

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

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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: 0

There is insufficient evidence that Mali has a national AMR plan for the surveillance, detection and reporting of priority AMR pathogens. The World Health Organization's (WHO) Library of National Action Plans does not list a national AMR plan from Mali. [1] The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 notes the lack of an AMR plan, although it mentions the existence of an AMR laboratory surveillance guide and the development of a 'One Health' national plan that would incorporate AMR detection and notification. [2] The 2018 WHO "Monitoring Global Progress on Addressing AMR" report notes that Mali has a national AMR action plan, however there is insufficient evidence that this action plan covers the surveillance, detection, and reporting of priority AMR pathogens. [3] There is no additional information on the websites of the Ministry of Health and Public Hygiene, Ministry of Agriculture, Higher Institute of Public Health or the National Institute of Research on Public Health about the status of the national AMR plan for the surveillance, detection and reporting of priority AMR pathogens. [4,5,6,7] The Higher Institute of Public Health does not have its own website, only a Facebook page. The National Health Laboratory of Mali and the National Institute of Research on Public Health do not have websites.

[1] World Health Organisation (WHO). "Library of National Action Plans". [<http://www.who.int/antimicrobial-resistance/national-action-plans/library/en>]. Accessed 3 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[3] World Health Organisation (WHO), Food and Agriculture Organisation of the United Nations (FAO), and World Organisation for Animal Health (OIE). 2017. "Monitoring Global Progress On Addressing Antimicrobial Resistance (AMR): Analysis report of the second round of results of AMR country self-assessment survey". [<http://www.who.int/antimicrobial-resistance/publications/Analysis-report-of-AMR-country-se/en/>]. Accessed 3 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). 2020. [<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[5] Mali Ministry of Agriculture. (Ministère de l'agriculture) 2020. [agriculture.gouv.ml] Accessed 3 September 2020.

[6] Higher Institute of Public Health. (Institut Supérieur De Santé De Santé Publique) 2020.

[<https://www.facebook.com/WWW.ISSP.ML/>] Accessed 3 September 2020.

[7] National Institute of Research on Public Health. ("Institut National de Recherche en Santé Publique") 2020.

[<http://www.sante.gov.ml/index.php/nep-mali/item/599-institut-national-de-recherche-en-sante-publique>] Accessed 3 September 2020.

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 Mali has a national laboratory that tests for some of the 7+1 priority AMR pathogens. The World Health Organization (WHO) Joint External Evaluation for Mali from June 2017 notes that the country has seven laboratories capable of detecting AMR pathogens. These include the Bacteriology Laboratory of the National Institute for Research in Public Health (INRSP) and the National Reference Laboratory for Priority AMR Pathogens. There is no mention of ongoing, regular testing for AMR pathogens or of a sentinel surveillance system. [1] The National Institute for Research in Public Health (INRSP) does not have its own website; its page on the Ministry of Health website does not have information about its diagnostic testing capacity or the existence of a sentinel surveillance system. [2] The National Reference Laboratory for Priority AMR Pathogens does not have a website. Academic publications indicate that there are domestic laboratories that can test for *E. coli*, *K. pneumoniae*, *S. pneumoniae*, *Salmonella* spp., *N. gonorrhoeae*, and *Mycobacterium tuberculosis*, but there is no mention of ongoing, regular testing or of a sentinel surveillance system. [3, 4, 5, 6, 7] The studies that involved *E. coli*, *Salmonella* spp., and *Mycobacterium tuberculosis* tests were for drug resistance. [3, 5, 7] There is no evidence of academic studies to indicate that laboratories in Mali have conducted tests for the other priority AMR pathogens (*S. aureus*, and *Shigella* spp). According to the WHO Global Database for Antimicrobial Resistance Country Self Assessment, there is a functioning national AMR surveillance system covering common bacterial infections in hospitalized and community patients+, with external quality assurance, and a national coordinating centre producing reports on AMR. There is no additional information on the websites of the Ministry of Health and Public Hygiene or Ministry of Agriculture. [8,9]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "National Institute for Research in Public Health (Institut National de Recherches en Santé Publique)". [<http://www.sante.gov.ml/index.php/nep-mali/item/599-institut-national-de-recherche-en-sante-publique>]. Accessed 3 September 2020.

[3] Sangare, Samba Adama et al. 2017. "Very high prevalence of extended-spectrum beta-lactamase-producing Enterobacteriaceae in bacteriemic patients hospitalized in teaching hospitals in Bamako, Mali". *PloS One* 12 [2] : e0172652. [<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5330466/>]. Accessed 3 September 2020.

[4] Baraïka, Mohamed A.G. et al. 2017. "Pathogens Causes of Fever in Sickle Cell Children in Mali". *Journal of Paediatric Laboratory Medicine* 1:102. [<https://www.omicsonline.org/open-access/pathogens-causes-of-fever-in-sickle-cell-children-in-mali.pdf>]. Accessed 3 September 2020.

[5] Fuche, Fabien J. et al. 2017. "Characterization of Invasive *Salmonella* Serogroup C1 Infections in Mali". *American Journal of Tropical Medicine and Hygiene* 98

[2] : 589-594. [<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5929196/>]. Accessed 3 September 2020.

[6] Mulanga-Kabeya, C. et al. 1999. "Prevalence and risk assessment for sexually transmitted infections in pregnant women and female sex workers in Mali: Is syndromic approach suitable for screening?" *Sexually Transmitted Infections* 75 [5] : 358-9. [<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1758239/>]. Accessed 3 September 2020.

[7] Togo, Antieme Combo Georges et al. 2017. "The most frequent *Mycobacterium tuberculosis* complex families in mali (2006–2016) based on spoligotyping". *International Journal Mycobacteriology*. 6 [4] : 379-86. [<http://www.ijmyco.org/text.asp?2017/6/4/379/218627>]. Accessed 3 September 2020.

[8] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). 2020. [<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[9] Mali Ministry of Agriculture. (Ministère de l'agriculture) 2020. [agriculture.gouv.ml] Accessed 3 September 2020.

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 evidence that the government of Mali conducts detection or surveillance activities (e.g. in soil, waterways, etc.) for antimicrobial residues or AMR organisms. There is no mention that the government of Mali conducts detection or surveillance activities for antimicrobial residues or AMR organisms in the World Health Organization (WHO) Joint External Evaluation for Mali from June 2017 or in the 2018 Monitoring Global Progress on Addressing Antimicrobial Resistance. [1, 2] There is no mention of such detection and surveillance activities on the websites of the Ministry of Environment, Ministry of Health and Public Hygiene, or Ministry of Security and Civil Protection. [3, 4, 5] Mali does not have a National Action Plan in the WHO Library of National Action Plans on AMR. [6]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[2] Food and Agriculture Organisation of the United Nations (FAO), World Organisation for Animal Health (OIE), and World Health Organisation (WHO). 2018. "Monitoring Global Progress on Addressing Antimicrobial resistance: Analysis report of the second round of results of AMR country self-assessment survey".

[<http://apps.who.int/iris/bitstream/handle/10665/273128/9789241514422-eng.pdf>]. Accessed 3 September 2020.

[3] Ministry of Environment, Sanitation, and Sustainable Development (Ministère de l'Environnement, de l'Assainissement et du Développement durable). [<https://environnement.gouv.ml/>]. Accessed 3 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[5] Ministry of Security and Civil Protection of Mali. (Ministère de la Sécurité et de la Protection Civile du Mali). [<https://www.securite.gouv.ml/>]. Accessed 3 September 2020.

[6] World Health Organisation. "Library of national action plans". [<http://www.who.int/antimicrobial-resistance/national-action-plans/library/en/>]. Accessed 3 September 2020.

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: 0

There is no evidence of national legislation or regulation in place requiring prescriptions for antibiotic use for humans. Decree No. 04-557/P-RM of 1 December 2004, which regulates the commercialisation of both human and veterinary medicines, does not require a prescription for antibiotics for humans. The approval process for medicines for human is overseen by the Ministry of Health. [1] The the World Health Organization (WHO) Joint External Evaluation (JEE) for Mali from June 2017 indicates that there is no national multisectoral plan for the detection of priority pathogens resistant to antimicrobials, antimicrobial stewardship plan, or national guidelines on the proper use of antibiotics. [2] However, the JEE mentions the existence of the National Guidelines for Antibiotic Therapy in Mali (RENAM 2015) and that Mali conducts a study on the quality of prescription drugs, in particular antibiotics (every 2 years). [2] The JEE also indicates that data show a large majority of bacterial strains isolated are resistant to antibiotics usually recommended for probabilistic treatment in both hospitalized patients and ambulatory. [2] Nor is there mention of Malian legislation requiring prescriptions for antibiotic use for humans

in the 2018 World Health Organisation's global progress report on AMR. [3] The website of the Ministry of Health does not have information on legislation regarding prescriptions for antibiotics. The Directorate of Pharmacy and Medicine is part of the Ministry of Health and does not have its own website [4, 5] The accessibility of unauthorized medicines is a problem in Mali. [6] With the support of United Nations Office on Drugs and Crime (UNODC), Mali's Mobile Intervention Brigade (BMI) has been fighting against fraudulent medicine. [6] Mali does not have a national action plan for AMR in the WHO Library of National Action Plans. [7]

[1] President of the Republic of Mali. Decree No. 04-557/P-RM of 1 December 2004. "Establishing authorization to market medicines for human and veterinary use (Décret n° 04 - 557 / P-RM du 01 décembre 2004 Instituant l'autorisation de mise sur le marché de médicaments à usage humain et vétérinaire)".

[http://mail.cnom.sante.gov.ml/index.php?option=com_content&task=view&id=447&Itemid=87]. Accessed 3 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[3] Food and Agriculture Organisation of the United Nations (FAO), World Organisation for Animal Health (OIE), and World Health Organisation (WHO). 2018. "Monitoring Global Progress on Addressing Antimicrobial resistance: Analysis report of the second round of results of AMR country self-assessment survey".

[<http://apps.who.int/iris/bitstream/handle/10665/273128/9789241514422-eng.pdf>]. Accessed 3 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[5] Directorate of Pharmacy and Medicine of Mali (Direction de la Pharmacie et du Médicament du Mali).

[http://mail.cnom.sante.gov.ml/index.php?option=com_directorix&view=entrydetails&id=164&Itemid=55]. Accessed 3 September 2020.

[6] United Nations Office on Drugs and Crime (UNODC). 28 March 2018. "Malian authorities achieve positive results in the fight against fraudulent medicine and drugs". [<https://www.unodc.org/westandcentralafrica/en/2018-03-12-mali-fight-against-fraudulent-medicine-and-drugs.html>]. Accessed 3 September 2020.

[7] World Health Organisation (WHO). "Library of National Action Plans". [<http://www.who.int/antimicrobial-resistance/national-action-plans/library/en>]. Accessed 3 September 2020.

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 evidence of national legislation or regulation in place requiring prescriptions for antibiotic use for animals. Decree No. 04-557/P-RM of 1 December 2004, which regulates the commercialisation of both human and veterinary medicines, does not require a prescription for antibiotics for animals. The approval process for medicines for animals is overseen by the Ministry of Livestock and Fish. [1] The completed Joint External Evaluation for Mali from June 2017 does not mention any national legislation requiring prescriptions for antibiotic use for animals. [2] Nor is there mention of Malian legislation requiring prescriptions for antibiotic use for animals in the 2018 World Health Organisation's global progress report on AMR. [3] The website of the Ministry of Livestock and Fisheries does not have information on legislation regarding prescriptions for antibiotics. [4] Mali does not have a national action plan for AMR in the WHO Library of National Action Plans. [5]

[1] President of the Republic of Mali. Decree No. 04-557/P-RM of 1 December 2004. "Establishing authorization to market medicines for human and veterinary use (Décret n° 04 – 557 / P-RM du 01 décembre 2004 Instituant l'autorisation de mise sur le marché de médicaments à usage humain et vétérinaire)".

