both contain elements of risk communication. [4, 5]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[2] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 16 January 2021.
[3] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 16 January 2021.
[4] Ethiopian Public Health Institute. 2014. "Ebola Viral Disease: Interim Guideline." [http://www.ephi.gov.et/images/pictures/Gudeline%20Ebola%20latest%20final%20combined.pdf]. Accessed 16 January 2021.
[5] Ethiopian Public Health Institute. 2011. "Guideline on Cholera Outbreak Management - Ethiopia." [https://www.ephi.gov.et/images/guidelines/national-cholera-guideline.pdf]. Accessed 16 January 2021.

3.5.1c

Does the risk communication plan (or other legislation, regulation or strategy document used to guide national public health response) designate a specific position within the government to serve as the primary spokesperson to the public during a public health emergency?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence suggesting that Ethiopia's risk communication plan (or other legislation, regulation or strategy document used to guide national public health response) designate a specific position within the government to serve as the primary spokesperson to the public during a public health emergency.

According to Ethiopia's Joint External Evaluation (JEE) assessment, published in March 2016, "communication strategies are diverse and include communication through traditional media (television, radio, press), social media and community engagement." Engagement with communities is done through disease prevention and health promotion directorates at both the national and regional levels, while at the 'kebele' (neighborhood) level it is done through health care extension workers. The JEE adds that the Director of Public Relation and Communication of the Ministry of Health, as well as the Head of Public Health Relations of the Ethiopian Public Health Institute (EPHI) are the designated spokesperson in the country. [1]

The Public Relation and Communication page on the Ministry of Health's website, states that the Public Relations and Communication Directorate teams "act as a spokesperson/information focal point of the Ministry to disseminate accurate and timely information using various information mediums including print materials, information desk, resource center, mass media, and website." [2]

The EPHI published the Public Health Emergency Management Guidelines in 2012, which includes general guidelines pertaining to outbreak risk communication. For example, it states that risk communication messages should use local terminology, be culturally sensitive and address beliefs about the disease. It also states that communication methods that are appropriate for and present within the 'wordea' (district) should be used. The guidelines provide a list of examples including radio, television, meetings with community, religious and political leaders, and presentations at community centers. [3] However, there is no indication of a specific position within the government to serve as the primary spokesperson to the public during a public health emergency. Also, while this implicitly outlines the communication lines with the community, it is

unclear if a specific position within these directorates is designated for such communication.

The website of the Ministry of Health, the Ethiopian Government Portal and the website of the EPHI do not provide further evidence. [4, 5, 6]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 20 January 2021.
[2] Ministry of Health. "Public Relation and Communication." [http://www.moh.gov.et/ejcc/en/public-relation-and-communication]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute (EPHI). "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 20 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[5] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.

3.5.2 Public communication

3.5.2a

In the past year, is there evidence that the public health system has actively shared messages via online media platforms (e.g. social media, website) to inform the public about ongoing public health concerns and/or dispel rumors, misinformation or disinformation?

Public health system regularly shares information on health concerns = 2, Public health system shares information only during active emergencies, but does not regularly utilize online media platforms = 1, Public health system does not regularly utilize online media platforms, either during emergencies or otherwise = 0

Current Year Score: 2

There is publicly available evidence that in the past year, the Ethiopian public health system has actively shared messages via online media platforms (e.g. social media, website) to inform the public about ongoing public health concerns and/or dispel rumors, misinformation, or disinformation.

The Ministry of Health's website is regularly updated with information on ongoing public health concerns in the country, and/or dispel rumors, misinformation, or disinformation. For example, the COVID-19 updates are shared on daily basis through a platform on the website and through the media page. [1, 2]

Also, the ministry of Health utilizes its social media platforms, Facebook page and Twitter account, to disseminate information and public health issues and the ministry's activities. The COVID-19 updates are regularly posted on both Facebook and Twitter. [3, 4]

The Ethiopian Public Health Institute (EPHI) also publishes weekly bullet-ins information on ongoing public health concerns. In addition to recent COVID-19 updates, the bulletins include information on other health concerns in the country such as malaria, measles, anthrax, and rabies. [5]

[1] Ministry of Health. [http://www.moh.gov.et/ejcc/en]. Accessed 20 January 2021.
[2] Ministry of Health. "COVID-19." [http://www.moh.gov.et/ejcc/en/node/196]. Accessed 20 January 2021.
[3] Ministry of Health. Facebook. [https://www.facebook.com/EthiopiaFMoH/?ref=page_internal]. Accessed 20 January 2021.

[4] Ministry of Health. Twitter. [https://twitter.com/EPHIEthiopia]. Accessed 20 January 2021.
[5] The Ethiopian Public Health Institute. "Publications." [https://www.ephi.gov.et/index.php/2014-04-10-07-22-18/download]. Accessed 20 January 2021.

3.5.2b

Is there evidence that senior leaders (president or ministers) have shared misinformation or disinformation on infectious diseases in the past two years?

No = 1, Yes = 0

Current Year Score: 1

There is no publicly available evidence suggesting that senior leaders (president or ministers) in Ethiopia have shared misinformation or disinformation on infectious diseases in the past two years.

The websites of local news agencies including The Reporter Ethiopia, Capital Business Newspaper, Ethiopian Observer, and the Ethiopian News Agency do not provide evidence of misinformation or disinformation shared by senior leaders on infectious diseases in the past two years. [1, 2, 3, 4] The website of BBC news, specifically Ethiopia Country profile, and CNN website do not provide evidence on this issue either. [5, 6]

[1] Reporter Ethiopia. [https://www.thereporterethiopia.com]. Accessed 20 January 2021.
[2] Capital Business Newspaper. [https://www.capitalethiopia.com]. Accessed 20 January 2021.
[3] Ethiopian Observer. [https://www.ethiopiaobserver.com]. Accessed 20 January 2021.
[4] Ethiopian News Agency. [https://www.ena.et/en/]. Accessed 20 January 2021.
[5] BBC News. "Ethiopia Country Profile." [https://www.bbc.com/news/world-africa-54985545]. Accessed 20 January 2021.
[6] CNN. [https://edition.cnn.com]. Accessed 20 January 2021.

3.6 ACCESS TO COMMUNICATIONS INFRASTRUCTURE

3.6.1 Internet users

3.6.1a

Percentage of households with Internet

Input number

Current Year Score: 18.62

2019

International Telecommunication Union (ITU)

3.6.2 Mobile subscribers

3.6.2a

Mobile-cellular telephone subscriptions per 100 inhabitants

Input number

Current Year Score: 36.2

2019

International Telecommunication Union (ITU)

3.6.3 Female access to a mobile phone

3.6.3a

Percentage point gap between males and females whose home has access to a mobile phone

Input number

Current Year Score: 25.0

2019

Gallup; Economist Impact calculation

3.6.4 Female access to the Internet

3.6.4a

Percentage point gap between males and females whose home has access to the Internet

Input number

Current Year Score: 9.0

2019

Gallup; Economist Impact calculation

3.7 TRADE AND TRAVEL RESTRICTIONS

3.7.1 Trade restrictions

3.7.1a

In the past year, has the country issued a restriction, without international/bilateral support, on the export/import of medical goods (e.g. medicines, oxygen, medical supplies, PPE) due to an infectious disease outbreak?

Yes = 0 , No = 1

Current Year Score: 1

There is no publicly available evidence that Ethiopia issued a restriction, without international/bilateral support, on the export/import of medical goods (e.g. medicines, oxygen, medical supplies, PPE) due to an infectious disease outbreak. Ethiopia's Import Requirements and Documentation published on the American International Trade Administration website, and last updated in October 2019, do not mention any restriction, without international/bilateral support, on the export/import of medical goods (due to an infectious disease outbreak. [1]The Medical Equipment and Pharmaceutical Supplies page on the Ethiopia Market does not mention any import/export policies in the country. [2] Local news websites including Reporter Ethiopia, Capital Business Newspaper, Ethiopian Observer and the Ethiopian News Agency do not provide evidence of restrictions issued on the export/import of medical goods in Ethiopia due to disease outbreak. [3, 4, 5, 6] The website of the Ministry of Health does not provide further evidence. [7] The Ethiopian Ministry of Agriculture and Natural

Resources and the Ministry of Defense websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [8, 9, 10]

[1] International Trade Administration. "Ethiopia - Import Requirements and Documentation." [https://www.export.gov/apex/article2?id=Ethiopia-Import-Requirements-and-Documentation]. Accessed 20 January 2021.
[2] Ethiopia Market. "Medical Equipment and Pharmaceutical Supplies." [https://ethiopiamarket.com/directory/importers/medical-equipment/]. Accessed 20 January 2020.
[3] Reporter Ethiopia. [https://www.thereporterethiopia.com]. Accessed 20 January 2021.
[4] Capital Business Newspaper. [https://www.capitalethiopia.com]. Accessed 20 January 2021.
[5] Ethiopian Observer. [https://www.ethiopiaobserver.com]. Accessed 20 January 2021.
[6] Ethiopian News Agency. [https://www.ena.et/en/]. Accessed 20 January 2021.
[7] Ministry of Health. [http://www.moh.gov.et/ejcc/index.php/en/node/1]. Accessed 20 January 2021.
[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 20 January 2021.
[9] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.
[10] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.

3.7.1b

In the past year, has the country issued a restriction, without international/bilateral support, on the export/import of non-medical goods (e.g. food, textiles, etc) due to an infectious disease outbreak?

Yes = 0 , No = 1

Current Year Score: 1

There is no publicly available evidence that Ethiopia issued a restriction, without international/bilateral support, on the export/import of non-medical goods (e.g. food, textiles, etc) due to an infectious disease outbreak.

Ethiopia's Import Requirements and Documentation published on the American International Trade Administration website, and last updated in October 2019, do not mention any restriction, without international/bilateral support, on the export/import of the export/import of non-medical goods (e.g. food, textiles, etc) due to an infectious disease outbreak. [1]

The Medical Equipment and Pharmaceutical Supplies page on the Ethiopia Market does not mention any import/export policies in the country. [2]

Local news websites including Reporter Ethiopia, Capital Business Newspaper, Ethiopian Observer, and the Ethiopian News Agency do not provide evidence of restrictions issued on the export/import of non-medical goods in Ethiopia due to disease outbreaks. [3, 4, 5, 6]

The website of the Ministry of Health does not provide further evidence. [7] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [8, 9, 10]

[1] International Trade Administration. "Ethiopia - Import Requirements and Documentation." [https://www.export.gov/apex/article2?id=Ethiopia-Import-Requirements-and-Documentation]. Accessed 20 January 2021.
[2] Ethiopia Market. "Medical Equipment and Pharmaceutical Supplies." [https://ethiopiamarket.com/directory/importers/medical-equipment/]. Accessed 20 January 2020.
[3] Reporter Ethiopia. [https://www.thereporterethiopia.com]. Accessed 20 January 2021.
[4] Capital Business Newspaper. [https://www.capitalethiopia.com]. Accessed 20 January 2021.

[5] Ethiopian Observer. [https://www.ethiopiaobserver.com]. Accessed 20 January 2021.
[6] Ethiopian News Agency. [https://www.ena.et/en/]. Accessed 20 January 2021.
[7] Ministry of Health. [http://www.moh.gov.et/ejcc/index.php/en/node/1]. Accessed 20 January 2021.
[8] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 20 January 2021.
[9] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.
[10] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.

3.7.2 Travel restrictions

3.7.2a

In the past year, has the country implemented a ban, without international/bilateral support, on travelers arriving from a specific country or countries due to an infectious disease outbreak?