[http://mail.cnom.sante.gov.ml/index.php?option=com_content&task=view&id=447&Itemid=87]. Accessed 3 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[3] Food and Agriculture Organisation of the United Nations (FAO), World Organisation for Animal Health (OIE), and World Health Organisation (WHO). 2018. "Monitoring Global Progress on Addressing Antimicrobial resistance: Analysis report of the second round of results of AMR country self-assessment survey".

[<http://apps.who.int/iris/bitstream/handle/10665/273128/9789241514422-eng.pdf>]. Accessed 3 September 2020.

[4] Ministry of Livestock and Fish of Mali (Ministère de l'Élevage et de la Pêche du Mali). [<http://mep.gouv.ml/>]. Accessed 3 September 2020.

[5] World Health Organisation (WHO). "Library of National Action Plans". [<http://www.who.int/antimicrobial-resistance/national-action-plans/library/en>]. Accessed 3 September 2020.

1.2 ZOOONOTIC 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: 0

There is insufficient evidence that Mali has national legislation, plans, or equivalent strategy documents on zoonotic disease. Mali does have national initiatives on specific zoonotic diseases. However, there is insufficient information about the content of these strategies and whether they address zoonotic diseases in terms of being a risk to human health. According to the WHO Joint External Evaluation (JEE) for Mali conducted in June 2017, Mali has six priority zoonotic diseases (rabies, avian flu, Rift Valley fever, tuberculosis, brucellosis and anthrax) and its national veterinary surveillance network, EPIVET-Mali, has five zoonotic diseases under surveillance: Rift Valley fever, bird flu, rabies, brucellosis, and tuberculosis. Additionally, the JEE notes that Mali has prevention and control plans in place for bovine tuberculosis, brucellosis, bird flu, and Rift Valley fever.

[1] The JEE references several official relevant documents, but the full text of the orders and plans are not available online: Decree No. 97-3150 / MDRE-SG of 1997 relating to Brucellosis; Order No. 05 -2703 MEP-SG of November 16, 2005 on the fight against avian influenza (avian influenza); Contingency plan to fight against avian influenza (2015-2019); and Integrated Emergency Plan for Rift Valley Fever 2016. [1] The Order No. 02-0982 / MDR-SG of May 15, 2002 on bovine tuberculosis does not include information about zoonotic disease spillover events. [2] According to the World Organization for Animal Health (OIE) evaluation visit in November 2017, there are not national plans on the priority zoonotic diseases. [3] The websites of the Ministry of Health, Ministry of Agriculture, and Ministry of Livestock and Fisheries do not have publicly available information about the various existing plans for the surveillance and control of priority zoonotic diseases. [4,5, 6]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[2] Official Journal of the Republic of Mali. 15 May 2002. p. 1134-1135 "ORDER N ° 02-0982 / MDR-SG Establishing the practical provisions to be taken in the fight against tuberculosis Bovine." ("ARRETE N°02-0982/MDR-SG Fixant les dispositions pratiques à prendre dans la lutte contre la tuberculose Bovine.")

[<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiVjczbyM3rAhXwxoUKHe23A6AQFjAAegQIBRAB&url=http%3A%2F%2Fwww.beep.ird.fr%2Fcollect%2Ffeismv%2Findex%2Fassoc%2FMEM10-15.dir%2FMEM10-15.pdf&usq=AOvVaw2VPxnL7D5fN-HXm878mPiy>] Accessed 3 September 2020.

[3] The World Organization for Animal Health (OIE). November 2017. "PVS monitoring mission report: Mali." ("Rapport de mission d'évaluation PVS de suivi: Mali") [<https://www.oie.int/solidarity/pvs-evaluations/pvs-follow-up-reports/>] Accessed 3 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 3 September 2020.

[6] Ministry of Livestock and Fish of Mali (Ministère de l'Elevage et de la Pêche du Mali). [<http://mep.gouv.ml/>]. Accessed 3 September 2020.

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 insufficient evidence that Mali has 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. Mali does have national initiatives on specific zoonotic diseases. However, there is insufficient information about the content of these strategies and whether they include measures for risk identification and reduction for zoonotic disease spillover events from animals to humans. According to the WHO Joint External Evaluation (JEE) for the Republic of Mali conducted in June 2017, Mali has six priority zoonotic diseases (rabies, avian flu, Rift Valley fever, tuberculosis, brucellosis and anthrax) and its national veterinary surveillance network, EPIVET-Mali, has five zoonotic diseases under surveillance: Rift Valley fever, bird flu, rabies, brucellosis, and tuberculosis. Additionally, the JEE notes that Mali has prevention and control plans in place for bovine tuberculosis, brucellosis, bird flu, and Rift Valley fever. [1] The JEE references several official relevant documents, but the full text of the orders and plans are not available online: Decree No. 97-3150 / MDRE-SG of 1997 relating to Brucellosis; Order No. 05 -2703 MEP-SG of November 16, 2005 on the fight against avian influenza (avian influenza); Contingency plan to fight against avian influenza (2015-2019); and Integrated Emergency Plan for Rift Valley Fever 2016. [1] The Order No. 02-0982 / MDR-SG of May 15, 2002 on bovine tuberculosis does not include information about zoonotic disease spillover events. [2] According to the World Organization for Animal Health (OIE) evaluation visit in November 2017, there are not national plans on the priority zoonotic diseases. [3] The websites of the Ministry of Health, Ministry of Agriculture, and Ministry of Livestock and Fisheries do not have publicly available additional information about the various existing plans. [4, 5, 6]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[2] Official Journal of the Republic of Mali. 15 May 2002. p. 1134-1135 "ORDER N ° 02-0982 / MDR-SG Establishing the practical provisions to be taken in the fight against tuberculosis Bovine." ("ARRETE N°02-0982/MDR-SG Fixant les dispositions pratiques à prendre dans la lutte contre la tuberculose Bovine.")

[<https://www.google.com/url?sa=t&rc=tj&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiVjczbyM3rAhXwXoUKHe23A6AQFjAAegQIBRAB&url=http%3A%2F%2Fwww.beep.ird.fr%2Fcollect%2Ffeismv%2Findex%2Fassoc%2FMEM10-15.dir%2FMEM10-15.pdf&usg=AOvVaw2VPxL7D5fN-HXm878mPiy>] Accessed 3 September 2020.

[3] The World Organization for Animal Health (OIE). November 2017. "PVS monitoring mission report: Mali." ("Rapport de mission d'évaluation PVS de suivi: Mali") [<https://www.oie.int/solidarity/pvs-evaluations/pvs-follow-up-reports/>] Accessed 3 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 3 September 2020.

[6] Ministry of Livestock and Fish of Mali (Ministère de l'Elevage et de la Peche du Mali). [<http://mep.gouv.ml/>]. Accessed 3 September 2020.

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: 0

There is insufficient evidence that Mali has national legislation, plans, or guidelines that account for the surveillance and control of multiple zoonotic pathogens of public health concern. Mali does have national initiatives on specific zoonotic diseases. However, there is insufficient information about the content of these strategies and whether they account for the surveillance and control of multiple zoonotic pathogens of public health concern. According to the WHO Joint External Evaluation (JEE) for Mali conducted in June 2017, Mali has six priority zoonotic diseases (rabies, avian flu, Rift Valley fever, tuberculosis, brucellosis and anthrax) and its national veterinary surveillance network, EPIVET-Mali, has five zoonotic diseases under surveillance: Rift Valley fever, bird flu, rabies, brucellosis, and tuberculosis. Additionally, the JEE notes that Mali has prevention and control plans in place for bovine tuberculosis, brucellosis, bird flu, and Rift Valley fever. [1] The JEE references several official relevant documents, but the full text of the orders and plans are not available online: Decree No. 97-3150 / MDRE-SG of 1997 relating to Brucellosis; Order No. 05 -2703 MEP-SG of November 16, 2005 on the fight against avian influenza (avian influenza); Contingency plan to fight against avian influenza (2015-2019); and Integrated Emergency Plan for Rift Valley Fever 2016. [1] The Order No. 02-0982 / MDR-SG of May 15, 2002 on bovine tuberculosis does include a basic strategy of surveillance. [2] According to the World Organization for Animal Health (OIE) evaluation visit in November 2017, there are not national plans on the priority zoonotic diseases. [3] The websites of the Ministry of Health, Ministry of Agriculture, and Ministry of Livestock and Fisheries do not have publicly available information about the various existing plans for the surveillance and control of priority zoonotic diseases. [4,5, 6]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[2] Official Journal of the Republic of Mali. 15 May 2002. p. 1134-1135 "ORDER N ° 02-0982 / MDR-SG Establishing the practical provisions to be taken in the fight against tuberculosis Bovine." ("ARRETE N°02-0982/MDR-SG Fixant les dispositions pratiques à prendre dans la lutte contre la tuberculose Bovine.")

[<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKewiVjczbyM3rAhXwwoUKHe23A6AQFjAAegQIBRAB&url=http%3A%2F%2Fwww.beep.ird.fr%2Fcollect%2Ffeismv%2Findex%2Fassoc%2FMEM10-15.dir%2FMEM10-15.pdf&usg=AOvVaw2VPxnL7D5fN-HXm878mPiy>] Accessed 3 September 2020.

[3] The World Organization for Animal Health (OIE). November 2017. "PVS monitoring mission report: Mali." ("Rapport de mission d'évaluation PVS de suivi: Mali") [<https://www.oie.int/solidarity/pvs-evaluations/pvs-follow-up-reports/>] Accessed 3 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 3 September 2020.

[6] Ministry of Livestock and Fish of Mali (Ministère de l'Elevage et de la Peche du Mali). [<http://mep.gouv.ml/>]. Accessed 3 September 2020.

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 no evidence of a department, agency or similar unit dedicated to zoonotic disease that functions across ministries. There is no mention of a department, agency or similar unit dedicated to zoonotic disease that functions across ministries in the WHO Joint External Evaluation for Mali from June 2017 or the PVS Follow Up Report from November 2017. [1, 2] There is no information on such a department, agency or unit on the websites of the Ministry of Health or Ministry of Agriculture. [3, 4] The National Directorate of Veterinary Services oversees zoonotic diseases, but it functions within the Ministry of Rural Development and not across ministries. The Ministry of Livestock and Fisheries and Ministry of Rural Development do not have functioning websites.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[2] World Organisation for Animal Health. 2017. "Rapport de mission d'évaluation PVS de suivi: Mali (PVS Follow Up Report: Mali)". [<http://www.oie.int/solidarity/pvs-evaluations/pvs-follow-up-reports/>]. Accessed 3 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 3 September 2020.

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 insufficient evidence that Mali has a national mechanism (either voluntary or mandatory) for owners of livestock to conduct and report on disease surveillance to a central government agency. There is no mention in the Joint External Evaluation (JEE) for Mali conducted in June 2017 of any mechanism for livestock owners to conduct and report on disease surveillance. [1] The JEE references several official documents that would be relevant to livestock ownership and zoonotic disease: 'Law No. 0-026 of 23 July 2008 on the sanitary and hygienic protection of poultry the control of poultry products'; 'National Directorate of Production and Animal Industries Annual Report 2015'; and 'National Directorate of Veterinary Services Annual Report 2015'. None of these documents mention a reporting mechanism for livestock owners. [2, 3, 4] While academic research suggests there is a rabies surveillance system functioning at household, health and veterinary structure levels, there is insufficient evidence about the system and whether it applies to other diseases. [5] There is no additional information on the websites of the Ministry of Health, Ministry of Agriculture, Ministry of Livestock and Fisheries, or the Ministry of Rural Development. [6, 7, 8,9]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[2] President of the Republic of Mali. Law No. 0-026 of 23 July 2008. "On the sanitary and hygienic protection of poultry the control of poultry products (Loi N°0-026 du 23 juillet 2008 relative à la protection sanitaire et hygiénique des élevages avicoles et au contrôle des produits avicoles)". [<http://extwprlegs1.fao.org/docs/pdf/mli156471.pdf>]. Accessed 3 September 2020.