Yes = 0 , No = 1

Current Year Score: 1

There is no publicly available evidence that Ethiopia in the past year implemented a ban, without international/bilateral support, on travelers arriving from a specific country or countries due to an infectious disease outbreak.

The Quarantine and Border Control Implementation Guide published in July 2020 by the Ethiopian Public Health Institute of the Ministry of Health, includes the country's border control measures adopted in response to COVID-19. Among other restrictions, the document states that passengers should quarantine at one of the government centers for a week, where a specimen is collected on the sixth day. However, the document does not include a ban on travelers arriving from a specific country or countries. [1] For example and according to an international news agency, even when several international airlines halted flights from China due to the outbreak of COVID-19, Ethiopia airlines refused to do so and announced that "there is no proof that canceling flights would help contain the virus;" and instead, the country followed the passengers screening protocols recommended by the Word Health Organization. [2]

There is no evidence of such a ban through the websites of the Ministry of Health, the Ministry of Transportation, the Department of Foreign Affairs, and the Ethiopian Government Portal. [3, 4, 5, 6] The website of the Ministry of Defense was non-functional during the time of writing this report. [7]

Local news websites including Reporter Ethiopia, Capital Business Newspaper, Ethiopian Observer, and the Ethiopian News Agency do not provide evidence of restrictions issued on a ban on travelers in Ethiopia conducted due to a disease outbreak. [8, 9, 10, 11]

[1] Ethiopian Public Health Institute. 2020 "COVID-19 Prevention and Control: The Quarantine and Border Control Implementation Guide." [https://www.ephi.gov.et/images/novel_coronavirus/EPHI_PHEOC_COVID-19_Quarantine_Implementation_Guide_English.pdf]. Accessed 20 January 2021.
[2] Voice of America. "Ethiopian Airlines Resists Pressure to Cancel Flights to China." []. Accessed 31 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.
[4] Ministry of Transportation. [http://www.motr.gov.et/web/guest/home].Accessed 20 January 2021.
[5] Department of Foreign Affairs. [https://www.dfa.ie/travel/travel-advice/a-z-list-of-countries/ethiopia/]. Accessed 20 January 2021.
[6] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.
[7] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.
[8] Reporter Ethiopia. [https://www.thereporterethiopia.com]. Accessed 20 January 2021.

[9] Capital Business Newspaper. [https://www.capitalethiopia.com].Accessed 20 January 2021.
[10] Ethiopian Observer. [https://www.ethiopiaobserver.com]. Accessed 20 January 2021.
[11] Ethiopian News Agency. [https://www.ena.et/en/]. Accessed 20 January 2021.

Category 4: Sufficient and robust health sector to treat the sick and protect health workers

4.1 HEALTH CAPACITY IN CLINICS, HOSPITALS, AND COMMUNITY CARE CENTERS

4.1.1 Available human resources for the broader healthcare system

4.1.1a

Doctors per 100,000 people

Input number

Current Year Score: 7.69

2018

WHO; national sources

4.1.1b

Nurses and midwives per 100,000 people

Input number

Current Year Score: 71.35

2018

WHO; national sources

4.1.1c

Does the country have a health workforce strategy in place (which has been updated in the past five years) to identify fields where there is an insufficient workforce and strategies to address these shortcomings?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence suggesting that Ethiopia has a public workforce strategy in place (which has been updated in the past five years) to identify fields where there is an insufficient workforce and strategies to address these shortcomings.

The Ministry of Health published in 2015 its "Health Sector Transformation Plan for the years 2015 to 2020" that mentions the improvements made in recent years, highlights the weaknesses of the public healthcare workforce, and includes strategies for increasing both the quantity and quality of the national healthcare workforce. [1] For example, the plan refers to the ministry's 2014 strategy and state that "the doctor, health officer, nurse and midwife to population ratio is 0.7 per 1000 population, far behind the minimum threshold of 2.3 doctor, nurse, and midwife to 1000 population ratio required to ensure high coverage with essential health interventions." This workforce shortage, according to the same source, was addressed through several mechanisms such as pre-service trainings, professional development and human resources regulation and management; the plan further discusses the gaps in the implementation of these mechanisms. [1]

However, no evaluation or updated version of the plan is publicly available although the Joint External Evaluation assessment of Ethiopia, published in March 2016, states that there is an annual review of the workforce strategy. [2]

The weaknesses of the existing strategy are reflected in recent articles and academic studies. For example, an article published by International Health Policies in March of 2018, categorizes Ethiopia as one of the countries with a health workforce crisis, finding that the situation is compounded by a substantial geographic maldistribution of the health workforce, as workers tend to favor the more urban parts of the country. The article also notes that Ethiopia's "flooding" strategy has prioritized increasing the number of healthcare workers available, without corresponding policies or resources in place to ensure a minimum standard of quality healthcare workers is available as well. The article also points out that "only marginal attention has been given to improving the prevailing poor working conditions, as well as the poor retention of the public sector workforce in the country." [3] Similar findings were reflected in an academic study published by the Human Resources for Health journal in 2017. [4]

[1] Ministry of Health. 2015. "Health Sector Transformation Plan 2015/16 - 2019/20." [https://www.globalfinancingfacility.org/sites/gff_new/files/documents/HSTP%20Ethiopia.pdf]. Accessed 16 January 2021.
[2] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[3] International Health Policies. 23rd March 2018. "Ethiopia's HRH Strategy: Will the 'flooding' strategy go down the drain?" [http://www.internationalhealthpolicies.org/ethiopias-hrh-strategy-will-the-flooding-strategy-go-down-the-drain/]. Accessed 16 January 2021.
[4] Tsion Assefa; Damen Haile Mariam; Wubegzier Mekonnen and Miliard Derbew. 2017. "Health System's Response for Physician Workforce Shortages and the Upcoming Crisis in Ethiopia: a Grounded Theory Research". Human Resources for Health. [https://link.springer.com/article/10.1186/s12960-017-0257-5]. Accessed 16 January 2021.

4.1.2 Facilities capacity

4.1.2a

Hospital beds per 100,000 people

Input number

Current Year Score: 33

2016

WHO/World Bank; national sources

4.1.2b

Does the country have the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit and/or patient isolation room/unit located within the country?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence suggesting that Ethiopia has the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit and/or patient isolation room/unit located within the country.

According to the World Health Organization's (WHO) 2014 report following the Ethiopia country visit to monitor the country's Ebola virus preparedness capacity, the country has functional regional isolation centers that are monitored by the emergency operations center. The report further states that the "Ethiopian Treatment Centers have separate isolation facilities for [Ebola] confirmed (11 beds), suspected (4 beds) and probable cases (2 beds)."

Furthermore, the existing pandemic influenza fever clinic has reportedly been converted into an isolation facility for suspected Ebola cases. The facility consists of two rooms for patients, each with two beds, two bathrooms with toilets, one storage room, and one duty nurse room. Basic equipment for infection prevention and control is available, including Personal Protective Equipment (PPE), goggles and boots, a disinfectant sprayer, and a container for waste management. The WHO report also notes that there is a UN isolation facility in place. [1]

The Ethiopian Public Health Institute's (EPHI) 2015 guidelines on Ebola emergency management make reference to isolation wards and isolation units and provide some general specifications for the isolation area. For example, the isolation area should have one entrance and exit, it should be clearly demarcated, have a designated separate latrine, etc. The guidelines also mention an Ebola treatment unit (ETU), with construction specifications, for example, the ETU should be constructed with smooth, non-slip solid floors that can be easily cleaned and disinfected, have adequate airflow, have adequate water drainage system, have a separate hand washing area available for patients, etc. [2] However, it remains unclear if these isolation facilities are used only in response to the Ebola outbreak, and whether they can be used for other health outbreaks.

The website of the Ministry of Health do not provide further evidence. [3]

[1] World Health Organization. 2014. "Ebola virus disease preparedness strengthening team Ethiopia country visit 1-8 December 2014." [https://apps.who.int/iris/bitstream/handle/10665/159786/WHO_EVD_PCV_Ethiopia_14_eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[2] Ethiopian Public Health Institute. 2015. "Ebola Virus Disease: Interim Guideline on EVD Emergency Management." [http://www.ephi.gov.et/images/pictures/revisideevdt.pdf].
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 16 January 2021.

4.1.2c

Does the country meet one of the following criteria?
- Is there evidence that the country has demonstrated capacity to expand isolation capacity in response to an infectious disease outbreak in the past two years?
- Is there evidence that the country has developed, updated or tested a plan to expand isolation capacity in response to an infectious disease outbreak in the past two years?

Yes = 1, No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has demonstrated capacity to expand isolation capacity in response to an infectious disease outbreak in the past two years; neither there is evidence that the country developed, updated or tested a plan to expand isolation capacity in response to an infectious disease outbreak in the past two years.

The Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, states that as part of the Ebola contingency plan, the country has an isolation facility at the airport for people coming from Ebola affected countries does not provide information about Ethiopia's isolation capacity or a plan to expand the country's capacity. [1] The website of the Ministry of Health does not provide evidence on the national isolation capacity, or any information on a plan to expand isolation capacity in response to an infectious disease outbreak in the past two years. [2] The website of the Ministry of Defense was non-functional during the time of writing this report. [3]

According to the World Health Organization's (WHO) 2014 report following the Ethiopia country visit to monitor the country's Ebola virus preparedness capacity, the country has functional regional isolation centers that are monitored by the emergency operations center. The report further states that the "Ethiopian Treatment Centers have separate isolation facilities for [Ebola] confirmed (11 beds), suspected (4 beds) and probable cases (2 beds)." Furthermore, the existing pandemic influenza fever clinic has reportedly been converted into an isolation facility for suspected Ebola cases. The facility consists of two rooms for patients, each with two beds, two bathrooms with toilets, one storage room, and one duty nurse room. Basic equipment for infection prevention and control is available, including Personal Protective Equipment (PPE), goggles and boots, a disinfectant sprayer, and a container for waste management. The WHO report also notes that there is a UN isolation facility in place. [4]

The Ethiopian Public Health Institute's (EPHI) 2015 guidelines on Ebola emergency management make reference to isolation wards and isolation units and provide some general specifications for the isolation area. For example, the isolation area should have one entrance and exit, it should be clearly demarcated, have a designated separate latrine, etc. The guidelines also mention an Ebola treatment unit (ETU), with construction specifications, for example, the ETU should be constructed with smooth, non-slip solid floors that can be easily cleaned and disinfected, have adequate airflow, have adequate water drainage system, have a separate hand washing area available for patients, etc. [5] However, both the WHO 2014 report and the EPHI 2015 guidelines do not provide indication of a plan to expand isolation capacity.

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 26 April 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 26 April 2021.
[3] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 26 April 2021.
[4] World Health Organization. 2014. "Ebola virus disease preparedness strengthening team Ethiopia country visit 1-8 December 2014."
[https://apps.who.int/iris/bitstream/handle/10665/159786/WHO_EVD_PCV_Ethiopia_14_eng.pdf?sequence=1&isAllowed=y]. Accessed 16 January 2021.
[5] Ethiopian Public Health Institute. 2015. "Ebola Virus Disease: Interim Guideline on EVD Emergency Management."
[http://www.ephi.gov.et/images/pictures/revisideevdt.pdf].

4.2 SUPPLY CHAIN FOR HEALTH SYSTEM AND HEALTHCARE WORKERS

4.2.1 Routine health care and laboratory system supply

4.2.1a

Is there a national procurement protocol in place which can be utilized by the Ministries of Health and Agriculture for the acquisition of laboratory supplies (e.g. equipment, reagents and media) and medical supplies (e.g. equipment, PPE) for routine needs?