[3] National Directorate of Production and Animal Industries (Direction nationale de la Production et des Industries animales).

January 2016. "Annual Report 2015 (Rapport annuel 2015)". [http://www.ofarcy.net/elevage-mali/docs/84-RAPPORT_ANNUEL_DNPIA_2015_docx.pdf]. Accessed 3 September 2020.

[4] National Directorate of Veterinary Services (Direction nationale des Services vétérinaires). February 2016. "Annual Report 2015 (Rapport annuel 2015)".

[http://mali.countrystat.org/fileadmin/user_upload/countrystat_fenix/congo/docs/2016%20Rapport%20%20Annuel%20DNSV%202015%20Valide%20%20VF%20%20Camara.pdf]. Accessed 3 September 2020.

[5] Science Direct. October 2020. "Rabies surveillance-response in Mali in the past 18 years and requirements for the future." *Acta Tropica*. Vol. 210. [https://www.sciencedirect.com/science/article/abs/pii/S0001706X19310307?dgcid=rss_sd_all] Accessed 3 September 2020.

[6] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[7] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 3 September 2020.

[8] Ministry of Livestock and Fish of Mali (Ministère de l'Elevage et de la Peche du Mali). [<http://mep.gouv.ml/>]. Accessed 3 September 2020.

[9] Ministry of Rural Development. 2020 [mep.gouv.ml] Accessed 3 September 2020.

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 evidence of legislation and/or regulations that safeguard the confidentiality of information generated through surveillance activities for animals (for owners). There is no evidence that Mali has a national mechanism (either voluntary or mandatory) for owners of livestock to conduct and report on disease surveillance to a central government agency. There is no mention in the Joint External Evaluation (JEE) for Mali conducted in June 2017 of any mechanism for livestock owners to conduct and report on disease surveillance. [1] The JEE references several official documents that would be relevant to livestock ownership and zoonotic disease: Law No. 0-026 of 23 July 2008. "On the sanitary and hygienic protection of poultry the control of poultry products; National Directorate of Production and Animal Industries Annual Report 2015; and National Directorate of Veterinary Services Annual Report 2015". None of these documents mention a reporting mechanism for livestock owners. [2, 3, 4] Academic research suggests there is a rabies surveillance system functioning at household, health and veterinary structure levels, but there is not detailed evidence about the system and whether it applies to other diseases. [5] There is no additional information on the websites of the Ministry of Health and Ministry of Agriculture. [6,7] The Ministry of Livestock and Fisheries and the Ministry of Rural Development do not have functioning websites.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 3 September 2020.

[2] President of the Republic of Mali. Law No. 0-026 of 23 July 2008. "On the sanitary and hygienic protection of poultry the control of poultry products (Loi N°0-026 du 23 juillet 2008 relative à la protection sanitaire et hygiénique des élevages avicoles et au contrôle des produits avicoles)". [<http://extwprlegs1.fao.org/docs/pdf/mli156471.pdf>]. Accessed 3 September 2020.

[3] National Directorate of Production and Animal Industries (Direction nationale de la Production et des Industries animales). January 2016. "Annual Report 2015 (Rapport annuel 2015)". [http://www.ofarcy.net/elevage-mali/docs/84-RAPPORT_ANNUEL_DNPIA_2015_docx.pdf]. Accessed 3 September 2020.

[4] National Directorate of Veterinary Services (Direction nationale des Services vétérinaires). February 2016. "Annual Report 2015 (Rapport annuel 2015)".

[http://mali.countrystat.org/fileadmin/user_upload/countrystat_fenix/congo/docs/2016%20Rapport%20%20Annuel%20DNSV%202015%20Valide%20%20VF%20%20Camara.pdf]. Accessed 3 September 2020.

[5] Science Direct. October 2020. "Rabies surveillance-response in Mali in the past 18 years and requirements for the future." *Acta Tropica*. Vol. 210. [https://www.sciencedirect.com/science/article/abs/pii/S0001706X19310307?dgcid=rss_sd_all] Accessed 3 September 2020.

[6] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 3 September 2020.

[7] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 3 September 2020.

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 insufficient evidence that Mali conducts surveillance of zoonotic disease in wildlife (e.g. wild animals, insects, other disease vectors, etc.). The National Directorate of Water and Forests (DNEF), which is based in the Ministry of Livestock and Fisheries, does not actively monitor zoonotic diseases in wildlife, although their field agents monitor wildlife populations in parks and reserves and send monthly report to the DNEF headquarters. [1] These DNEF agents do not monitor zoonotic diseases in wildlife but do report if there were elevated numbers of wildlife deaths. According to the WHO Joint External Evaluation (JEE) for Mali conducted in June 2017, the Animal Diseases' Epidemio-Surveillance Network (EPIVET-Mali) has five zoonotic diseases under surveillance: Rift Valley fever, bird flu, rabies, brucellosis, and tuberculosis, but the report indicates this network is ineffective. [1] There is no mention of whether all (or if only some, then which) of these zoonotic disease surveillance activities include wildlife in the JEE, or on the websites of the Ministry of Health, Ministry of Agriculture, and Ministry of Livestock and Fisheries, or the Ministry of Rural Development. [1, 2, 3, 4,5] The Evaluation of Veterinary Services Performance (PVS) Follow Up Report for Mali from November 2017 does not explicitly mention that the country conducts surveillance of zoonotic disease in wildlife, but the report does mention the Food and Agriculture Organisation (FAO) is experimenting with the implementation of a web application regarding declaration of all possible contagious disease in parts of Mali and that wildlife-related information would be sent to the Ministry of Environment. [6]

[1] FAO. February 2018. "Evation for Action: Assess surveillance capacities of animal diseases." ("évaluation pour action: évaluer les capacités de surveillance des maladies animales")

[<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewiFliCw9ovsAhUuAWMBHc7TCocQFjABegQIBBAB&url=http%3A%2F%2Fwww.fao.org%2F3%2Fca5753fr%2Fca5753fr.pdf&usg=AOvVaw35msjqtJWQNs5y-H-jd3D>] Accessed 28 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Livestock and Fish of Mali (Ministère de l'Elevage et de la Peche du Mali). [<http://mep.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Rural Development. 2020 [mep.gouv.ml] Accessed 3 September 2020.

[7] World Organisation for Animal Health. November 2017. "Rapport de mission d'évaluation PVS de suivi: Mali (PVS Follow Up Report: Mali)". [<http://www.oie.int/solidarity/pvs-evaluations/pvs-follow-up-reports/>]. Accessed 28 September 2020.

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: 0.98

2018

OIE WAHIS database

1.2.4b

Number of veterinary para-professionals per 100,000 people

Input number

Current Year Score: 6.78

2018

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 national plan on zoonotic disease or other legislation that includes mechanisms for working with the private sector in controlling or responding to zoonoses. According to the WHO Joint External Evaluation (JEE) for Mali from June 2017, private sector participation in real-time epidemiological surveillance and monitoring remains very limited. The JEE suggests that there are private sector human resources available to ensure key capabilities required under the International Health Regulations (IHR), but that they have not been effectively utilized. [1] There is no information about mechanisms for

working with the private sector in controlling or responding to zoonoses in the JEE or on the websites of the Ministry of Health, Ministry of Agriculture, and Ministry of Livestock and Fisheries or the Ministry of Rural Development. [1, 2, 3, 4,5] The National Institute for Research in Public Health does not have a website. The Evaluation of Veterinary Services Performance (PVS) Follow Up Report for Mali from November 2017 does not mention any plans or legislation that includes mechanisms for working with the private sector in controlling or responding to zoonoses, but the report does mention (though not by name) the existence of a policy entrusting animal vaccinations to private veterinary practices. [6] A 2018 Food and Agriculture Organization (FAO) evaluation of Mali's veterinary services indicated that Mali has a health mandate which allows private animal health agents to survey the animal health and diseases in areas where there are gaps of public animal health agents. [6] No further information about this mandate is publically available.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[3] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[4] Ministry of Livestock and Fish of Mali (Ministère de l'Élevage et de la Pêche du Mali). [<http://mep.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Rural Development. 2020 [mep.gouv.ml] Accessed 3 September 2020.

[6] World Organisation for Animal Health. November 2017. "Rapport de mission d'évaluation PVS de suivi: Mali (PVS Follow Up Report: Mali)". [<http://www.oie.int/solidarity/pvs-evaluations/pvs-follow-up-reports/>]. Accessed 28 September 2020.

[6] FAO. February 2018. "Evation for Action: Assess surveillance capacities of animal diseases." ("Évaluation pour action: Évaluer les capacités de surveillance des maladies animales") [<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewiFIIcW9ovsAhUuAWMBHc7TCocQFjABegQIBBAB&url=http%3A%2F%2Fwww.fao.org%2F3%2Fca5753fr%2Fca5753fr.pdf&usg=AOvVaw35msjqtJWQNs5y-H-jd3D>] Accessed 28 September 2020.

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 insufficient public information about whether Mali has a record, updated within the last five years, of the facilities in which especially dangerous pathogens and toxins are stored or processed. Mali has four P-3 level laboratories capable of testing and investigating dangerous pathogens and toxins including COVID-19, Ebola, Lassa Fever, Yellow Fever, Rift Valley Fever, Zika virus disease, Diphtheria, Dengue and Crimean-Congo Haemorrhagic Fever. [1,2] There is insufficient public information regarding Mali's record of storage and processing of these pathogens. According to the WHO Joint External Evaluation (JEE) report for Mali from June 2017, the country does not maintain a registry or inventory of pathogens to monitor. There is no national structure for storing or handling pathogens, toxins, and other dangerous substances; nor is there a mechanism in place to ensure the safety of staff and the control of sensitive information. [3] There is no information about this issue on the websites of the Ministry of Health, Ministry of Defense, and Ministry of Agriculture. [4, 5,6] The Vertic

Database also does not list a law about records of facilities of especially dangerous pathogen and toxins are stored or processed. [7] The National Institute for Research in Public Health, National Center for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [8]

- [1] Le Monde. (The World.) 15 June 2020. "The "P3" of Bamako, a lab at the heart of the battle against Covid-19" ("Le « P3 » de Bamako, un labo au cœur de la bataille contre le Covid-19") [https://www.lemonde.fr/afrique/article/2020/06/15/le-p3-de-bamako-un-labo-au-c-ur-de-la-bataille-contre-le-covid-19_6042940_3212.html] Accessed 28 September 2020.
- [2] Rodolphe Mérieux Center for Infectious Disease of Mali. (Centre d'infectiologie Rodolphe Mérieux du Mali) 12 March 2018. "Handover ceremony of a mobile laboratory to the five G5 Sahel countries" ("Cérémonie de remise d'un laboratoire mobile aux cinq pays du G5 Sahel") [<https://www.cicm-mali.org/ceremonie-de-remise-dun-laboratoire-mobile-au-cinq-pays-du-g5-sahel/>] Accessed 28 September 2020.
- [3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.
- [4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.
- [6] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<http://magriculture.gouv.ml/>]. Accessed 28 September 2020.
- [7] Vertic Database. 2018. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>] Accessed 22 October 2020.
- [8] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali/>]. Accessed 28 September 2020.

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

Mali does not 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. According to the Joint External Evaluation for Mali conducted in June 2017, the country has still limited capacity to ensure biosecurity (and biosafety). There is no mention of biosecurity regulations, although there is a national biosafety framework focusing on genetically modified organisms (GMOs) and a national decree N°10-682/P-RM from 30 December 2010 on GMOs. [1] There is no information about biosecurity regulations on the websites of the Ministry of Health, Ministry of Defence, Ministry of Agriculture, or the VERTIC database. [2, 3, 4, 5] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology, and the Ministry of Higher Education and Scientific Research do not have websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [6]

- [1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

- [2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [3] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.
- [4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.
- [5] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.
- [6] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali>]. Accessed 28 September 2020.