Yes for both laboratory and medical supply needs = 2, Yes, but only for one = 1, No = 0

Current Year Score: 1

There is publicly available evidence suggesting that Ethiopia has a national procurement protocol in place which can be utilized by the Ministry of Health but not the Ministry of Agriculture for the acquisition of laboratory supplies (e.g. equipment, reagents and media) and medical supplies (e.g. equipment, PPE) for routine needs.

The Ministry of Health's "Master Plan for the Public Health Laboratory System in Ethiopia for the years 2009 to 2013", states that the Pharmaceutical Fund and Supply Agency (PFSA) of the Ministry of Health is responsible for managing national procurement of medical supplies and laboratory equipment, reagents and consumables. Specifically, PFSA is responsible for ordering, shipment clearance, storage, distribution, and inventory control. This includes the purchase and distribution of laboratory. [1] However, the master plan does not mention that the Ethiopian Ministry of Agriculture and Natural Resources can access this procurement system.

In 2019, the PFSA published their Pharmaceuticals Procurement List, as part of the agency's efforts to develop a comprehensive list of what they procure to the public health facilities on regular basis. The PFSA notes that "defining the list will enable the Agency [PFSA] to be focused on procuring, storing and distributing pharmaceuticals that are essential for the provision of health services for the majority of the population," and that "health facilities will be clear on what can be supplied by the Agency on regular basis and look for options to avail products that are not supplied by the Agency." The list includes both medical and laboratory reagents and chemicals. [2] It is unclear, however, whether the PFSA handles the procurement for the Ministry of Agriculture and Natural Resources.

The website of the Ministry of Health does not provide further evidence. [3] The Ethiopian Ministry of Agriculture and Natural Resources was non-functional during the time of writing this report. [4]

[1] Federal Ministry of Health. 2009. "Master Plan for the Public Health Laboratory System in Ethiopia - Second Edition (2009-2013)." [http://www.ephi.gov.et/images/downloads/Ethiopia%20Lab%20Master%20Plan_2nd%20Edition.pdf]. Accessed 20 January 2021.
[2] Pharmaceutical Fund and Supply Agency. 2019. "Pharmaceuticals Procurement List." [https://www.ghsupplychain.org/sites/default/files/2019-07/PFSA_s%20Pharmaceuticals%20List.pdf]. Accessed 20 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[4] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 20 January 2021.

4.2.2 Stockpiling for emergencies

4.2.2a

Does the country have a stockpile of medical supplies (e.g. MCMs, medicines, vaccines, medical equipment, PPE) for national use during a public health emergency?

Yes = 2, Yes, but there is limited evidence about what the stockpile contains = 1, No = 0

Current Year Score: 2

Ethiopia has a stockpile of medical supplies (e.g. MCMs, medicines, vaccines, medical equipment, PPE) for national use during a public health emergency and there is public information on its contents.

The Ethiopian Public Health Institute (EPHI) published the Public Health Emergency Management Guidelines in 2012, which mentions in its logistics component the stockpiling of drugs, vaccines (buffer stocks), personal protection equipment (PPE), emergency health kits, medical supplies required for prevention and control of epidemics, and nutritional supplements. [1]

In 2015, the EPHI published its strategic plan for the years 2015 to 2020, which includes public health emergency management. The plan discusses Ethiopia's progress and objectives regarding public health emergency risk mapping and health emergency preparedness. As of 2010, 100% identified public health emergency risks had adequate stockpiles of drugs, medical supplies, and PPE as per EPHI's public health emergency management guidelines. [2]

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, Ethiopia's national countermeasure response plan is incorporated in the Epidemic Preparedness and Response Plan, which the JEE reports has proved to be effective during real events (e.g. the Ebola outbreak). [3]

Both the Ethiopian Public Health Institute (EPHI) and the Pharmaceuticals Fund and Supply Agency (PFSA) are responsible for maintaining the national stockpile of medical countermeasures. [3] The Epidemic Preparedness and Response Plan, however, is not publicly available online. No further evidence is found through the website of the Ministry of Health. [4]

[1] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 26 April 2021.
[2] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 26 April 2021.
[3] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 26 April 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 26 April 2021.

4.2.2b

Does the country have a stockpile of laboratory supplies (e.g. reagents, media) for national use during a public health emergency?

Yes = 2, Yes, but there is limited evidence about what the stockpile contains = 1, No = 0

Current Year Score: 0

There is insufficient evidence suggesting that Ethiopia has a stockpile of laboratory supplies (e.g. reagents, media) for national use during a public health emergency.

The Ethiopian Public Health Institute (EPHI) published the Public Health Emergency Management Guidelines in 2012, does not indicate that a stockpile of laboratory supplies exists in the country; the guidelines mentions among the strategic goals, the need to focus on "stockpiling drugs, vaccines (buffer stocks), personal protection equipment (PPE), emergency health kits, medical supplies required for prevention and control of epidemics, and nutritional supplements." [1]

In 2015, the EPHI published its strategic plan for the years 2015 to 2020, which includes public health emergency management. The plan discusses Ethiopia's progress and objectives regarding public health emergency risk mapping and health emergency preparedness. As of 2010, 100% identified public health emergency risks had ad hoc adequate stockpiles of drugs, reagents, medical supplies, and PPE as per EPHI's public health emergency management guidelines. [2]

The Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, does not mention that the country has a stockpile of laboratory supplies such as reagents and media, for national use during a public health emergency. [3] No further evidence is found through the website of the Ministry of Health. [4]

[1] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 20 January 2021.
[2] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 20 January 2021.
[3] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 20 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.

4.2.2c

Is there evidence that the country conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency?

Yes = 1, No = 0

Current Year Score: 0

There is no publicly available evidence suggesting the Ethiopia conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency.

The Ethiopian Public Health Institute (EPHI) published the Public Health Emergency Management Guidelines in 2012, which mentions in its logistics component the stockpiling of drugs, vaccines (buffer stocks), personal protection equipment (PPE), emergency health kits, medical supplies required for prevention and control of epidemics, and nutritional supplements. [1] There is no mention in the guidelines, nonetheless, of an annual review of the national stockpile.

In 2015, the EPHI published its strategic plan for the years 2015 to 2020, which includes public health emergency management. The plan discusses Ethiopia's progress and objectives regarding public health emergency risk mapping and health emergency preparedness. As of 2010, 100% identified public health emergency risks had adequate stockpiles of drugs, medical supplies, and PPE as per EPHI's public health emergency management guidelines. [2] The strategic plan, however, does not indicate that the country conducts or requires an annual review of the national stockpile.

According to the Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, Ethiopia's national countermeasure response plan is incorporated in the Epidemic Preparedness and Response Plan, which the JEE reports has proved to be effective during real events (e.g. the Ebola outbreak). [3] The JEE does not provide information on annual

reviews of the national stockpile in Ethiopia.

Both the Ethiopian Public Health Institute (EPHI) and the Pharmaceuticals Fund and Supply Agency (PFSA) are responsible for maintaining the national stockpile of medical countermeasures. [4] The Epidemic Preparedness and Response Plan, however, is not publicly available online. No further evidence is found through the website of the Ministry of Health. [5]

[1] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 26 April 2021.
[2] Ethiopian Health and Nutrition Research Institute. 2010. "A Five Year, Balanced Score Card Based Strategic Plan (2010-2015 G.C)." [https://www.ephi.gov.et/images/downloads/final-spm.pdf]. Accessed 26 April 2021.
[3] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 26 April 2021.
[4] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 26 April 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 26 April 2021.

4.2.3 Manufacturing and procurement for emergencies

4.2.3a

Does the country meet one of the following criteria?
- Is there evidence of a plan/agreement to leverage domestic manufacturing capacity to produce medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency?
- Is there evidence of a plan/mechanism to procure medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency?
Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia has a plan/agreement to leverage domestic manufacturing capacity to produce medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency; neither there is evidence of a plan/mechanism to procure medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency.

The Ministry of Health's Master Plan for the Public Health Laboratory System in Ethiopia for the years 2009 to 2013, states that the Pharmaceutical Fund and Supply Agency (PFSA) of the Ministry of Health is responsible for managing national procurement of medical supplies and laboratory equipment, reagents and consumables. Specifically, PFSA is responsible for ordering, shipment clearance, storage, distribution, and inventory control. [1] However, the master plan does not include any indication of a plan/mechanism to leverage domestic manufacturing capacity to produce or procure medical supplies for national use during a public health emergency.

In 2019, the PFSA published their Pharmaceuticals Procurement List, as part of the agency's efforts to develop a comprehensive list of what they procure to the public health facilities on regular basis. The PFSA notes that "defining the list will enable the Agency [PFSA] to be focused on procuring, storing and distributing pharmaceuticals that are essential for the provision of health services for the majority of the population," and that "health facilities will be clear on what can be supplied by the Agency on regular basis and look for options to avail products that are not supplied by the Agency." The list includes both medical and laboratory reagents and chemicals. [2] The list does not include any indication of domestic

manufacturing capacity or specific plans for procurement during health emergencies.

There is no further evidence on this matter through the website of the Ministry of Health. [3] The website of the Ministry of Defense was non-functional during the time of writing this report. [4]

[1] Federal Ministry of Health. 2009. "Master Plan for the Public Health Laboratory System in Ethiopia - Second Edition (2009-2013)." [http://www.ephi.gov.et/images/downloads/Ethiopia%20Lab%20Master%20Plan_2nd%20Edition.pdf]. Accessed 20 January 2021.
[2] Pharmaceutical Fund and Supply Agency. 2019. "Pharmaceuticals Procurement List." [https://www.ghsupplychain.org/sites/default/files/2019-07/PFSA_s%20Pharmaceuticals%20List.pdf]. Accessed 20 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[4] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.

4.2.3b

Does the country meet one of the following criteria?
- Is there evidence of a plan/agreement to leverage domestic manufacturing capacity to produce laboratory supplies (e.g. reagents, media) for national use during a public health emergency?
- Is there evidence of a plan/mechanism to procure laboratory supplies (e.g. reagents, media) for national use during a public health emergency?
Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia has a plan/agreement to leverage domestic manufacturing capacity to produce laboratory supplies (e.g. reagents, media) for national use during a public health emergency; neither there is evidence of a plan/mechanism to procure laboratory supplies for national use during a public health emergency.

The Ministry of Health's Master Plan for the Public Health Laboratory System in Ethiopia for the years 2009 to 2013, states that the Pharmaceutical Fund and Supply Agency (PFSA) of the Ministry of Health is responsible for managing national procurement of medical supplies and laboratory equipment, reagents and consumables. Specifically, PFSA is responsible for ordering, shipment clearance, storage, distribution, and inventory control. This includes the purchase and distribution of laboratory supplies. [1] However, the master plan does not include any indication of a plan/mechanism to leverage domestic manufacturing capacity to produce or procure laboratory supplies for national use during a public health emergency.

In 2019, the PFSA published their Pharmaceuticals Procurement List, as part of the agency's efforts to develop a comprehensive list of what they procure to the public health facilities on regular basis. The PFSA notes that "defining the list will enable the Agency [PFSA] to be focused on procuring, storing and distributing pharmaceuticals that are essential for the provision of health services for the majority of the population," and that "health facilities will be clear on what can be supplied by the Agency on regular basis and look for options to avail products that are not supplied by the Agency." The list includes both medical and laboratory reagents and chemicals. [2] The list does not include any indication of domestic manufacturing capacity or specific plans for procurement during health emergencies.

There is no further evidence on this matter through the website of the Ministry of Health. [3] The website of the Ministry of Defense was non-functional during the time of writing this report. [4]

[1] Federal Ministry of Health. 2009. "Master Plan for the Public Health Laboratory System in Ethiopia - Second Edition (2009-2013)." [http://www.ephi.gov.et/images/downloads/Ethiopia%20Lab%20Master%20Plan_2nd%20Edition.pdf]. Accessed 20 January 2021.
[2] Pharmaceutical Fund and Supply Agency. 2019. "Pharmaceuticals Procurement List." [https://www.ghsupplychain.org/sites/default/files/2019-07/PFSA_s%20Pharmaceuticals%20List.pdf]. Accessed 20 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[4] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.

4.3 MEDICAL COUNTERMEASURES AND PERSONNEL DEPLOYMENT

4.3.1 System for dispensing medical countermeasures (MCM) during a public health emergency

4.3.1a

Does the country have a plan, program, or guidelines in place for dispensing medical countermeasures (MCM) for national use during a public health emergency (i.e., antibiotics, vaccines, therapeutics and diagnostics)?

Yes = 1 , No = 0

Current Year Score: 0

There is no public evidence suggesting that Ethiopia has a plan, program, or guidelines for dispensing medical countermeasures (MCM) for national use during a public health emergency (i.e., antibiotics, vaccines, therapeutics, and diagnostics).

The Ethiopian Public Health Institute's (EPHI) Public Health Emergency Management Center is mandated to "maintain and administer a stockpile of supplies and equipment required for rapid response to public health emergencies," however, there is no elaboration suggesting that the supplies and equipment include MCMs. [1]

The EPHI's Public Health Emergency Management Guidelines, published in 2012, state that "the public health emergency management unit shall ensure adequate supplies for the management of different hazards and identified risks are available, as part of the preparedness plan," no further information is provided suggesting that the supplies specifically include MCMs. [2]

EPHI's strategic plan for the years 2015 to 2020, published in 2015, although includes a section on public health emergency management, the guidelines do not touch upon the process of dispensing or procuring medical countermeasures. [3]

The Joint External Evaluation (JEE) assessment for Ethiopia, published in March 2016, states that "no specific EPHI storage facilities exist for bulk items (partners' facilities are currently used)" and stronger inventory management is needed. [4] The websites of the Ministry of Health, the EPHI, and the Ministry of Defence do not provide further evidence. [5, 6, 7]

[1] Ethiopian Public Health Institute. "Public Health Emergency Management Center and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 20 January 2021.
[2] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 16 January 2021.
[3] Ethiopian Public Health Institute. 2015. "The 2nd BSC Based EPHI's Strategic Management Plan (2015/16 to 2019/20)." [https://www.ephi.gov.et/images/pictures/download2009/EPHI_2nd_SPM.pdf]. Accessed 16 January 2021.

[4] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 20 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[7] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.

4.3.2 System for receiving foreign health personnel during a public health emergency

4.3.2a

Is there a public plan in place to receive health personnel from other countries to respond to a public health emergency?
Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Ethiopia has a plan in place to receive health personnel from other countries to respond to a public health emergency.

The Joint External Evaluation (JEE) report for Ethiopia, published in March 2016, states that no formal system is currently in place in the country, however, the Government of Ethiopia wants to assist other nations should they need their help. According to the same source, Ethiopia provided support in the Ebola containment efforts by sending healthcare workers to West Africa. [1] It remains unclear if this support is part of a broader national plan that includes receiving health personnel from other countries to respond to a public health emergency.

According to the African Union's First Progress Report of the Chairperson of the Commission on the Africa Center for Disease Control'(African CDC), published in July 2018, the Africa CDC works to support member states respond to disease outbreaks. Examples of this include addressing Ebola in the Democratic Republic of the Congo (DRC) in 2017; Cholera in the DRC; and Acute Watery Diarrhea in Ethiopia. [2] However, there is no indication of a plan in place to receive health workers to respond to a public health emergency. The websites of the Ministry of Health, the Ethiopian Public Health Institute, and the Ministry of Defense do not provide further evidence. [3, 4, 5]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 20 January 2021.
[2] African Union. July 2018. "Meeting of the Permanent Representatives' Committee 29 March 2018 Addis Ababa: First Progress Report of the Chairperson of the Commission on the Africa Center for Disease Control." [https://au.int/sites/default/files/documents/34074-doc-auc.report.africa.cdc_.prc_.29.03.pdf]. Accessed 20 January 2021.
[3] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[4] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[5] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.

4.4 HEALTHCARE ACCESS

4.4.1 Access to healthcare

4.4.1a

Does the constitution explicitly guarantee citizens' right to medical care?

Guaranteed free = 4, Guaranteed right = 3, Aspirational or subject to progressive realization = 2, Guaranteed for some groups, not universally = 1, No specific provision = 0

Current Year Score: 2

2020

World Policy Analysis Center

4.4.1b

Access to skilled birth attendants (% of population)

Input number

Current Year Score: 27.7

2016

WHO/World Bank/United Nations Children's Fund (UNICEF)

4.4.1c

Out-of-pocket health expenditures per capita, purchasing power parity (PPP; current international $)

Input number

Current Year Score: 22.94

2017

WHO Global Health Expenditure database

4.4.2 Paid medical leave

4.4.2a

Are workers guaranteed paid sick leave?

Paid sick leave = 2, Unpaid sick leave = 1, No sick leave = 0

Current Year Score: 2

2020

World Policy Analysis Center

4.4.3 Healthcare worker access to healthcare

4.4.3a

Has the government issued legislation, a policy, or a public statement committing to provide prioritized healthcare services to healthcare workers who become sick as a result of responding to a public health emergency?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that the government of Ethiopia issued legislation, a policy, or a public statement committing to provide prioritized healthcare services to healthcare workers who become sick as a result of responding to a public health emergency.

An academic study published in 2018, states that the infection of healthcare workers due to the nature of their job continues to be a problem in Ethiopia. Several factors drove this problem including the lack of staff replacement, absence of occupational health services, and pressure from supervisors. [1] According to another study published in 2018, 41% of the study's sample of healthcare workers were exposed to blood and body fluids within one year of when the study was conducted. This puts healthcare workers at risk of blood-borne infections such as hepatitis B, hepatitis C, and HIV. The study attributes this to improper use of equipment and the lack of standard precautions. [2] Both studies, nonetheless, do not include evidence of legislation, policy, or public statement committing to provide prioritized healthcare services to healthcare workers who become sick as a result of responding to a public health emergency.

The Ethiopian Public Health Institute published disease-specific emergency preparedness and response plans, such as Ebola, measles, and cholera plans, which provide detailed risk-reduction strategies for the respective pandemics. However, these plans do not include information on prioritizing healthcare services to healthcare workers who become sick as a result of responding to a public health emergency [3, 4, 5].

The websites of the Ministry of Health, the Ethiopian Government Portal, and the Ethiopian Public Health Institute do not provide further evidence on this matter. [6, 7, 8]

[1] Tesfaye Hambisa Mekonnen; Mekuriaw Alemayewu Tefera; Yayehirad Alemu Melsew. 2018. "Sick at work: prevalence and determinants among healthcare workers, western Ethiopia: an institution based cross-sectional study". Annals of Occupational and Environmental Medicine. [https://www.ncbi.nlm.nih.gov/pubmed/29435337]. Accessed 20 January 2021.
[2] Amerga EW and Mekonnen TG. 2018. "Occupational Exposure to Blood and Body Fluids among Health Care Workers in Arada Sub-city Health Centers of Addis Ababa, Ethiopia". Occupational Medicine and Health Affairs. [https://www.omicsonline.org/open-access/occupational-exposure-to-blood-and-body-fluids-among-health-careworkers-in-arada-subcity-health-centers-of-addis-ababa-ethiopia-2329-6879-1000281.pdf]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute. 2014. "Ebola Viral Disease: Interim Guideline." [http://www.ephi.gov.et/images/pictures/Gudeline%20Ebola%20latest%20final%20combined.pdf]. Accessed 20 January 2021.
[4] Ethiopian Public Health Institute. 2012. "Guidelines on Measles Surveillance and Outbreak Management - 3rd Edition." [https://www.ephi.gov.et/images/guidelines/guideline-on-measles-surveillance-and-outbreak-management2012.pdf]. Accessed 20 January 2021.
[5] Ethiopian Public Health Institute. 2011. "Guideline on Cholera Outbreak Management - Ethiopia." [https://www.ephi.gov.et/images/guidelines/national-cholera-guideline.pdf]. Accessed 20 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[7] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.

[8] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.

4.5 COMMUNICATIONS WITH HEALTHCARE WORKERS DURING A PUBLIC HEALTH EMERGENCY

4.5.1 Communication with healthcare workers

4.5.1a

Is there a system in place for public health officials and healthcare workers to communicate during a public health emergency?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence of a system in place for public health officials and healthcare workers to communicate during a public health emergency in Ethiopia.

According to Ethiopia's Joint External Evaluation (JEE) assessment, published in March 2016, risk communication systems are in place and dedicated units have been established at both the Ministry of Health and the Ethiopian Public Health Institute (EPHI) with trained staff and technical advisors. The JEE adds that risk communication is included in emergency preparedness and response plans where roles and responsibilities are defined. The communication strategies including the communication committee have been tested in real-time during the Ebola outbreak and other emergencies. [1] However, the JEE also states that "coordination with other sectors at all levels of government in the area of social mobilization and risk communication can be strengthened", suggesting that the systems in place but require further development. [1]

The EPHI's Public Health Emergency Management Guidelines, published in 2012, include guidelines on establishing the ad hoc communication strategy for specific outbreaks, as well as a section on communicating with healthcare workers and decision-makers. The guidelines state that "communication usually takes two forms: 1) an oral briefing for local health authorities and 2) a written report," however, no further elaboration is provided on how the system operates. [2]

While, EPHI's Strategic Plan for the years 2015 to 2020, published in 2015, aims at developing and implementing a communications strategy with local, regional and international partners, no further explanation is provided on this strategy or what it will entail. [3]

EPHI also publishes disease-specific emergency preparedness and response plans. The Ebola guidelines published in 2014, include elements of coordination between health officials and healthcare workers. For example, it states that health extension workers should be trained and supported to conduct "house to house and community mobilization," and that public health officials should engage with people working in high-risk professions, including healthcare workers and nursing staff, however, no further details are provided. [4] The websites of the Ministry of Health and the EPHI do not provide further evidence. [5, 6]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[2] Ethiopian Public Health Institute (EPHI). "Public Health Emergency ManagementCenter and its Functions." [https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 20 January 2021.
[3] Ethiopian Health and Nutrition Research Institute. 2010. "A Five Year, Balanced Score Card Based Strategic Plan (2010-

2015 G.C)." [https://www.ephi.gov.et/images/downloads/final-spm.pdf]. Accessed 20 January 2021.
[4] Ethiopian Public Health Institute. 2014. "Ebola Viral Disease: Interim Guideline." [http://www.ephi.gov.et/images/pictures/Gudeline%20Ebola%20latest%20final%20combined.pdf]. Accessed 20 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.

4.5.1b

Does the system for public health officials and healthcare workers to communicate during an emergency encompass healthcare workers in both the public and private sector?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence of a system in place for public health officials and healthcare workers to communicate during a public health emergency in Ethiopia, and therefore, it is unclear if the system encompasses healthcare workers in both the public and private sector.