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 insufficient evidence of an established agency responsible for the enforcement of biosecurity legislation and regulations. The WHO Joint External Evaluation for Mali from June 2017 does not mention any established agency responsible for the enforcement of biosecurity legislation and regulations, but it mentions a biosecurity committee exists. [1] The National Decree N°10-682/P-RM of 30 December 2010 Determining The Modalities Experimentation Of Genetically Modified Organisms (GMOs) established the National Committee of Biosafety and its Specialized Commissions (Comité National de Biosécurité et ses Commissions spécialisées) with the purpose of overseeing GMOs in the country. [2] There is no further information on an agency responsible for the enforcement of biosecurity legislation on the websites of the Ministry of Health, Ministry of Defence, Ministry of Agriculture, and the VERTIC database. [3,4,5,6] The National Institute for Research in Public Health does not have a website. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [7]

- [1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.
- [2] Republic of Mali Presidential Decree. 30 December 2010. "National Decree N°10-682/P-RM of 30 December 2010 Determining The Modalities Experimentation Of Genetically Modified Organisms" ("DECRET N°10-682/P-RM DU 30 DECEMBRE 2010 DETERMINANT LES MODALITES D'EXPERIMENTATION DES ORGANISMES GENETIQUEMENT MODIFIES") [<http://www.fao.org/faolex/results/details/en/c/LEX-FAOC152164/>] Accessed 28 September 2020.
- [3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [4] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.
- [5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.
- [6] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.
- [7] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali>]. Accessed 28 September 2020.

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 insufficient public evidence that shows Mali has taken action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities. Despite Mali's four operational P3 laboratories, there is no publically available evidence that Mali has consolidated its inventories of especially dangerous pathogens. [1,2] According to the WHO Joint External Evaluation (JEE) report for Mali from June 2017, the country does not maintain a registry or inventory of pathogens to monitor. There is no national structure for storing or handling pathogens, toxins, and other dangerous substances; nor is there a mechanism in place to ensure the safety of staff and the control of sensitive information. [3] There is no information about inventory consolidation of dangerous pathogens on the websites of the Ministry of Health, Ministry of Defence, Ministry of Agriculture or the Vertic Database. [4, 5,6,7] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology, and the Ministry of Higher Education and Scientific Research do not have websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [8]

[1] Le Monde. (The World.) 15 June 2020. "The "P3" of Bamako, a lab at the heart of the battle against Covid-19" ("Le « P3 » de Bamako, un labo au cœur de la bataille contre le Covid-19") [https://www.lemonde.fr/afrique/article/2020/06/15/le-p3-de-bamako-un-labo-au-c-ur-de-la-bataille-contre-le-covid-19_6042940_3212.html] Accessed 28 September 2020.

[2] Rodolphe Mériex Center for Infectious Disease of Mali. (Centre d'infectiologie Rodolphe Mériex du Mali) 12 March 2018. "Handover ceremony of a mobile laboratory to the five G5 Sahel countries" ("Cérémonie de remise d'un laboratoire mobile aux cinq pays du G5 Sahel") [<https://www.cicm-mali.org/ceremonie-de-remise-dun-laboratoire-mobile-au-cinq-pays-du-g5-sahel/>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[7] Vertic Database. 2018. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>] Accessed 22 October 2020.

[8] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali>]. Accessed 28 September 2020.

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 of in-country capacity to conduct Polymerase Chain Reaction (PCR)-based diagnostic testing for Ebola that precludes culturing a live pathogen. Academic publications indicate that the Serefo Laboratory, part of the University of Sciences, Techniques and Technologies of Bamako (USTTB), has the capacity to conduct PCR-based diagnostic testing that precludes culturing a live pathogen. The Faculty of Medicine and Pharmacy Serefo Laboratories participated in an international study that conducted PCR-based diagnostic test for Ebola from inactivated ebolavirus samples. [1,2,3] There is no mention of PCR-based diagnostic testing in the Joint External Evaluation for Mali conducted in June 2017, nor on the

websites of the Ministry of Health, Ministry of Defence, and Ministry of Agriculture. [4,5,6,7] The National Institute for Research in Public Health does not have a website.

- [1] Ellerbrok, Heinz et al. 2017. "External quality assessment study for ebolavirus PCR-diagnostic promotes international preparedness during the 2014 - 2016 Ebola outbreak in West Africa". *PLoS Neglected Tropical Diseases* 11 [5] : e0005570. [<https://doi.org/10.1371/journal.pntd.0005570>]. Accessed 28 September 2020.
- [2] Diarra, Bassirou. 2016. "Laboratory Response to 2014 Ebola Virus Outbreak in Mali". *Journal of Infectious Diseases* 214(Suppl 3): S164-S168. [<https://europepmc.org/articles/pmc5050465>]. Accessed 28 September 2020.
- [3] World Health Organisation (WHO). 24 October 2014. "Mali confirms its first case of Ebola". [<https://www.who.int/mediacentre/news/ebola/24-october-2014/en/>]. Accessed 15 October 2020.
- [4] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.
- [5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [6] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.
- [7] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

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 train-the-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 evidence that the country requires biosecurity training, 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 materials with pandemic potential. The Joint External Evaluation (JEE) for Mali from June 2017 notes that the country's laboratory staff are poorly trained with respect to biosafety and biosecurity best practices. The JEE also notes that the country has not yet set up a permanent training curriculum for personnel working with pathogens, toxins, and other dangerous substances, though eight basic training modules on biosafety and biosecurity developed by the Djomi Consortium/GHSA (Global Health Security Agenda) have taken place. [1] There is no mention of a standardized biosecurity training on the websites of the Ministry of Health, Ministry of Agriculture, or the Rodolphe Mérieux Laboratory in Bamako. [2, 3, 4,5] The National Institute for Research in Public Health and the Ministry of Higher Education, National Centre for Scientific Research and Technology, and Scientific Research do not have websites. None of the documents available for Mali on the VERTIC database indicate that the country requires biosecurity training using a standardized approach. [6] Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [7]

- [1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.
- [2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [3] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>].

Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[6] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.

[7] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali>]. Accessed 28 September 2020.

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 evidence that there are regulations in Mali specifying that security and other personnel with access to especially dangerous pathogens, toxins, or biological materials with pandemic potential are subject to drug testing, background checks, or psychological/mental fitness checks. There is no mention that personnel are subject to any of these checks in the completed WHO Joint External Evaluation for Mali from June 2017. [1] There also is no mention of this issue on the websites of the Ministry of Health, Ministry of Defence, Ministry of Agriculture, or the Rodolphe Mérieux Laboratory in Bamako. [2, 3, 4,5] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have functioning websites. There is no indication from the documents available for Mali in the VERTIC database that Mali requires security and other personnel with access to dangerous pathogens to undergo drug testing, background checks, or mental fitness checks. [6] Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [7]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[3] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[6] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.

[7] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali>]. Accessed 28 September 2020.

ecbm.unog.ch/state/mali]. Accessed 28 September 2020.

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: 0

There is no public information on Mali's national regulations on the safe and secure transport of infectious substances (specifically including Categories A and B). The National Decree N°10-682/P-RM of 30 December 2010 Determining The Modalities Experimentation Of Genetically Modified Organisms (GMOs) addressed GMOs in the country, but not the safe and secure transport of infectious substances. [1] The WHO Joint External Evaluation for Mali from June 2017 mentions the existence of national directives on the sampling, packaging, preservation, and transportation of samples. [2] However, the text of these directives are not available on the websites of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Rodolphe Mérieux Laboratory in Bamako or the VERTIC database. [3,4,5,6,7] The Ministry of Transport, National Centre for Scientific Research and Technology, and the National Institute for Research in Public Health do not have a working website. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [8]

[1] Republic of Mali Presidential Decree. 30 December 2010. "National Decree N°10-682/P-RM of 30 December 2010 Determining The Modalities Experimentation Of Genetically Modified Organisms" ("DECRET N°10-682/P-RM DU 30 DECEMBRE 2010 DETERMINANT LES MODALITES D'EXPERIMENTATION DES ORGANISMES GENETIQUEMENT MODIFIES") [<http://www.fao.org/faolex/results/details/en/c/LEX-FAOC152164/>] Accessed 28 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[4] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[6] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[7] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.

[8] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali/>]. Accessed 28 September 2020.

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 public information of 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 in Mali. The National Decree N°10-682/P-RM of 30 December 2010 Determining The Modalities Experimentation Of Genetically Modified Organisms (GMOs) addressed GMOs in the country, but not cross-border transfer and end-user screening of especially dangerous pathogens and toxins. [1] The WHO Joint External Evaluation for Mali from June 2017 notes that the domestic and cross-border systems to transfer and transport of specimen samples need to be improved. [2] There is no information on cross-border transfer and end-user screening of especially dangerous pathogens, toxins, and pathogens with pandemic potential on the websites of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Rodolphe Mérieux Laboratory in Bamako or the VERTIC database. [3,4,5,6,7] The Ministry of Transport, National Centre for Scientific Research and Technology, and the National Institute for Research in Public Health do not have a working website. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [8]

[1] Republic of Mali Presidential Decree. 30 December 2010. "National Decree N°10-682/P-RM of 30 December 2010 Determining The Modalities Experimentation Of Genetically Modified Organisms" ("DECRET N°10-682/P-RM DU 30 DECEMBRE 2010 DETERMINANT LES MODALITES D'EXPERIMENTATION DES ORGANISMES GENETIQUEMENT MODIFIES") [<http://www.fao.org/faolex/results/details/en/c/LEX-FAOC152164/>] Accessed 28 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[4] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[6] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[7] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.

[8] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali/>]. Accessed 28 September 2020.

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 that Mali has national biosafety legislation and/or regulations. The WHO Joint External Evaluation for Mali conducted in June 2017 notes that the country has limited capacities to address biosafety (and

biosecurity) issues and lacks a mechanism to ensure the safety of staff that work with dangerous pathogens and toxins. [1] There is a law on biosafety as it relates to agricultural biotechnology and pharmaceutical products (Law No. 08-042 of 1 December 2008). Decisions regarding the dissemination and commercialisation of genetically modified organisms are made by Mali's Ministry of Environment in consultation with a National Biosafety Committee. [2] The National Decree N°10-682/P-RM of 30 December 2010 Determining The Modalities Experimentation Of Genetically Modified Organisms (GMOs) addresses GMOs in the country, but not biosafety issues from harmful biological substances for those working with these substances. [3] There is no further information on the websites of on the websites of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, , Rodolphe Mérieux Laboratory in Bamako or in the VERTIC database. [4,5,6,7,8] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [9]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[2] National Assembly of Mali. Law No. 08-042/AN-RM of 1 December 2008. "On Biotechnology Security in the Republic of Mali. (Loi n°08-042/AN-RM du 1er Decembre 2008 relative à la sécurité en Biotechnologie en République du Mali)". [http://www.vertic.org/media/National%20Legislation/Mali/Mali_ML_Loi_securite_biotechnologie.pdf]. Accessed 28 September 2020.

[3] Republic of Mali Presidential Decree. 30 December 2010. "National Decree N°10-682/P-RM of 30 December 2010 Determining The Modalities Experimentation Of Genetically Modified Organisms" ("DECRET N°10-682/P-RM DU 30 DECEMBRE 2010 DETERMINANT LES MODALITES D'EXPERIMENTATION DES ORGANISMES GENETIQUEMENT MODIFIES") [<http://www.fao.org/faolex/results/details/en/c/LEX-FAOC152164/>] Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[7] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[8] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.

[9] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali>]. Accessed 28 September 2020.