According to Ethiopia's Joint External Evaluation (JEE) assessment, published in March 2016, risk communication systems are in place and dedicated units have been established at both the Ministry of Health and the Ethiopian Public Health Institute (EPHI) with trained staff and technical advisors. The JEE adds that risk communication is included in emergency preparedness and response plans where roles and responsibilities are defined. The communication strategies including the communication committee have been tested in real time during the Ebola outbreak and other emergencies. [1] However, the JEE also states that "coordination with other sectors at all levels of government in the area of social mobilization and risk communication can be strengthened", suggesting that the systems in place but require further development. [1]

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The websites of the Ministry of Health and the EPHI do not provide further evidence. [5, 6]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 12 January 2021.
[2] Ethiopian Public Health Institute (EPHI). "Public Health Emergency ManagementCenter and its Functions."

[https://www.ephi.gov.et/index.php/public-health-emergency]. Accessed 20 January 2021.
[3] Ethiopian Health and Nutrition Research Institute. 2010. "A Five Year, Balanced Score Card Based Strategic Plan (2010-2015 G.C)." [https://www.ephi.gov.et/images/downloads/final-spm.pdf]. Accessed 20 January 2021.
[4] Ethiopian Public Health Institute. 2014. "Ebola Viral Disease: Interim Guideline." [http://www.ephi.gov.et/images/pictures/Gudeline%20Ebola%20latest%20final%20combined.pdf]. Accessed 20 January 2021.
[5] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[6] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.

4.6 INFECTION CONTROL PRACTICES AND AVAILABILITY OF EQUIPMENT

4.6.1 Healthcare associated infection (HCAI) prevention and control programs

4.6.1a

Is there evidence that the national public health system is monitoring for and tracking the number of healthcare associated infections (HCAI) that take place in healthcare facilities?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that the national public health system in Ethiopia is monitoring for and tracking the number of healthcare associated infections (HCAI) that take place in healthcare facilities.

Ethiopia's Joint External Evaluation assessment, published in March 2016, states that while Ethiopia has an HCAI plan in place, not all facilities implement the HCAI programs. [1] The HACI plan is not publicly available. The websites of the Ministry of Health and the Ethiopian Public Health Institute do not provide any indication that a system is in place for monitoring and tracking the number of HCAI in the country. [2, 3]

Several academic studies on HCAI in Ethiopia recommended strengthening the infection prevention measures in Ethiopian hospitals, including a study published in the Journal of Environmental and Occupation Science in 2014, a study published in the International Journal of Microbiology in 2018, a study published in the journal of Antimicrobial Resistance & Infection Control in 2018, and a study published by the World Health Organization (WHO) in 2011. [4, 5, 6, 7]

[1] World Health Organization. March 2016. "Joint External Evaluation of IHR Core Capacities of the Federal Democratic Republic of Ethiopia, Mission Report: March 2016." [https://apps.who.int/iris/bitstream/handle/10665/254276/WHO-HSE-GCR-2016.24-eng.pdf?sequence=1&isAllowed=y]. Accessed 20 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[4] Aschalew Gelaw; Moges Tiruneh; Solomon Gebreselassie and Eshetu Matiwos. 2014. "Isolation of bacterial pathogens from patients with postoperative surgical site infections and possible sources of infections at the University of Gondar Hospital, Northwest Ethiopia." Journal of Environmental and Occupation Science. [https://www.researchgate.net/publication/273563117_Isolation_of_bacterial_pathogens_from_patients_with_postoperative_surgical_site_infections_and_possible_sources_of_infections_at_the_University_of_Gondar_Hospital_Northwest_Ethiopia]. Accessed 20 January 2021.
[5] Hailu Getachew; Awoke Derbie and Daniel Mekonnen. 2018. "Surfaces and Air Bacteriology of Selected Wards at a Referral Hospital, Northwest Ethiopia: A Cross-Sectional Study." International Journal of Microbiology.

[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5971317/]. Accessed 20 January 2021.
[6] Solomon Ali; Melkamu Birhane; Sisay Bekele and Kibru Gebre. 2018. "Healthcare associated infection and its risk factors among patients admitted to a tertiary hospital in Ethiopia: longitudinal study." Antimicrobial Resistance & Infection Control Vol. 7
[2].
[https://www.researchgate.net/publication/322275609_Healthcare_associated_infection_and_its_risk_factors_among_patients_admitted_to_a_tertiary_hospital_in_Ethiopia_longitudinal_study]. Accessed 20 January 2021.
[7] Sepideh Bagheri Nejad; Benedetta Allegranzi; Shamsuzzoha Syed; Benjamin Ellis and Didier Pittetd. 2011. "Health-care-associated infection in Africa: a systematic review." World Health Organization Bulletin Vol. 89.
[https://www.who.int/bulletin/volumes/89/10/11-088179.pdf]. Accessed 20 January 2021.

4.7 CAPACITY TO TEST AND APPROVE NEW MEDICAL COUNTERMEASURES

4.7.1 Regulatory process for conducting clinical trials of unregistered interventions

4.7.1a

Is there a national requirement for ethical review (e.g., from an ethics committee or via Institutional Review Board approval) before beginning a clinical trial?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence of a national requirement for ethical review (e.g., from an ethics committee or via Institutional Review Board approval) before beginning a clinical trial in Ethiopia.

The Scientific and Ethical Review Office (SERO), which is the secretariat for the institutional review board of the Ethiopian Public Health Institute (EPHI), is responsible for ensuring the scientific validity and ethical integrity of ongoing and completed research projects for entities under the auspices of EPHI. [1]

According to the Canadian Coalition for Global Health Research, the Ministry of Science and Technology is mandated to guide, coordinate, and facilitate all science and technology activities in the country including health. [2] The website of the Ministry of Science and Technology was non-functional during the time of writing this report. [3] The Ministry of Science and Technology's National Research Ethics Review Guidelines, published in 2014, state that the Ministry requires all research involving human participants or human biological materials to be reviewed and approved by the National Research Ethics Review Committee (NRERC) and Institutional Review Boards (IRB) prior to the initiation of any research-related activities, including the recruitment and screening of participants. [4] Although NRERC and IRBs are both established under the authority of the Ministry of Science and Technology but function independently. They both have the authority to approve, require modification in, or disapprove all research activities that fall within the ministry's jurisdiction. The NRERC is responsible for providing the final ethical decision regarding all clinical trials involving new drugs, vaccines, therapeutic regimens, and other biological products as well as invasive diagnostic procedures. The IRB, on the other hand, is composed of at least five members and is mandated to review research related to genetic research (including stem cell research). [4]

No further evidence is provided through the website of the Ministry of Health.

[1] Ethiopian Public Health Institute. "Scientific and Ethical Review Office (SERO)." [http://www.ephi.gov.et/index.php/services/scientific-and-ethical-review-office-sero]. Accessed 20 January 2021.
[2] Canadian Coalition for Global Health Research. "Ethiopia Research Ethics." [https://www.ccghr.ca/resources/harmonization/ethiopia/ethiopia-research-ethics/]. Accessed 20 January 2021.
[3] Ministry of Science and Technology. [https://mint.gov.et/?lang=en]. Accessed 20 January 2021.
[4] Ministry of Science and Technology. 2014. "National Research Ethics Review Guideline." [https://www.ccghr.ca/wp-content/uploads/2013/11/national-research-ethics-review-guidline.pdf]. Accessed 20 January 2021.

4.7.1b

Is there an expedited process for approving clinical trials for unregistered medical countermeasures (MCM) to treat ongoing epidemics?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence of an expedited process for approving clinical trials for unregistered medical countermeasures (MCM) to treat ongoing epidemics in Ethiopia.

The Ministry of Science and Technology is mandated to guide, coordinate, and facilitate all science and technology activities in the country including health. The ministry's National Research Ethics Review Guidelines, published in 2014, guide the research involving human participants and clinical trials. The guidelines contain review mechanisms and exempted review procedures that list "emergency conditions of national or regional importance, such as epidemics," as one of the categories for which the normal review process is replaced with an expedited and streamlined review process. [1]

The research under the exempt categories still undergoes a perfunctory review to ensure adherence to ethical principles and that the process meets at a minimum "the principles of respect for persons, beneficence, and justice." The guidelines also contain a section on expedited review procedures, which contains eligibility criteria such as minimal risk and protection of privacy. Requests for study submission must also be endorsed by the institutional review board (IRB), and the chair of the IRB administration holds the ultimate authority to approve such requests, where additional requirements may be placed before commencing the study. [1] The document, however, does not make any specific reference to the form the research to which these guidelines apply, and there is no explicit mention of clinical trials. [1]

No further evidence of expedited processes for clinical trials is available through the Ministry of Health website or the Ethiopian Public Health Institute website. [2, 3] The website of the Ministry of Science and Technology was non-functional during the time of writing this report. [4]

[1] Ministry of Science and Technology. 2014. "National Research Ethics Review Guideline." [https://www.ccghr.ca/wp-content/uploads/2013/11/national-research-ethics-review-guidline.pdf]. Accessed 20 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[4] Ministry of Science and Technology. [https://mint.gov.et/?lang=en]. Accessed 20 January 2021.

4.7.2 Regulatory process for approving medical countermeasures

4.7.2a

Is there a government agency responsible for approving new medical countermeasures (MCM) for humans?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence of a government agency responsible for approving new medical countermeasures (MCM) for humans in Ethiopia.

The Ethiopian Food and Drug Administration (EFDA) has a Medicine Registration and Licensing Directorate which works "to offer quality, safe and effective medicines in the pursuit of protecting public health," as well as a Medicine Quality Assessment Directorate; however, no further information is provided on either of the Directorate's webpages. [1, 2, 3]

The EFDA is also mandated to issue, renew, suspend, revoke or deny a certificate of competence for medicines, ensure the efficacy and quality of medicines, and monitor and control the manufacturing, import, export, distribution, prescribing, dispensing, and use of drugs. The EFDA also mandated to "prepare a list of medicines for the country, structure the medicines in the list into different categories, revise the list whenever necessary." [4]

EFDA published in 2018 the Guidelines for Registration of Vaccines stating that "a basic function of the Authority is to evaluate the quality, safety, and efficacy of vaccines for human use. In order to license a vaccine for human use, the Authority must first set requirements for applicants to comply with. These requirements include (i) information needed for the application; (ii) evidence that the vaccine has passed the stages of research, development, production and quality control; (iii) evidence from clinical testing, and (iv) evidence that quality, safety and efficacy of the vaccine has been established." [5]

Additionally, according to the Expediting Medicine Market Authorization Strategy, published in 2017, the EFDA has been implementing different initiatives for expedited medicine market authorization, including a "fast track registration procedure" to be used "for new chemical entities claimed to treat seriously debilitating or life-threatening disease, or are used in emergency situations (conditions which cannot be adequately managed by medicines marketed in Ethiopia or which is not yet available in Ethiopia), the authority can designate priority review, issue conditional approval for one year, and allow for the submission of additional data or rolling submission based on the clinical data review by national advisory committee provided that the submitted limited clinical data demonstrates satisfactory benefit/risk ratio." [6]

[1] Ethiopian Food and Drug Administration. "About EFDA." [http://www.fmhaca.gov.et/about-efda/]. Accessed 20 January 2021.
[2] Ethiopian Food and Drug Administration Ethiopia. "Medicine Registration and Licensing Directorate: About the Directorate." [http://www.fmhaca.gov.et/medicine-registration-and-licensing-directorate/#1543485334675-ea77f300-3ebba6d0-27ff0858-062c]. Accessed 20 January 2021.
[3] Ethiopian Food and Drug Administration. "Medicine Quality Assessment Directorate." [http://www.fmhaca.gov.et/medicine-quality-assessment-directorate/]. Accessed 20 January 2021.
[4] Ethiopian Food and Drug Administration. "Power and Duties." [http://www.fmhaca.gov.et/about-efda/power-and-duties/]. Accessed 20 January 2021.
[5] Food, Medicine and Healthcare Administration and Control Authority of Ethiopia. 2018. "Guidelines for Registration of Vaccines." [http://www.fmhaca.gov.et/publication/guideline-for-registration-of-vaccine/]. Accessed 20 January 2021.
[6] Ethiopian Food and Drug Administration. 2017. "Expediting Medicine Market Authorization Strategy." [http://www.fmhaca.gov.et/publication/medicines-market-authorization-strategy-2017/]. Accessed 20 January 2021.