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 evidence of an established agency responsible for the enforcement of biosafety legislation and regulations in Mali. There is a law on biosafety as it relates to agricultural biotechnology and pharmaceutical products (Law No. 08-042 of 1 December 2008). There is a non-governmental agency called the Malian Agency of Biosecurity and Biosafety (AMBIOS), which along with its Malian government ministry partners established the National Working Group on Biosecurity and Biosafety (Groupe national de travail sur la biosécurité et la biosûreté) [1,2] There is insufficient publically available information on the activities and objectives of this group. Decisions regarding the dissemination and commercialisation of

genetically modified organisms (GMOs) are made by Mali's Ministry of Environment in consultation with a National Biosafety Committee. [3] The National Biosafety Committee is comprised of representatives from the Ministry of Environment, Ministry of Agriculture, Ministry of Livestock and Fishery, Ministry of Education, Ministry of Health, Ministry of Industry and Commerce, Ministry of Justice, Ministry of Transport, Ministry of Finance, civil society, private sector, and professional organisations and associations. In addition to its advisory role, the National Biosafety Committee is also responsible for approving procedures related to testing, experimenting, and observing genetically modified organisms. [4] There is no further information on the websites of on the websites of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Rodolphe Mérieux Laboratory in Bamako, in the VERTIC database, or in the WHO Joint External Evaluation for Mali, conducted in June 2017. [5,6,7,8,9, 10] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology, and the Ministry of Higher Education and Scientific Research do not have websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [11]

[1] Bamada.net. 29 March 2019. "Implementation of the national biosafety and biosecurity framework in Mali: Ambios resolved to solve the problems." ("Mise en œuvre du cadre national de biosécurité et biosûreté au Mali : Ambios résolu à résoudre les problèmes") [<http://bamada.net/mise-en-oeuvre-du-cadre-national-de-biosecurite-et-biosurete-au-mali-ambios-resolu-a-resoudre-les-problemes>] Accessed 28 September 2020.

[2] Malijet.com. 28 November 2017. "Biosecurity and Biosecurity in Mali: The development of the AMBIOS / GPP / PHAC project at the heart of a workshop." ("Biosûreté et Biosécurité au Mali : L'élaboration du projet AMBIOS/GPP/PHAC au cœur d'un atelier") [http://malijet.com/la_societe_malienne_aujourd'hui/education_et_formation_au_mali/199400-bios%C3%BBret%C3%A9-et-bios%C3%A9curit%C3%A9-au-mali-l%E2%80%99%C3%A9laboration-du-projet-ambios-.html] Accessed 28 September 2020.

[3] National Assembly of Mali. Law No. 08-042/AN-RM of 1 December 2008. "On Biotechnology Security in the Republic of Mali. (Loi n°08-042/AN-RM du 1er Decembre 2008 relative à la sécurité en Biotechnologie en République du Mali)". [http://www.vertic.org/media/National%20Legislation/Mali/Mali_ML_Loi_securite_biotechnologie.pdf]. Accessed 28 September 2020.

[4] Ministry of Environment and Sanitation of Mali. April 2005. "National Biosafety Framework for Mali". [<https://docplayer.net/14396587-National-biosafety-framework-for-mali.html>]. Accessed 28 September 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[6] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[7] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[8] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[9] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.

[10] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[11] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali/>]. Accessed 28 September 2020.

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 train-the-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 evidence that the country requires biosafety training, 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 materials with pandemic potential. The WHO Joint External Evaluation (JEE) for Mali from June 2017 notes that the country's laboratory staff are poorly trained with respect to biosafety and biosecurity best practices. The JEE also notes that the country has not yet set up a permanent training curriculum for personnel working with pathogens, toxins, and other dangerous substances, though eight basic training modules on biosafety and biosecurity developed by the Djomi Consortium/GHSA (Global Health Security Agenda) have taken place. [1] There is no mention of a standardized biosafety training on the websites of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, or Rodolphe Mérieux Laboratory in Bamako. [2, 3, 4, 5] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology, and the Ministry of Higher Education and Scientific Research do not have websites. Mali's law on biosafety pertains only to agricultural biotechnology and pharmaceutical products (Law No. 08-042 of 1 December 2008). The National Biosafety Committee is responsible for approving procedures related to testing, experimenting, and observing genetically modified organisms; it does not cover personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential. [6, 7] Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [8]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[3] Ministry of Defense and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[6] National Assembly of Mali. Law No. 08-042/AN-RM of 1 December 2008. "On Biotechnology Security in the Republic of Mali. (Loi n°08-042/AN-RM du 1er Decembre 2008 relative à la sécurité en Biotechnologie en République du Mali)". [http://www.vertic.org/media/National%20Legislation/Mali/Mali_ML_Loi_securite_biotechnologie.pdf]. Accessed 28 September 2020.

[7] Ministry of Environment and Sanitation of Mali. April 2005. "National Biosafety Framework for Mali". [https://unep.ch/biosafety/old_site/development/Countryreports/MLNBFrepEN.pdf]. Accessed 28 September 2020.

[8] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali>]. Accessed 28 September 2020.

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 that Mali 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. No information on this topic was found on the websites of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Ministry of Security and Civil Protection, Technology or Rodolphe Mérieux Laboratory in Bamako, and the Vertic Database. [1,2,3,4,5,6] The National Institute for Research in Public Health, National Centre for Scientific Research and the Ministry of Higher Education and Scientific Research do not have functioning websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [7]

[1] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[2] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[3] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[4] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

[5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[6] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.

[7] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali/>]. Accessed 28 September 2020.

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 evidence of a national policy in Mali requiring oversight of dual use research. No information on this topic can be found on the websites of the of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Ministry of Security and Civil Protection, Rodolphe Mérieux Laboratory in Bamako, or the Vertic Database. [1,2,3,4,5,6] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology and the Ministry of Higher Education and

Scientific Research do not have functioning websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [7]

- [1] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [2] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.
- [3] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.
- [4] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile). [<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.
- [5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.
- [6] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.
- [7] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali/>]. Accessed 28 September 2020.

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 no evidence of an agency responsible for oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research in Mali. No information on this topic can be found on the websites of the of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Ministry of Security and Civil Protection, National Centre for Scientific Research and Technology, Rodolphe Mérieux Laboratory in Bamako, or the Vertic Database.. [1,2,3,4,5,6] The National Institute for Research in Public Health and the Ministry of Higher Education and Scientific Research do not have functioning websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [7]

- [1] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [2] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.
- [3] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.
- [4] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile). [<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.
- [5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.
- [6] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.
- [7] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali/>]. Accessed 28 September 2020.

ecbm.unog.ch/state/mali]. Accessed 28 September 2020.

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

Although Mali has guidance regarding the screening of synthesized DNA, there is no evidence that the required screening involves a code reader. Mali's Law No. 08-042 of 1 December 2008 on biotechnology security regulates recombinant DNA in the context of agricultural biotechnology and pharmaceutical products; it is inclusive of DNA, not just crops/products. Approval decisions regarding the dissemination and commercialisation of genetically modified organisms, which include recombinant DNA, are made by Mali's Ministry of Environment in consultation with a National Biosafety Committee. The application process requires risk assessment studies equivalent to at least one life cycle of the species and results showing that the genetically modified organism (GMO) or GMO product does not pose a significant risk to human health, biological diversity, or the environment. There is no mention of screening involving a code reader. [1] There is no further information available on this topic can be found on the websites of the of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Ministry of Security and Civil Protection, Rodolphe Mérieux Laboratory in Bamako, or the Vertic Databases. [2,3,4,5,6,7] The Ministry of Transport, Ministry of Defence, Ministry of Higher Education and Scientific Research, National Centre for Scientific Research and Technology, and National Institute for Research in Public Health do not have functioning websites. Although Mali submitted Confidence Building Measures in 2019, access to the report is restricted to the public, and it is unknown if they contain information on this matter. [8]

[1] National Assembly of Mali. Law No. 08-042/AN-RM of 1 December 2008. "On Biotechnology Security in the Republic of Mali. (Loi n°08-042/AN-RM du 1er Decembre 2008 relative à la sécurité en Biotechnologie en République du Mali)". [http://www.vertic.org/media/National%20Legislation/Mali/Mali_ML_Loi_securite_biotechnologie.pdf]. Accessed 28 September 2020

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[3] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile). [<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

[6] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[7] VERTIC. "BWS Legislation Database". [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/m/>]. Accessed 28 September 2020.

[8] Biological Weapons Convention (BWC) Electronic Confidence Building Measures Portal. "Mali." [<https://bwc-ecbm.unog.ch/state/mali>]. Accessed 28 September 2020.

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

The national laboratory system has the capacity to conduct diagnostic tests for at least 5 of the 10 WHO-defined core tests although the specific tests are not specified. Mali has four P-3 level laboratories capable of testing and investigating dangerous pathogens and toxins including tuberculosis, HIV, malaria, Hepatitis B and C, pneumonia, COVID-19, Ebola, Lassa Fever, Yellow Fever, Rift Valley Fever, Zika virus disease, Diphtheria, Dengue and Crimean-Congo Haemorrhagic Fever. [1,2,3]

The WHO Joint External Evaluation (JEE) for Mali, conducted in June 2017, indicates that there is a national network of laboratories for integrated disease surveillance and rapid confirmation of epidemics. The JEE gives Mali a score of 4 on indicator D.1.1 (Laboratory analysis for the detection of priority diseases), which means that the national laboratory system is capable of conducting five or more of the ten core tests, however, only three WHO-defined core tests are named, e.g. HIV, tuberculosis, and malaria. The types of tests are not explicitly mentioned. [4] The JEE also highlights the National Institute for Research in Public Health (INRSP) and the National Reference Laboratory for Priority AMR Pathogens as the main laboratories in Mali, but neither has a web presence. The National Institute for Research in Public Health is part of the Ministry of Health. The one-page description of INRSP on the Ministry of Health website does not provide information about the types of diagnostic tests the institute can carry out. [5] There is no additional information on the Ministry of Health website. [6]

[1] Le Monde. (The World.) 15 June 2020. "The "P3" of Bamako, a lab at the heart of the battle against Covid-19" ("Le « P3 » de Bamako, un labo au cœur de la bataille contre le Covid-19") [https://www.lemonde.fr/afrique/article/2020/06/15/le-p3-de-bamako-un-labo-au-c-ur-de-la-bataille-contre-le-covid-19_6042940_3212.html] Accessed 28 September 2020.

[2] Rodolphe Mérieux Center for Infectious Disease of Mali. (Centre d'infectiologie Rodolphe Mérieux du Mali) 12 March 2018. "Handover ceremony of a mobile laboratory to the five G5 Sahel countries" ("Cérémonie de remise d'un laboratoire mobile aux cinq pays du G5 Sahel") [<https://www.cicm-mali.org/ceremonie-de-remise-dun-laboratoire-mobile-au-cinq-pays-du-g5-sahel/>] Accessed 28 September 2020.

[3] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[4] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "National Institute for Research in Public Health (Institut national de recherche en santé publique)". [<http://www.sante.gov.ml/index.php/nep-mali/item/599-institut-national-de-recherche-en-sante-publique>]. Accessed 28 September 2020.

[6] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

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 insufficient 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 Mali.

For the COVID-19 pandemic, the Malian government created a new national plan in March 2020 called the COVID-19 Disease (COVID-19) Prevention and Response Action Plan (Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)), which indicated that Mali had a weak capacity for diagnostic testing all over the country with a total of 2000 tests in a country of roughly 19 million people. It also mentions that Mali has a preliminary budget for 48500 rapid diagnostic tests. However, this document does not include a strategy or plan for conducting testing for COVID-19, including how they would be used or by which entities. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan includes a

basic table with a scenario of a cholera or bird flu outbreak, which indicates more testing kits would be needed. [2] However, it does not indicate how these kits would be obtained or how testing could be conducted or expanded in the event of such an outbreak.