4.7.2b

Is there an expedited process for approving medical countermeasures (MCM) for human use during public health emergencies?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence of an expedited process for approving medical countermeasures (MCM) for human use during public health emergencies.

According to the Food, Medicine and Healthcare Administration and Control Authority of Ethiopia's (EFDA) Expediting Medicine Market Authorization Strategy, published in 2017, the EFDA has been implementing different initiatives for expedited medicine market authorization. Initiatives include establishing a "fast track registration procedure." The strategy further states that "for new chemical entities claimed to treat seriously debilitating or life-threatening disease, or are used in emergency situations (conditions which cannot be adequately managed by medicines marketed in Ethiopia or which is not yet available in Ethiopia), the authority can designate 'priority review;' issue conditional approval for one year and allow for the submission of additional data or rolling submission based on the clinical data review by national advisory committee provided that the submitted limited clinical data demonstrates satisfactory benefit/risk ratio." [1]

Furthermore, conditional marketing authorization may also be requested for medical products for human consumption, provided that the medical products are proven to treat a seriously debilitating or life-threatening disease, or that the medical products can be used in an emergency health situation. [1] While these guidelines are not specific to medical countermeasures, it is likely that they do encompass medical countermeasures based on the exemption criteria provided. The website of the Ministry of Health and the Ethiopian Public Health Institute do not provide further evidence. [2, 3]

[1] Food, Medicine and Healthcare Administration and Control Authority of Ethiopia. 2017. "Expediting Medicine Market Authorization Strategy." [http://www.fmhaca.gov.et/publication/medicines-market-authorization-strategy-2017/]. Accessed 20 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.

Category 5: Commitments to improving national capacity, financing plans to address gaps, and adhering to global norms

5.1 INTERNATIONAL HEALTH REGULATIONS (IHR) REPORTING COMPLIANCE AND DISASTER RISK REDUCTION

5.1.1 Official IHR reporting

5.1.1a

Has the country submitted IHR reports to the WHO for the previous calendar year?

Yes = 1 , No = 0

Current Year Score: 1

2020

World Health Organization

5.1.2 Integration of health into disaster risk reduction

5.1.2a

Are epidemics and pandemics integrated into the national risk reduction strategy or is there a standalone national disaster risk reduction strategy for epidemics and pandemics?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that epidemics and pandemics are integrated into the national risk reduction strategy in Ethiopia.

In 2012, the Ethiopian Public Health Institute (EPHI) published the Public Health Emergency Management Guidelines which pertain to health emergency preparedness, logistics and capacity building, early warning and surveillance, response, recovery, monitoring, and evaluation. The guidelines make reference to several priority diseases and do provide some disease-specific protocols to be followed (e.g. reporting procedures, sample types and reference laboratories, and 'action threshold levels'). Although these guidelines are general overall and not specify any particular pandemic, [1]

EPHI publishes disease-specific emergency preparedness and response plans, such as those for Ebola, measles, and cholera, which provide detailed risk-reduction strategies for the respective pandemics. The plans include disease surveillance, immunization strategies, screening at national ports of entry, rumor management guidelines, 'contact tracing and contact follow-up' (in the case of Ebola and measles), guidelines to reduce the spread of an outbreak (e.g. sanitation and hygiene precautions), pre-identification of resource needs and information and awareness generation. [2, 3, 4]

Additionally, according to a news release by EPHI, the Ministry of Health in collaboration with EPHI and several line ministries including the Ministry of Agriculture and Livestock Resources, the Ethiopian Environmental Protection Authority, and the Ethiopian Wildlife Conservation Authority, began developing a National Action Plan for Health Security in November 2017; the action plan, nonetheless, is not publicly available as of yet. [5]

[1] Ethiopian Public Health Institute. 2012. "Public Health Emergency Management - Guidelines for Ethiopia." [https://www.ephi.gov.et/images/guidelines/phem-guideline-final.pdf]. Accessed 20 January 2021.
[2] Ethiopian Public Health Institute. 2014. "Ebola Viral Disease: Interim Guideline." [http://www.ephi.gov.et/images/pictures/Gudeline%20Ebola%20latest%20final%20combined.pdf]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute. 2012. "Guidelines on Measles Surveillance and Outbreak Management - 3rd Edition." [https://www.ephi.gov.et/images/guidelines/guideline-on-measles-surveillance-and-outbreak-management2012.pdf]. Accessed 20 January 2021.
[4] Ethiopian Public Health Institute. 2011. "Guideline on Cholera Outbreak Management - Ethiopia." [https://www.ephi.gov.et/images/guidelines/national-cholera-guideline.pdf]. Accessed 20 January 2021.
[5] Ethiopian Public Health Institute. "National Action Plan for Health Security Being Developed." [https://www.ephi.gov.et/index.php/news-information/633-national-action-plan-for-health-security-being-developed].

Accessed 20 January 2021.

5.2 CROSS-BORDER AGREEMENTS ON PUBLIC HEALTH AND ANIMAL HEALTH EMERGENCY RESPONSE

5.2.1 Cross-border agreements

5.2.1a

Does the country have cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to public health emergencies?

Yes = 2, Yes, but there is evidence of gaps in implementation = 1, No = 0

Current Year Score: 2

There is publicly available evidence that Ethiopia has cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to public health emergencies.

Ethiopia is a member of the African Union's Africa Center for Disease Control and Prevention (Africa CDC), which seeks to improve the capacity of member states in surveillance, emergency response, and prevention of infectious diseases. The Africa CDC's strategic objectives include supporting member states during health emergencies; promoting partnerships and collaboration amongst member states to address emerging and endemic diseases and public health emergencies; and harmonizing disease control, prevention policies, and the surveillance systems of member states amongst other objectives. [1]

According to a report published by the African Union in July 2018, the Africa CDC epidemiologists have begun producing weekly reports that summarize public health events and provide early signals of possible disease outbreaks that may negatively affect general public health. The report also notes that the Africa CDC works to support member states respond to disease outbreaks. Examples include addressing Acute Watery Diarrhea in Ethiopia. Mechanisms are also in place to facilitate public health information sharing; for example, the Africa CDC launched a platform to facilitate weekly discussions on regional public health issues between member states, which have been successful in allowing for informal notifications of outbreak events taking place in neighboring states. [2]

Ethiopia's profile on the CDC website suggests that the CDC support is ongoing in the country, and does not indicate that there are any gaps its implementation. [3]

No further evidence is provided through the websites of the Ministry of Health and the Ethiopian Public Health Institute. [4, 5]

[1] Africa Center for Disease Control and Prevention. "About the Africa Centers for Disease Control and Prevention (Africa CDC)." [http://www.africacdc.org/about/about-us]. Accessed 20 January 2021.
[2] African Union. July 2018. "Meeting of the Permanent Representatives' Committee 29 March 2018 Addis Ababa: First Progress Report of the Chairperson of the Commission on the Africa Center for Disease Control." [https://au.int/sites/default/files/documents/34074-doc-auc.report.africa.cdc_.prc_.29.03.pdf]. Accessed 20 January 2021.
[3] Center for Disease Control and Prevention. "Ethiopia Country Profile." [https://www.cdc.gov/globalhivtb/where-we-work/ethiopia/ethiopia.html]. Accessed 2 February 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.

[5] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.

5.2.1b

Does the country have cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to animal health emergencies?

Yes = 2, Yes, but there is evidence of gaps in implementation = 1, No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to animal health emergencies.

The strategic objectives of the African Union's Africa Center for Disease Control and Prevention (Africa CDC), which Ethiopia is a member of, do not specifically mention animal health. [1]

The websites of the Ministry of Health, and the Ethiopian Public Health Institute do not provide evidence of cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to animal health emergencies. [2, 3] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Livestock and Fisheries websites, both included in the Ethiopian Government Portal, were non-functional during the time of writing this report. [4, 5, 6]

[1] Africa Center for Disease Control and Prevention. "About the Africa Centers for Disease Control and Prevention (Africa CDC)". http://www.africacdc.org/about/about-us. Accessed 20 January 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[3] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[4] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 20 January 2021.
[5] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 20 January 2021.
[6] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.

5.3 INTERNATIONAL COMMITMENTS

5.3.1 Participation in international agreements

5.3.1a

Does the county have signatory and ratification (or same legal effect) status to the Biological Weapons Convention?

Signed and ratified (or action having the same legal effect) = 2, Signed = 1, Non-compliant or not a member = 0

Current Year Score: 2

2021

Biological Weapons Convention

5.3.1b

Has the country submitted confidence building measures for the Biological Weapons Convention in the past three years?

Yes = 1 , No = 0

Current Year Score: 0

2021

Biological Weapons Convention

5.3.1c

Has the state provided the required United Nations Security Council Resolution (UNSCR) 1540 report to the Security Council Committee established pursuant to resolution 1540 (1540 Committee)?

Yes = 1 , No = 0

Current Year Score: 1

2021

Biological Weapons Convention

5.3.1d

Extent of United Nations Security Council Resolution (UNSCR) 1540 implementation related to legal frameworks and enforcement for countering biological weapons:

Very good (60+ points) = 4, Good (45–59 points) = 3, Moderate (30–44 points) = 2, Weak (15–29 points) = 1, Very weak (0–14 points) or no matrix exists/country is not party to the BWC = 0

Current Year Score: 2

2021

Biological Weapons Convention

5.3.2 Voluntary memberships

5.3.2a

Does the country meet at least 2 of the following criteria?

- Membership in Global Health Security Agenda (GHSA)
- Membership in the Alliance for Country Assessments for Global Health Security and IHR Implementation (JEE Alliance)
- Membership in the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (GP)
- Membership in the Australia Group (AG)
- Membership in the Proliferation Security Initiative (PSI)

Needs to meet at least two of the criteria to be scored a 1 on this measure. , Yes for five = 1 , Yes for four = 1 , Yes for three = 1 , Yes for two = 1 , Yes for one = 0 , No for all = 0

Current Year Score: 1

2021

Global Health Security Agenda; JE Alliance; Global Partnership; Australia Group; PSI

5.4 JOINT EXTERNAL EVALUATION (JEE) AND PERFORMANCE OF VETERINARY SERVICES PATHWAY (PVS)

5.4.1 Completion and publication of a Joint External Evaluation (JEE) assessment and gap analysis

5.4.1a

Has the country completed a Joint External Evaluation (JEE) or precursor external evaluation (e.g., GHSA pilot external assessment) and published a full public report in the last five years?

Yes = 1 , No = 0

Current Year Score: 1

2021

WHO Strategic Partnership for IHR and Health Security (SPH); Global Health Security Agenda

5.4.1b

Has the country completed and published, within the last five years, either a National Action Plan for Health Security (NAPHS) to address gaps identified through the Joint External Evaluation (JEE) assessment or a national GHSA roadmap that sets milestones for achieving each of the GHSA targets?

Yes = 1 , No = 0

Current Year Score: 0

2021

WHO Strategic Partnership for IHR and Health Security (SPH); Global Health Security Agenda

5.4.2 Completion and publication of a Performance of Veterinary Services (PVS) assessment and gap analysis

5.4.2a

Has the country completed and published a Performance of Veterinary Services (PVS) assessment in the last five years?

Yes = 1 , No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.4.2b

Has the country completed and published a Performance of Veterinary Services (PVS) gap analysis in the last five years?

Yes = 1 , No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.5 FINANCING

5.5.1 National financing for epidemic preparedness

5.5.1a

Is there evidence that the country has allocated national funds to improve capacity to address epidemic threats within the past three years?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has allocated national funds to improve capacity to address epidemic threats within the past three years.

The Ethiopian Health Accounts (HA) document for the years 2016/2017, published by the Ministry of Health, provides information on national level regarding the parties that pay and manage health resources in the country. According to the HA findings, the government managed 52 per cent of the health resources in the country, without further elaboration on the spending allocations; although the priority of the donor and NGO -managed fund was allocated for preventive care. [1] The document, nonetheless, does not include any indication of the resources distribution plan for the years ahead.

The website of the Ministry of Health and the Ethiopian Government Portal do not provide evidence of national funds allocated to improve capacity to address epidemic threats. [2, 3] The websites of the Ministry of Agriculture, the Ministry of Livestock and Fisheries, and the Ministry of Defense were non-functional during the time of writing this report. [4, 5, 6]

[1] Ministry of Health. 2019. "Ethiopia Health Accounts." [http://www.moh.gov.et/ejcc/sites/default/files/2020-01/Ethiopia%207th%20Health%20Accounts%20Report_2016-17.pdf]. Accessed 3 February 2021.
[2] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 3 February 2021.
[3] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 3 February 2021.
[4] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 3 February 2021.
[5] Ministry of Livestock and Fisheries. [http://www.molf.gov.et]. Accessed 3 February 2021.
[6] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 3 February 2021.

5.5.2 Financing under Joint External Evaluation (JEE) and Performance of Veterinary Services (PVS) reports and gap analyses

5.5.2a

Does the Joint External Evaluation (JEE) report, National Action Plan for Health Security (NAPHS), and/or national GHSA roadmap allocate or describe specific funding from the national budget (covering a time-period either in the future or within the past five years) to address the identified gaps?

Yes = 1 , No/country has not conducted a JEE = 0

Current Year Score: 0

2021

WHO Strategic Partnership for IHR and Health Security (SPH); Global Health Security Agenda

5.5.2b

Does the Performance of Veterinary Services (PVS) gap analysis and/or PVS assessment allocate or describe specific funding from the national budget (covering a time-period either in the future or within the past five years) to address the identified gaps?

Yes = 1 , No/country has not conducted a PVS = 0

Current Year Score: 0

2021

OIE PVS assessments

5.5.3 Financing for emergency response

5.5.3a

Is there a publicly identified special emergency public financing mechanism and funds which the country can access in the face of a public health emergency (such as through a dedicated national reserve fund, an established agreement with the World Bank pandemic financing facility/other multilateral emergency funding mechanism, or other pathway identified through a public health or state of emergency act)?

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence of a publicly identified special emergency public financing mechanism and funds which Ethiopia can access in the face of a public health emergency.

The International Development Association (IDA) of the World Bank reports that Ethiopia was one of the top borrowers of IDA loans in 2020, borrowing 1,046 million USD. [1] Ethiopia is also a recipient of the World Health Organization's (WHO) Contingency Fund for Emergencies, which falls under the WHO's Health Emergencies Programme. [2]

Also, the Ethiopia Humanitarian Fund (EHF) is a pooled fund, with operational support from the UN Office for the Coordination of Humanitarian Affairs. Since its establishment in 2006 until 2016, the fund has allocated over 360 million USD in emergency assistance, addressing sectoral needs in major emergencies stemming from hazards such as drought, floods, and disease outbreaks. The EHF aims to "support the timely disbursement of funds to the most critical humanitarian needs in the context of both the annual Humanitarian Requirements Document (HRD) and emerging unforeseen emergency needs." [3]

[1] World Bank International Development Association. "Financing." [http://ida.worldbank.org/financing/ida-financing]. Accessed 20 January 2021.
[2] World Health Organization. 2018. "Enabling Quick Action to Save Lives: Contingency Fund for Emergencies - 2018 update." [https://www.who.int/emergencies/funding/contingency-fund/cfe-update-october2018.pdf]. Accessed 20 January

2021.
[3] Humanitarian Response. "EHF." [https://www.humanitarianresponse.info/en/operations/ethiopia/hrf]. Accessed 20 January 2021.

5.5.4 Accountability for commitments made at the international stage for addressing epidemic threats

5.5.4a

Is there evidence that senior leaders (president or ministers), in the past three years, have made a public commitment either to:
- Support other countries to improve capacity to address epidemic threats by providing financing or support?
- Improve the country's domestic capacity to address epidemic threats by expanding financing or requesting support to improve capacity?
Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 0

There is no publicly available evidence that senior leaders in Ethiopia, in the past three years, have committed to support other countries to improve capacity to address epidemic threats by providing financing or support; neither there is evidence that senior leaders in Ethiopia committed to improve its own domestic capacity to address epidemic threats by expanding financing or requesting support to improve capacity in the past three years.

According to a report by the African Union, published in 2014, following the Ebola outbreak in 2014 the Government of Ethiopia, as announced by the Minister of Health, pledged to deploy 200 volunteer health professionals to West Africa and also donated 500,000 USD to Liberia, Guinea, and Sierra Leone. [1] However, there is no evidence of more recent or similar support that Ethiopia provided for other countries.

Ethiopia is a member of the African Union's Africa Center for Disease Control and Prevention (Africa CDC), which seeks to improve the capacity of member states in the surveillance, emergency response, and prevention of infectious diseases. The Africa CDC serves as a cooperative platform for member states to share knowledge, exchange lessons learnt, build capacity, and provide technical assistance to each other. The Africa CDC's strategic objectives include supporting member states during health emergencies; promoting partnerships and collaboration amongst member states to address emerging and endemic diseases and public health emergencies; and harmonizing disease control, prevention policies and the surveillance systems of member states amongst other objectives. [2] There is no evidence, however, suggesting that Ethiopian senior leaders made any commitments to financially support other countries to improve their capacity to address epidemic threats.

The Government of Ethiopia committed to improve its capacity to address domestic health emergencies, including dedicating financial resources in response to the El Nino drought in 2015/2016, in addition to Ethiopia's ongoing efforts to fighting the HIV/AIDs epidemic; there is no publicly available evidence regarding other epidemic threats by senior leaders. [3, 4]

According to the Global Health Security Tracking Dashboard, Ethiopia received 5.66 Billion USD in disbursed funds between 2014 and 2020. The funding was primarily for workforce development, immunization efforts, reporting, and improving the national laboratory system. According to the same source, Ethiopia dedicated 488.29 Million USD for emergency response operations. [5] However, there is no evidence suggesting that this has been officially announced by Ethiopian senior leaders as of yet.

No further evidence was available the websites of the Ministry of Health, the Ethiopian Public Health Institute, or the

Ethiopian Government Portal. [6, 7, 8]

[1] African Union. 2014. "Ethiopia Contributes to African Union Ebola Response Efforts." [https://reliefweb.int/report/liberia/ethiopia-contributes-african-union-ebola-response-efforts]. Accessed 20 January 2021.
[2] Africa Center for Disease Control and Prevention. "About the Africa Centers for Disease Control and Prevention (Africa CDC)." [http://www.africacdc.org/about/about-us]. Accessed 20 January 2021.
[3] World Health Organization. 2016. "Drought and Disease Outbreaks in Ethiopia: Partner Update and Funding Request." [https://www.afro.who.int/sites/default/files/2017-05/160208-ethiopia_partner-engagement-1_jan2016_final_ap.pdf]. Accessed 20 January 2021.
[4] United States Embassy in Ethiopia. 2018. "Remarks by Ambassador Michael Raynor on Progress toward HIV Epidemic Control in Ethiopia." [https://et.usembassy.gov/remarks-by-ambassador-michael-raynor-on-progress-toward-hiv-epidemic-control-in-ethiopia/]. Accessed 20 January 2021.
[5] Global Health Security Tracking Dashboard. "Ethiopia: Recipient Profile." [https://tracking.ghscosting.org/details/74/recipient]. Accessed 20 January 2021.
[6] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[7] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[8] Ethiopian Government Portal. [http://www.ethiopia.gov.et/ministries-and-agencies]. Accessed 20 January 2021.

5.5.4b

Is there evidence that the country has, in the past three years, either:
- Provided other countries with financing or technical support to improve capacity to address epidemic threats?
- Requested financing or technical support from donors to improve the country's domestic capacity to address epidemic threats?
Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 1

There is publicly available evidence suggesting that Ethiopia in the past three years utilized financing or technical support from donors to improve the country's domestic capacity to address epidemic threats; but there is no evidence that Ethiopia provided other countries with financing or technical support to improve capacity to address epidemic threats over the past three years.

The Global Health Security Funding Tracker that Ethiopia invested donor finances to improve domestic capacity to address epidemic threats. The tracker notes that Ethiopia has received funding of around 5.51 Million USD from multiple donors to enhance their capacity on global security preparedness. [1] There is evidence that the Government of Ethiopia has committed to improve its capacity to address domestic health emergencies, including dedicating financial resources in response to the El Nino drought in 2015/2016, and Ethiopia's ongoing efforts to fighting the HIV/AIDs epidemic, however there is no publicly available evidence regarding other epidemic threats. [2, 3]

[1] Global Health Security Funding Tracker. [https://tracking.ghscosting.org/details/74/recipient]. Accessed 20 January 2021.
[2] World Health Organization. 2016. "Drought and Disease Outbreaks in Ethiopia: Partner Update and Funding Request." [https://www.afro.who.int/sites/default/files/2017-05/160208-ethiopia_partner-engagement-1_jan2016_final_ap.pdf]. Accessed 20 January 2021.
[3] United States Embassy in Ethiopia. 2018. "Remarks by Ambassador Michael Raynor on Progress toward HIV Epidemic Control in Ethiopia." [https://et.usembassy.gov/remarks-by-ambassador-michael-raynor-on-progress-toward-hiv-epidemic-control-in-ethiopia/]. Accessed 20 January 2021.

5.5.4c

Is there evidence that the country has fulfilled its full contribution to the WHO within the past two years?

Yes = 1 , No = 0

Current Year Score: 0

2021

Economist Impact analyst qualitative assessment based on official national sources, which vary by country

5.6 COMMITMENT TO SHARING OF GENETIC AND BIOLOGICAL DATA AND SPECIMENS

5.6.1 Commitment to sharing genetic data, clinical specimens, and/or isolated specimens (biological materials) in both emergency and nonemergency research

5.6.1a

Is there a publicly available plan or policy for sharing genetic data, clinical specimens, and/or isolated specimens (biological materials) along with the associated epidemiological data with international organizations and/or other countries that goes beyond influenza?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence suggesting that Ethiopia has a plan or policy for sharing genetic data, clinical specimens, and/or isolated specimens (biological materials) along with the associated epidemiological data with international organizations and/or other countries that goes beyond influenza.