According to the WHO's Joint External Evaluation (JEE) of IHR Core Capacities of the Republic of Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, but this updated plan is not publically available. [3] Further, the JEE indicates that Mali does not have a national multi-risk preparedness and action plan in the event of a public health emergency.

There is no further information available on the websites of the of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Ministry of Security and Civil Protection, or Rodolphe Mérieux Laboratory in Bamako. [4,5,6,7,8] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[7] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

[8] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

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: 0

There is insufficient evidence that a national laboratory that serves as a reference facility is accredited (e.g., International Organization for Standardization [ISO] 15189:2003, U.S. Clinical Laboratory Improvement Amendments [CLIA]) in Mali. The Malaria Research and Training Center (MRTC) clinical laboratory at the University of Bamako, Mali has been accredited with CLIA since 2010. [1,2,3] However, the MRTC clinical laboratory is not currently a reference facility although it is working

towards becoming one. [2] It has developed partnerships specifically with U.S. partners to help maintain its accreditation. The Rodolphe Mérieux Laboratory of Bamako serves as a reference laboratory for the Ebola virus, Zika virus infection, Lassa fever, and molecular diagnosis of tuberculosis. [4] However, since 2014 it is in the process of seeking ISO 15189:2003 accreditation. [5] Two other laboratories, the National Public Health Institute and the Fomba Hospital, (Institut National de Sante Publique and l'hôpital Nianankoro FOMBA de Ségou) are in the process of being ISO 15189:2003 certified and their personnel have become accredited in ISO 15189:2003 standards. [6] There is no additional information on the Ministry of Health website. [7]

[1] Guindo, Merepen, Joseph P Shott, Renion Saye, and Mohamed Faraban Diakite. April 2012. "Promoting Good Clinical Laboratory Practices and Laboratory Accreditation to Support Clinical Trials in Sub-Saharan Africa." The American Journal of Tropical Medicine and Hygiene. 86

[4] :573-9

[https://www.researchgate.net/publication/223973567_Promoting_Good_Clinical_Laboratory_Practices_and_Laboratory_Accreditation_to_Support_Clinical_Trials_in_Sub-Saharan_Africa] Accessed 29 September 2020.

[2] The University of Sciences, Techniques and Technologies of Bamako. 2020. "Capacity of MRTC Clinical-Lab to support MRTC programs in Mali" ("Capacités du MRTC Clinical-Lab à soutenir les programmes du MRTC au Mali ")

[<http://www.usttb.edu.ml/index.php/capacites-du-mrtc-clinical-lab-a-soutenir-les-programmes-du-mrtc-au-mali>] Accessed 29 September 2020.

[3] Schroeder, Lee F. MD, PhD, and Timothy Amukele, MD, PhD. June 2014. "Medical Laboratories in Sub-Saharan Africa That Meet International Quality Standards." American Journal of Clinical Pathology 141

[6] :791-5 [https://www.researchgate.net/publication/262422295_Medical_Laboratories_in_Sub-Saharan_Africa_That_Meet_International_Quality_Standards] Accessed 29 September 2020.

[4] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[5] Charles Mérieux Center for Infectious Disease of Mali. 20 October 2018. "Quality Policies" ("Politique qualité")

[<https://www.cicm-mali.org/nos-activites/diagnostic-biologique-de-qualite/politique-qualite/>] Accessed 26 October 2020.

[6] Mali News (Maliactu.net). 28 November 2019. "Mali: ISO 15189 standards: certified laboratory agents" ("Mali : Normes ISO 15189: des agents des laboratoires certifiés") [<https://maliactu.net/mali-normes-iso-15189-des-agents-des-laboratoires-certifies/>] Accessed 29 September 2020.

[7] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

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 evidence that the national reference laboratory is subject to external quality assurance review. The Rodolphe Mérieux Laboratory of Bamako is a national reference laboratory for the government for Ebola, the Zika virus, Lassa fever, and tuberculosis. [1] It is a member of the West African Network of Medical Biology Laboratories (RESAOLAB network), which conducts external quality control evaluations on its members. [2,3] The Mérieux Fondation also has external experts that conduct quality controls on the Rodolphe Mérieux Laboratory of Bamako. [1,4] Specifically, the Mérieux Fondation through RESAOLAB network has conducted external quality assurance reviews in all RESAOLAB countries including Mali since 2009. This external quality assurance review consists of comparing test results from a laboratory to an external reference to provide objective evidence of test quality. The laboratories receive test samples to be analyzed and the level of compliance of the results provided is sent to the participating laboratories in order to put in place any corrective actions aimed at

continuous improvement of the quality of the analyzes. [5] Since 2014 Rodolphe Mérieux Laboratory of Bamako in the process of seeking ISO 15189:2003 accreditation. [6] The Joint External Evaluation (JEE) for Mali from June 2017 notes the involvement of domestic laboratories in international external quality control for meningitis, measles, HIV, tuberculosis, malaria, and viral haemorrhagic fevers. [7] However, those laboratories are not named Neither the National Institute for Research in Public Health (INRSP) nor the National Reference Laboratory for Priority AMR Pathogens, are included among those laboratories has a web presence. The INRSP is part of the Ministry of Health. The one-page description of INRSP on the Ministry of Health website does not provide information about whether the INRSP laboratories are subject to external quality assurance review. [8] There is no additional information on the Ministry of Health website. [9]

[1] Rodolphe Mérieux Center for Infectious Disease of Mali. (Centre d'infectiologie Rodolphe Mérieux du Mali) 12 March 2018. "Handover ceremony of a mobile laboratory to the five G5 Sahel countries" ("Cérémonie de remise d'un laboratoire mobile aux cinq pays du G5 Sahel") [<https://www.cicm-mali.org/ceremonie-de-remise-dun-laboratoire-mobile-au-cinq-pays-du-g5-sahel/>] Accessed 28 September 2020.

[2] West African Network of Medical Biology Laboratories (Réseau d'Afrique de l'Ouest des laboratoires de biologie médicale). 2020. "RESALAB." [<https://www.fondation-merieux.org/projets/resaolab-fr/>] Accessed 30 September 2020.

[3] Guindo, Merepen, Joseph P Shott, Renion Saye, and Mohamed Faraban Diakite. April 2012. "Promoting Good Clinical Laboratory Practices and Laboratory Accreditation to Support Clinical Trials in Sub-Saharan Africa." The American Journal of Tropical Medicine and Hygiene. 86

[4] :573-9

[https://www.researchgate.net/publication/223973567_Promoting_Good_Clinical_Laboratory_Practices_and_Laboratory_Accreditation_to_Support_Clinical_Trials_in_Sub-Saharan_Africa] Accessed 29 September 2020.

[4] RESALAB. 2011. "National Quality Assurance Plan for Analytical Laboratories Medical in Mali 2011-2012." ("Plan National d'Assurance Qualité pour les Laboratoires d'Analyses Médicales au Mali 2011-2012") [https://moam.info/telecharger-le-plan-qualite-du-mali-globe-network_5a35fc281723dd159ad44d8d.html] Accessed 29 September 2020.

[5] Mérieux Foundation. (Fondation Mérieux.) 2020. "RESALAB" [<https://www.fondation-merieux.org/projets/resaolab-fr/>] Accessed 22 October 2020.

[6] Charles Mérieux Center for Infectious Disease of Mali. 20 October 2018. "Quality Policies" ("Politique qualité") [<https://www.cicm-mali.org/nos-activites/diagnostic-biologique-de-qualite/politique-qualite/>] Accessed 26 October 2020.

[7] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[8] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "National Institute for Research in Public Health (Institut national de recherche en santé publique)". [<http://www.sante.gov.ml/index.php/nep-mali/item/599-institut-national-de-recherche-en-sante-publique>]. Accessed 28 September 2020.

[9] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

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 evidence that Mali has a nationwide specimen transport system. In 2016, the Mérieux Foundation trained laboratory personnel from three regions on international standards of specimen transport as well as provided material to follow these standards. [1] There is no public evidence that Mali developed a nationwide specimen transport system following these initiatives or that the trainings were expanded to other parts of the country. According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Malian laboratories have sample transport material available but there is not a coordination mechanism available between the various sectors that would be involved in specimen transport. [2] The JEE also indicates that guidelines exist for the transport of samples of diseases with epidemic potential and tuberculosis, but it does not provide the name of these guidelines or what these guidelines consist of. JEE also indicated that current methods did not ensure the safety of the samples during transport, including sending samples via public transportation. There is no further information available on the websites of the of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Ministry of Security and Civil Protection, or Rodolphe Mérieux Laboratory in Bamako. [3,4,5,6,7] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Mérieux Foundation (Fondation Mérieux) 2016. "DJOMI." [<https://www.fondation-merieux.org/projets/djomi/>] Accessed 30 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[4] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile). [<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

[7] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

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 evidence of a plan in place in Mali to rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak. For the COVID-19 pandemic, the Malian government created a new national plan in March 2020 called the COVID-19 Disease (COVID-19) Prevention and Response Action Plan, which indicated that Mali had a weak testing capacity. [1] This document does not include a strategy or plan for rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention a plan to rapidly authorize laboratories to supplement testing capacity. [2] According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available. [3] The JEE indicated that Mali does not have a national multi-risk preparedness and action plan in

the event of a public health emergency. There is no further information available on the websites of the of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Ministry of Security and Civil Protection, or Rodolphe Mérieux Laboratory in Bamako.. [4,5,6,7,8] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPONSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[7] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

[8] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

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 no evidence that Mali is conducting ongoing event-based surveillance and analysis for infectious disease. The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 does not mention ongoing event-based surveillance (EBS) and analysis for infectious disease within the country. In fact, the JEE lists establishing EBS at all levels as a priority recommendation for Mali. [1] There is no additional information about EBS available from the websites of the Ministry of Health, Ministry of Agriculture, Ministry of Security and Civil Protection, and Technology or Rodolphe Mérieux Laboratory in Bamako [2,3,4,5] The Directorate General of Civil Protection (DGCP) functions as the country's emergency management agency but its website contains to further information. The National Institute for Research in Public Health and National Centre for Scientific Research do not have a website. [6] Mali has an emergency operations centre (EOC), which was first set up during the Ebola outbreak in order to manage the epidemic; afterwards, the EOC was transferred to the Department of Emergency Public Health Operations (DOU-SP) under the National Centre for Disease Control (CNAM: Centre National

d'Appui à la Lutte contre la Maladie). [1] CNAM does not have a website.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[3] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[4] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile). [<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

[5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

[6] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali). [<https://www.protectioncivile.ml/>]. Accessed 28 September 2020.

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 Mali reported a potential public health emergency of international concern (PHEIC) to the World Health Organisation (WHO) within the past two years. Mali reported its first covid-19 cases on March 25th, 2020, after the WHO had declared covid-19 a PHEIC on January 30, 2020. [1, 2] However, the WHO Disease outbreak News indicated that Mali reported a Yellow Fever outbreak in December 2019. [3] Prior to this incident, the Ministry of Health informed the WHO of a laboratory-confirmed case of infection with Ebola Virus Disease in 2014. [4] There is no mention in the Joint External Evaluation for Mali conducted in June 2017 of other disease outbreak reports to the WHO. [5]

[1] Reliefweb. 11 September 2020. "Mali's security context exacerbated by COVID-19."

[<https://reliefweb.int/report/mali/mali-s-security-context-exacerbated-covid-19>] Accessed 30 September 2020.

[2] World Health Organisation (WHO). 27 April 2020. "Archived: WHO Timeline - COVID-19".

[<https://www.who.int/news/item/27-04-2020-who-timeline---covid-19>] Accessed 8 April 2021.

[3] World Health Organization. 26 December 2019. "Emergencies preparedness, response: Yellow fever – Mali."

[<https://www.who.int/csr/don/26-december-2019-yellow-fever-mali/en/>] Accessed 30 September 2020.