Ethiopia is a member of the African Society for Laboratory Medicine (ASLM), which is headquartered in Addis Ababa; however, the ASLM website does not indicate that there is such a policy in place. [1] Ethiopia is also a member of the East African Laboratory Network, although the group do not appear to have a website and so it cannot be determined whether a plan to share clinical specimens is in place. [2, 3] The websites of the Ministry of Health, Ethiopian Public Health Institute do not provide further evidence. [4, 5] The Ethiopian Ministry of Agriculture and Natural Resources and the Ministry of Defense websites were non-functional during the time of this research. [6, 7]

[1] African Society for Laboratory Medicine. [http://www.aslm.org/]. Accessed 20 January 2021.
[2] World Organization for Animal Health (OIE). December 2017. "Meeting on FMD for the East African Regional Laboratory Network (EARLN) Addis Ababa, Ethiopia, December 12-14th 2017."[http://www.rr-africa.oie.int/docspdf/en/2018/FMD/4-Daniel%20Gizaw%20EARLN%20Report.pdf]. Accessed 20 January 2021.
[3] Food and Agriculture Organization of the United Nations. 2018. "Regional Roadmap Meeting III: Foot-and-Mouth Disease Progressive Control Pathway - Eastern Africa." [http://www.fao.org/3/CA1479EN/ca1479en.pdf]. Accessed 20 January 2021.
[4] Ministry of Health. [http://www.moh.gov.et/ejcc/]. Accessed 20 January 2021.
[5] Ethiopian Public Health Institute. [https://www.ephi.gov.et/]. Accessed 20 January 2021.
[6] Ministry of Agriculture and Natural Resources. [http://www.moa.gov.et]. Accessed 20 January 2021.
[7] Ministry of Defense. [http://www.fdreDefenseforce.gov.et]. Accessed 20 January 2021.

5.6.1b

Is there public evidence that the country has not shared samples in accordance with the Pandemic Influenza Preparedness (PIP) framework in the past two years?

Yes = 0 , No = 1

Current Year Score: 1

There is no public evidence that Ethiopia has not shared samples in accordance with the Pandemic Influenza Preparedness (PIP) framework in the past two years.

Ethiopia's country profile on the World Health Organization (WHO) website do not indicate that Ethiopia has not shared samples, [1] nor does Ethiopia's page on WHO PIP framework website, or local media outlets. [2]

[1] World Health Organization. "Ethiopia." [https://www.who.int/countries/eth/en/]. Accessed 20 January 2021.
[2] World Health Organization. "Pandemic Influenza Preparedness (PIP) Framework - Ethiopia." [http://open.who.int/2018-19/country-category/ETH/20]. Accessed 20 January 2021.

5.6.1c

Is there public evidence that the country has not shared pandemic pathogen samples during an outbreak in the past two years?

Yes = 0 , No = 1

Current Year Score: 1

There is no publicly available evidence suggesting that Ethiopia has not shared pandemic pathogen samples, including COVID-19 samples, during an outbreak in the past two years.

According to a news article published by the Ethiopian News Agency, in November 2018, a yellow fever epidemic occurred in the Wolayita Zone, and the Ethiopian Public Health Institute reported that blood specimens were sent to a laboratory in Dakar, Senegal. [1] The Ethiopia country profile on th eWorld Health Organization (WHO) website does not provide evidence on this matter. [2] A review of online local news sources did not provide any evidence that Ethiopia has not shared pandemic pathogen samples during an outbreak over the past two years.

[1] Ethiopian News Agency. 7th November 2018. "Yellow Fever Epidemic Reported in Wolayita Zone." [https://www.ena.et/en/2018/11/07/yellow-fever-epidemic-reported-in-wolayita-zone/]. Accessed 20 January 2021.
[2] World Health Organizaion. "Ethiopia." [https://www.who.int/countries/eth/en/]. Accessed 2 February 2021.

Category 6: Overall risk environment and vulnerability to biological threats

6.1 POLITICAL AND SECURITY RISK

6.1.1 Government effectiveness

6.1.1a

Policy formation (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 3

2020

Economist Intelligence

6.1.1b

Quality of bureaucracy (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 1

2020

Economist Intelligence

6.1.1c

Excessive bureaucracy/red tape (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.1d

Vested interests/cronyism (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 1

2020

Economist Intelligence

6.1.1e

Country score on Corruption Perception Index (0-100, where 100=best)

Input number

Current Year Score: 38

2020

Transparency International

6.1.1f

Accountability of public officials (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 1

2020

Economist Intelligence

6.1.1g

Human rights risk (Economist Intelligence score; 0-4, where 4=best)

Input number

Current Year Score: 1

2020

Economist Intelligence

6.1.2 Orderly transfers of power

6.1.2a

How clear, established, and accepted are constitutional mechanisms for the orderly transfer of power from one government to another?

Very clear, established and accepted = 4, Clear, established and accepted = 3, One of the three criteria (clear, established, accepted) is missing = 2, Two of the three criteria (clear, established, accepted) are missing = 1, Not clear, not established, not accepted = 0

Current Year Score: 0

2021

Economist Intelligence

6.1.3 Risk of social unrest

6.1.3a

What is the risk of disruptive social unrest?

Very low: Social unrest is very unlikely = 4, Low: There is some prospect of social unrest, but disruption would be very limited = 3, Moderate: There is a considerable chance of social unrest, but disruption would be limited = 2, High: Major social unrest is likely, and would cause considerable disruption = 1, Very high: Large-scale social unrest on such a level as to seriously challenge government control of the country is very likely = 0

Current Year Score: 0

2021

Economist Intelligence

6.1.4 Illicit activities by non-state actors

6.1.4a

How likely is it that domestic or foreign terrorists will attack with a frequency or severity that causes substantial disruption?

No threat = 4, Low threat = 3, Moderate threat = 2, High threat = 1, Very high threat = 0

Current Year Score: 1

2021

Economist Intelligence

6.1.4b

What is the level of illicit arms flows within the country?

4 = Very high, 3 = High, 2 = Moderate, 1 = Low, 0 = Very low

Current Year Score: 3

2020

UN Office of Drugs and Crime (UNODC)

6.1.4c

How high is the risk of organized criminal activity to the government or businesses in the country?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 3

2021

Economist Intelligence

6.1.5 Armed conflict

6.1.5a

Is this country presently subject to an armed conflict, or is there at least a moderate risk of such conflict in the future?

No armed conflict exists = 4, Yes; sporadic conflict = 3, Yes; incursional conflict = 2, Yes, low-level insurgency = 1, Yes; territorial conflict = 0

Current Year Score: 0

2021

Economist Intelligence

6.1.6 Government territorial control

6.1.6a

Does the government's authority extend over the full territory of the country?

Yes = 1, No = 0

Current Year Score: 0

2021

Economist Intelligence

6.1.7 International tensions

6.1.7a

Is there a threat that international disputes/tensions could have a negative effect?

No threat = 4, Low threat = 3, Moderate threat = 2, High threat = 1, Very high threat = 0

Current Year Score: 1

2021

Economist Intelligence

6.2 SOCIO-ECONOMIC RESILIENCE

6.2.1 Literacy

6.2.1a

Adult literacy rate, population 15+ years, both sexes (%)

Input number

Current Year Score: 51.77

2017

United Nations Development Programme (UNDP); United Nations Educational, Scientific and Cultural Organization (UNESCO); The Economist Intelligence Unit

6.2.2 Gender equality

6.2.2a

United Nations Development Programme (UNDP) Gender Inequality Index score

Input number

Current Year Score: 0.49

2018

United Nations Development Programme (UNDP); The Economist Intelligence Unit

6.2.3 Social inclusion

6.2.3a

Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)

Input number

Current Year Score: 9.4

2015

World Bank; Economist Impact

6.2.3b

Share of employment in the informal sector

Greater than 50% = 2, Between 25-50% = 1, Less than 25% = 0

Current Year Score: 1

Ethiopia's share of employment in the informal sector is 49 per cent as reported by International Labour Organization in 2005. [1]

[1] International Labour Organization. 2005. "Labour Force Survey - Ethiopia." [https://www.ilo.org/dyn/lfsurvey/lfsurvey.list?p_lang=en&p_country=ET]. Accessed 20 January 2021.

6.2.3c

Coverage of social insurance programs (% of population)

Scored in quartiles (0-3, where 3=best)

Current Year Score: 0

2016, or latest available

World Bank; Economist Impact calculations

6.2.4 Public confidence in government

6.2.4a

Level of confidence in public institutions

Input number

Current Year Score: 1

2021

Economist Intelligence Democracy Index

6.2.5 Local media and reporting

6.2.5a

Is media coverage robust? Is there open and free discussion of public issues, with a reasonable diversity of opinions?

Input number

Current Year Score: 0

2021

Economist Intelligence Democracy Index

6.2.6 Inequality

6.2.6a

Gini coefficient

Scored 0-1, where 0=best

Current Year Score: 0.35

Latest available.

World Bank; Economist Impact calculations

6.3 INFRASTRUCTURE ADEQUACY

6.3.1 Adequacy of road network

6.3.1a

What is the risk that the road network will prove inadequate to meet needs?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 1

2021

Economist Intelligence

6.3.2 Adequacy of airports

6.3.2a

What is the risk that air transport will prove inadequate to meet needs?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 2

2021

Economist Intelligence

6.3.3 Adequacy of power network

6.3.3a

What is the risk that power shortages could be disruptive?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 2

2021

Economist Intelligence

6.4 ENVIRONMENTAL RISKS

6.4.1 Urbanization

6.4.1a

Urban population (% of total population)

Input number

Current Year Score: 21.23

2019

World Bank

6.4.2 Land use

6.4.2a

Percentage point change in forest area between 2006–2016

Input number

Current Year Score: -0.65

2008-2018

World Bank; Economist Impact

6.4.3 Natural disaster risk

6.4.3a

What is the risk that the economy will suffer a major disruption owing to a natural disaster?

Very low = 4, Low = 3, Moderate = 2, High = 1, Very high = 0

Current Year Score: 1

2021

Economist Intelligence

6.5 PUBLIC HEALTH VULNERABILITIES

6.5.1 Access to quality healthcare

6.5.1a

Total life expectancy (years)

Input number

Current Year Score: 66.24

2018

United Nations; World Bank, UNICEF; Institute for Health Metrics and Evaluation (IHME); Central Intelligence Agency (CIA) World Factbook

6.5.1b

Age-standardized NCD mortality rate (per 100 000 population)

Input number

Current Year Score: 511.3

2019

WHO

6.5.1c

Population ages 65 and above (% of total population)

Input number

Current Year Score: 3.52

2019

World Bank

6.5.1d

Prevalence of current tobacco use (% of adults)

Input number

Current Year Score: 4.6

2018

World Bank

6.5.1e

Prevalence of obesity among adults

Input number

Current Year Score: 4.5

2016

WHO

6.5.2 Access to potable water and sanitation

6.5.2a

Percentage of homes with access to at least basic water infrastructure

Input number

Current Year Score: 41.06

2017

UNICEF; Economist Impact

6.5.2b

Percentage of homes with access to at least basic sanitation facilities

Input number

Current Year Score: 7.32

2017

UNICEF; Economist Impact

6.5.3 Public healthcare spending levels per capita

6.5.3a

Domestic general government health expenditure per capita, PPP (current international $)

Input number

Current Year Score: 15.57

2018

WHO Global Health Expenditure database

6.5.4 Trust in medical and health advice

6.5.4a

Trust medical and health advice from the government

Share of population that trust medical and health advice from the government , More than 80% = 2, Between 60-80%, or no data available = 1, Less than 60% = 0

Current Year Score: 2

2018

Wellcome Trust Global Monitor 2018

6.5.4b

Trust medical and health advice from medical workers

Share of population that trust medical and health advice from health professionals , More than 80% = 2, Between 60-80%, or no data available = 1, Less than 60% = 0

Current Year Score: 2

2018

Wellcome Trust Global Monitor 2018