[4] World Health Organization. 31 October 2014. "Global Alert and Response (GAR)." [<https://www.who.int/csr/don/31-october-2014-ebola/en/>] Accessed 30 September 2020.

[5] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

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: 1

There is evidence that the government of Mali operates an electronic reporting surveillance system at both the national and sub-national levels. Since 2015, Mali uses District Health Information Software (DHIS2) as the electronic system for aggregating routine facility and community service data and DHIS2 indicator data is made public via quarterly reports available on the Ministry of Health website. [1,2] Since 2017, the DHIS2 is available in 100% of regional health offices and hospitals and 100% of districts. [3] According to the WHO Joint External Evaluation for Mali from June 2017, the country collects indicator-based surveillance data at both the national and sub-national levels via multiple methods, i.e. paper, mobile phone, and electronically. [4] Depending on the disease, the data is collected into daily, weekly, or monthly reports for analysis, interpretation, and decision-making, and eventually reaching the central government. [5] There is no additional relevant information on the website of the Ministry of Health. [6] The National Institute for Research in Public Health does not have a functioning website.

[1] MEASURE Evaluation. 2019. "Mali's experience in deploying DHIS2." ("L'expérience du Mali dans le déploiement du DHIS2") [<https://www.measureevaluation.org/resources/publications/tr-20-407-fr>] Accessed 30 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). September 2018. "Quarterly Bulletin of Routine Sanitary Information System of Mali No. 3 (Bulletin trimestriel du système d'information sanitaire de routine du Mali N. 3)". [<http://www.sante.gov.ml/index.php/actualites/item/3184-bulletin-trimestriel-du-systeme-d-information-sanitaire-de-routine-du-mali-n-3>]. Accessed 30 September 2020.

[3] MEASURE Evaluation. 2020. "The Story of DHIS2 in Mali: Toward a Fully Integrated Health Information System." [<https://www.measureevaluation.org/resources/publications/gr-20-103>] Accessed 30 September 2020.

[4] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 30 September 2020.

[5] MEASURE Evaluation. "Mali: HIS Indicators". [<https://www.measureevaluation.org/his-strengthening-resource-center/country-profiles/mali>]. Accessed 30 September 2020.

[6] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 30 September 2020.

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 no evidence that Mali's electronic reporting system collects ongoing/real time laboratory data. Mali uses District Health Information Software (DHIS2) as the electronic system for aggregating routine facility and community service data, however, there is no indication that there is real time laboratory data collection. [1,2]The WHO Joint External Evaluation for Mali conducted in June 2017 does not mention real-time data collection within laboratories. [3] There is no information about real-time laboratory data collection on the websites of the Ministry of Health, or Rodolphe Mériéux Laboratory in Bamako. [4,5] The National Institute of Public Health, the National Centre for Scientific Research and the Ministry of Higher Education and Scientific Research do not have working websites.

[1] MEASURE Evaluation. 2019. "Mali's experience in deploying DHIS2." ("L'expérience du Mali dans le déploiement du DHIS2") [<https://www.measureevaluation.org/resources/publications/tr-20-407-fr>] Accessed 30 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). September 2018. "Quarterly Bulletin of Routine Sanitary Information System of Mali No. 3 (Bulletin trimestriel du système d'information sanitaire de routine du Mali N. 3)". [<http://www.sante.gov.ml/index.php/actualites/item/3184-bulletin-trimestriel-du>

systeme-d-information-sanitaire-de-routine-du-mali-n-3]. Accessed 30 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 30 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

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 evidence that electronic health records (EHR) are in use in Mali, but it is not evidence that they are commonly used. While there is evidence that EHR are in use in some of the country's hospitals, usage figures are not available or up-to-date. [1, 2] In 2016, Mali used the EHR application OpenClinic in 5 of 65 health districts in the country. [3] In 2016, Mali also was piloting the EHR application Health Data Mali (Data Santé Mali) in two health centers. According to the National Agency for Telehealth and Medical Informatics (ANTIM), there are currently 15 health structures using OpenClinic. [4] ANTIM is the national agency charged with the promotion and development of e-health and medical informatics in Mali, including implementing a system of electronic health and managing databases in the field of telehealth and health informatics. There are not EHR usage figures on the websites of the Ministry of Health. [5] The National Institute for Research in Public Health does not have a working website. According to the WHO's 2015 eHealth country profiles, Mali reported that it does not have a national EHR system. [6]

[1] World Health Organisation (WHO). "Mali". [<http://www.who.int/goe/publications/atlas/mli.pdf>]. Accessed 28 September 2020.

[2] Syzdykova, Assel et al. 2017. "Open-Source Electronic Health Record Systems for Low-Resource Settings: Systematic Review". JMIR Medical Informatics 5

[4] : e44. [<https://medinform.jmir.org/2017/4/e44/>]. Accessed 28 September 2020.

[3] Medicine Businesses. (les entreprises du médicament) LEEM. 22 May 2016. "The main successes of digital health in the French-speaking world." ("Les principaux succès de la santé numérique dans l'espace francophone.")

[<https://www.leem.org/publication/les-principaux-succes-de-la-sante-numerique-dans-lespace-francophone-geneve-22-mai-2016>] Accessed 30 September 2020.

[4] National Agency for Telehealth and Medical Informatics. (l'Agence Nationale de Télé Santé et d'Informatique Médicale. - ANTIM) 2020. "Home." ("Accueil.") [<http://41.73.116.155:8000/antim/index.php>] Accessed 28 September 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[6] World Health Organisation (WHO). 2015. "Alphabetical list of the eHealth country profiles, 2015: Mali". [<https://www.who.int/goe/publications/atlas/2015/mli.pdf?ua=1>]

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 evidence that Mali's national public health system has access to the electronic health records (EHR) of individuals in the country. While there is evidence that EHR are in use in some of the country's hospitals, there is no evidence that the national public health system has access to these data. [1, 2,3] According to the National Agency for Telehealth and Medical Informatics (ANTIM), there are currently 15 health structures using the EHR application OpenClinic, but there is no indication whether OpenClinic is accessible via the national public health system. [4] ANTIM is the national agency charged with the promotion and development of e-health and medical informatics in Mali, including implementing a system of electronic health and managing databases in the field of telehealth and health informatics. There are not EHR usage figures on the websites of the Ministry of Health. [5] The National Institute for Research in Public Health does not have a working website.

[1] World Health Organisation (WHO). "Mali". [<http://www.who.int/goe/publications/atlas/mli.pdf>]. Accessed 28 September 2020.

[2] Syzdykova, Assel et al. 2017. "Open-Source Electronic Health Record Systems for Low-Resource Settings: Systematic Review". JMIR Medical Informatics 5

[4] : e44. [<https://medinform.jmir.org/2017/4/e44/>]. Accessed 28 September 2020.

[3] Medicine Businesses. (les entreprises du médicament) LEEM. 22 May 2016. "The main successes of digital health in the French-speaking world." ("Les principaux succès de la santé numérique dans l'espace francophone.")

[<https://www.leem.org/publication/les-principaux-succes-de-la-sante-numerique-dans-lespace-francophone-geneve-22-mai-2016>] Accessed 30 September 2020.

[4] National Agency for Telehealth and Medical Informatics. (l'Agence Nationale de Télésanté et d'Informatique Médicale. - ANTIM) 2020. "Home." ("Accueil.") [<http://41.73.116.155:8000/antim/index.php>] Accessed 28 September 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

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 no evidence on data standards for electronic health records (EHR) in Mali. While there is evidence that EHR are in use in some of the country's hospitals, usage figures are not available and there is no information publically available on data standards. [1, 2,3] There is no information regarding EHR data standards on the website of the Ministry of Health or the National Agency for Telehealth and Medical Informatics (ANTIM). [4,5] ANTIM is the national agency charged with the promotion and development of e-health and medical informatics in Mali, including implementing a system of electronic health and managing databases in the field of telehealth and health informatics. The laws creating ANTIM are not publically available, specifically Law No. 08-037 of 7 November 2008. "On ratifying Order N. 08-007 / P-RM of 26 September 2008 on the creation of the National Agency for Telehealth and Medical Informatics" and Order No. 08-007 of 26 September 2008. "On the creation of the National Agency for Telehealth and Medical Informatics . [5] The National Institute of Research in Public Health does not have a website.

- [1] World Health Organisation (WHO). "Mali". [<http://www.who.int/goe/publications/atlas/mli.pdf>]. Accessed 28 September 2020.
- [2] Syzdykova, Assel et al. 2017. "Open-Source Electronic Health Record Systems for Low-Resource Settings: Systematic Review". JMIR Medical Informatics 5 [4] : e44. [<https://medinform.jmir.org/2017/4/e44/>]. Accessed 28 September 2020.
- [3] Medicine Businesses. (les entreprises du médicament) LEEM. 22 May 2016. "The main successes of digital health in the French-speaking world." ("Les principaux succès de la santé numérique dans l'espace francophone.") [<https://www.leem.org/publication/les-principaux-succes-de-la-sante-numerique-dans-lespace-francophone-geneve-22-mai-2016>] Accessed 30 September 2020.
- [4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [5] National Agency for Telehealth and Medical Informatics. (l'Agence Nationale de Télé Santé et d'Informatique Médicale. - ANTIM) 2020. "Home." ("Accueil.") [<http://41.73.116.155:8000/antim/index.php>] Accessed 28 September 2020.
- [5] Ministry of Health. 01 November 2008. "RATIFICATION OF ORDER N ° 08-007 / P-RM OF SEPTEMBER 26, 2008 ESTABLISHING ANTIM." ("RATIFICATION DE L'ORDONNANCE N°08-007/P-RM DU 26 SEPTEMBRE 2008 PORTANT CREATION DE L'ANTIM ") [<http://www.sante.gov.ml/index.php/actualites/communiques/item/625-ratification-de-l-ordonnance-n-08-007-p-rm-du-26-septembre-2008-portant-creation-de-l-antim>] Accessed 22 October 2020.

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 insufficient evidence of an established mechanisms at the relevant ministries responsible for animal, human, and wildlife surveillance to share data (e.g., through mosquito surveillance, brucellosis surveillance). Mali launched its OneHealth platform, which combines human, animal, and environmental health data into a comprehensive multi-sectoral framework, in June of 2018. [1] There is no further evidence publically available to indicate whether the OneHealth platform is functional and whether it is being used at relevant ministries responsible for animal, human, and wildlife surveillance. The WHO Joint External Evaluation (JEE) for Mali, conducted in June 2017, indicated a lack of coordination and information sharing between ministries responsible for animal and human health. [2] There is no further information available on the websites of the Ministry of Health or Ministry of Agriculture. [3,4] The National Institute for Research in Public Health and National Centre for Scientific Research and Technology do not have functioning websites.

- [1] USAID. 27 June 2018. "One Health Platform Launch." [<https://www.usaid.gov/mali/press-releases/june-27-2018-one-health-platform-launch>] Accessed 30 September 2020.
- [2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.
- [3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

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 insufficient evidence that Mali 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) on a regular basis. Since 2015, Mali uses District Health Information Software (DHIS2) as the electronic system for aggregating routine facility and community service data including disease rates, and DHIS2 indicator data is made public via quarterly reports available on the Ministry of Health website. [1,2] There is no further information available on the websites of the Ministry of Health, the Ministry of Agriculture, or Rodolphe Mérieux Laboratory in Bamako. [3,4, 5] The National Institute for Research in Public Health and National Centre for Scientific Research and Technology do not have functioning websites.

[1] MEASURE Evaluation. 2019. "Mali's experience in deploying DHIS2." ("L'expérience du Mali dans le déploiement du DHIS2") [<https://www.measureevaluation.org/resources/publications/tr-20-407-fr>] Accessed 30 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). September 2018. "Quarterly Bulletin of Routine Sanitary Information System of Mali No. 3 (Bulletin trimestriel du système d'information sanitaire de routine du Mali N. 3)". [<http://www.sante.gov.ml/index.php/actualites/item/3184-bulletin-trimestriel-du-systeme-d-information-sanitaire-de-routine-du-mali-n-3>]. Accessed 30 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

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: 0

There is insufficient evidence that Mali 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 Ministry of Health provides official statements (Communiqué) multiple times a week that detail the number of people tested, the number of positive cases, the location of positive cases, the number of healed cases, and the number of deaths since the last official statement as well as the total number of positive cases, healed cases and deaths in the country since the beginning of the outbreak. [1] The National Agency for Telehealth and Medical Informatics (ANTIM) has been tracking and displaying the number of COVID-19 cases in Mali and updating regularly. As of September 30th, 2020, ANTIM reports 3118 positive cases, but no deaths. [2] The WHO, however, indicates that there have been 131 confirmed COVID-19 deaths in Mali as of September 30th, 2020. [3]

[1] Mali Ministry of Health. 28 September 2020. "COMMUNIQUE N ° 210 FROM THE MINISTRY OF HEALTH AND SOCIAL AFFAIRS ON THE FOLLOW-UP OF PREVENTION AND RESPONSE ACTIONS TO CORONAVIRUS DISEASE" ("COMMUNIQUE N°210 DU MINISTERE DE LA SANTE ET DES AFFAIRES SOCIALES SUR LE SUIVI DES ACTIONS DE PREVENTION ET DE RIPOSTE FACE A LA MALADIE A CORONAVIRUS") [<http://www.sante.gov.ml/index.php/actualites/communiques/item/5821-communiqué-n-210-du-ministere-de-la-sante-et-des-affaires-sociales-sur-le-suivi-des-actions-de-prevention-et-de-riposte-face-a-la-maladie-a-coronavirus>] Accessed 30 September 2020.

[2] National Agency for Telehealth and Medical Informatics. (l'Agence Nationale de Télésanté et d'Informatique Médicale.- ANTIM) 2020. "Home." ("Accueil.") [<http://41.73.116.155:8000/antim/index.php>] Accessed 28 September 2020.

[3] World Health Organization. 2020. "Mali." [<https://www.who.int/countries/mli/>] Accessed 30 September 2020.

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: 1

Mali has a national data privacy law that would safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities. Under Law No. 2013-015 on the Protection of Personal Data, personal health information falls under the category of "sensitive data." Improper use of sensitive data, e.g. illegal collection, improper storage, etc. is subject to monetary fines ranging from 2.5 to 10 million francs. [1] Thus, the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities is covered under Mali's data privacy law.

[1] President of the Republic of Mali. Law No. 2013-015 of 21 May 2013. "On the Protection of Personal Data (Portant protection des données a caractère personnel en République du Mali)". [<https://media2.mofo.com/documents/Mali-Loi-sur-la-protection-des-donnees-personnelles-du-21-mai-2013.pdf>]. Accessed 30 September 2020.

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

The laws, regulations, or guidelines safeguarding the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities, do not include mention of protections from cyber attacks. Mali's data privacy law, No. 2013-015 on the Protection of Personal Data, protects personal health information, which fall under the category of "sensitive data," but does not mention protections from cyber attacks. The improper use of sensitive data, e.g. illegal collection, improper storage, etc. is subject to monetary fines ranging from 2.5 to 10 million francs. [1] Mali does not have specific regulations and compliance requirements that pertain to cybersecurity. However, the country's Criminal Code contains two articles relevant to cybercrime, i.e. Articles 264 and 271, which set out penalties for those who fraudulently access or keep information from an automated data processing system. [2, 3]

[1] President of the Republic of Mali. Law No. 2013-015 of 21 May 2013. "On the Protection of Personal Data (Portant protection des donnees a caractere personnel en Republique du Mali)". [<https://media2.mofo.com/documents/Mali-Loi-sur-la-protection-des-donnees-personnelles-du-21-mai-2013.pdf>]. Accessed 30 September 2020.

[2] International Telecommunications Union (ITU). "Cyberwellness Profile: Mali". [https://www.itu.int/en/ITU-D/Cybersecurity/Documents/Country_Profiles/Mali.pdf]. Accessed 30 September 2020.

[3] President of the Republic of Mali. Law No. 01-079 of 20 August 2001. "Criminal Code" (Loi N. 01-079 due 20 Aout 2001 portant Code Penal)". [<http://www.droit-afrique.com/upload/doc/mali/Mali-Code-2001-penal.pdf>]. Accessed 30 September 2020.

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

In its March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan, Mali committed to sharing information related to COVID-19 with the WHO country office, West African Health Organisation (WAHO) and the Africa Center of Disease Control (Africa CDC). However, there is no evidence that countries in the WAHO region or Africa CDC member states are able to share and utilise such data with each other as opposed to the organisation. [1]

Mali is part of several regional surveillance networks: the West and Central Africa Veterinary Laboratory Network for Avian Influenza and other Transboundary Diseases (RESOLAB), the Regional Network of National Epidemiology Surveillance Systems for HPAI and Other Priority Animal Diseases in West Africa (RESEPI), and the West Africa Network for Infectious Disease Surveillance (WANIDS). WANIDS aims to enhance the capacity of its 15 member countries to collect and share health information; member countries participate in a regional platform that regularly collects and shares health information. RESOLAB and RESEPI bring together the animal health experts in the region in order to prepare and implement regional control strategies for major animal diseases, including Avian Influenza, Foot-and-Mouth Disease, small ruminants' plague, and rabies. However, there is no evidence that these three networks require its members to share surveillance data during public health emergencies, although data sharing is encouraged in the RESOLAB sub-networks focused on specific diseases. [2,3,4,5]

Mali would take part in the West Africa Regional Disease Surveillance Systems Enhancement (REDISSE) project, funded by the World Bank, which has building regional inter-sectoral capacities for enhanced collaborative disease surveillance as an objective. However, there is no evidence of an explicit requirement that REDISSE member countries share surveillance data during public health emergencies. [6,7]

There is no additional information on the Ministry of Health website. [8] Mali's National Institute for Research in Public Health does not have a functioning website.

- [1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")
[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.
- [2] Connecting Organisations for Regional Disease Surveillance (CORDS). 27 May 2016. "A New West African Network".
[<https://www.cordsnetwork.org/2016/05/27/waho-cords-joint-workshop-to-set-up-the-national-coordinating-institutions-network-nci-25-26-may-2016-hotel-nouvelle-pergola-abidjan-cote-divoire/>]. Accessed 28 September 2020.
- [3] Asamoah, Lydia. 5 March 2017. "ECOWAS sets up a body to control epidemics".
[<http://www.ghananewsagency.org/print/113929>]. Accessed 28 September 2020.
- [4] Food and Agriculture Organisation of the United Nations (FAO). 20 December 2013. "FAO hands over Coordination of Animal Networks to Regional Coordinators in West and Central Africa".
[http://www.fao.org/ag/againfo/programmes/en/empres/news_201213b.html]. Accessed 28 September 2020.
- [5] Final Report of the 4th RESOLAB Annual Coordination Meeting, 6-10 December 2010, Bamako, Mali".
[<https://docplayer.net/89455106-Final-report-of-the-4-th-resolab-annual-coordination-meeting-6-10-december-2010-bamako-mali.html>]. Accessed 28 September 2020.
- [6] World Bank. 6 June 2016. "International Development Association Project Appraisal for a Regional Disease Surveillance Enhancement Program in West Africa (First Phase in a Series of Projects)".
[<http://documents.worldbank.org/curated/en/965001467305866621/text/PAD1752-PAD-P154807-OUO-9-IDA-R2016-0154-1-Box396265B.txt>]. Accessed 28 September 2020.
- [7] West African Health Organisation (WAHO). 2 November 2018. "REDISSE". [<http://w3.wahooas.org/web-ooas/en/projets/redisse-regional-disease-surveillance-systems-enhancement-project-west-africa>]. Accessed April 8, 2021.
- [8] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).
[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

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: 0

There is insufficient evidence of 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 an active or potential public health emergency in Mali. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not include a strategy or plan to support sub-national level contact tracing operations. It only proposed a 20 person contract-tracing team at the international airport. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan includes a basic table with a scenario of a cholera or bird flu outbreak, which indicates more testing kits would be needed. However, it does not indicate how testing could be conducted or supported by training and financial resources at the sub-national level. [2] According to the WHO's Joint External Evaluation (JEE) of IHR Core Capacities of the Republic of Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017. However, this plan is not publically available. [3] Moreover, the JEE indicates that Mali does not have a national multi-risk preparedness and action plan in the

event of a public health emergency. [3] There is no further information available on the websites of the of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, Ministry of Security and Civil Protection, or Rodolphe Mérieux Laboratory in Bamako. [4,5,6,7,8] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[7] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

[8] Fondation Mérieux. 2020. "Rodolphe Mérieux Laboratory in Bamako (Mali)" ("Laboratoire Rodolphe Mérieux de Bamako (Mali)") [<https://www.fondation-merieux.org/ce-que-nous-faisons/accroitre-acces-diagnostic/mettre-en-place-infrastructures/laboratoire-rodolphe-merieux-bamako-mali/>] Accessed 28 September 2020.

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 evidence that Mali 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. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not address providing wraparound services to enable cases and suspected cases to self-isolate as recommended. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention providing wraparound services either. [2] According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available. [3] Moreover, the JEE indicated that Mali does not have a national multi-risk preparedness and action plan in the event of a public health emergency. There is no further information available on the websites of the of the Ministry of Health, Ministry of Agriculture, or Ministry of Security and Civil Protection for the provision of government funded or subsidised medical attention and economic support for those required to self-isolate or quarantine in Mali. [4,5,6] The National Institute for Research in Public Health, the National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have functioning websites.

- [1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")
[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.
- [2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")
[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.
- [3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.
- [4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.
- [5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.
- [6] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile). [<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

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 insufficient evidence that Mali 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 Ministry of Health provides official statements (Communiqué) available every few days that detail the number of people being monitored for COVID-19 following contact tracing but not the percentage of new cases from identified contacts. [1] Additional information shared in these reports include the number of people tested, the number of positive cases, the location of positive cases, the number of healed cases, and the number of deaths since the last official statement as well as the total number of positive cases, healed cases and deaths in the country since the beginning of the outbreak. [1] The National Agency for Telehealth and Medical Informatics (ANTIM) has been tracking and displaying the number of COVID-19 cases in Mali and updating regularly. As of September 30th, 2020, ANTIM reports 3118 positive cases, but no deaths. [2] The WHO, however, indicates that there have been 131 confirmed COVID-19 deaths in Mali as of September 30th, 2020. [3]

- [1] Mali Ministry of Health. 28 September 2020. "COMMUNIQUE N ° 210 FROM THE MINISTRY OF HEALTH AND SOCIAL AFFAIRS ON THE FOLLOW-UP OF PREVENTION AND RESPONSE ACTIONS TO CORONAVIRUS DISEASE" ("COMMUNIQUE N°210 DU MINISTERE DE LA SANTE ET DES AFFAIRES SOCIALES SUR LE SUIVI DES ACTIONS DE PREVENTION ET DE RIPOSTE FACE A LA MALADIE A CORONAVIRUS") [<http://www.sante.gov.ml/index.php/actualites/communiques/item/5821-communiqué-n-210-du-ministere-de-la-sante-et-des-affaires-sociales-sur-le-suivi-des-actions-de-prevention-et-de-riposte-face-a-la-maladie-a-coronavirus>] Accessed 30 September 2020.
- [2] National Agency for Telehealth and Medical Informatics. (l'Agence Nationale de Télé Santé et d'Informatique Médicale.- ANTIM) 2020. "Home." ("Accueil.") [<http://41.73.116.155:8000/antim/index.php>] Accessed 28 September 2020.
- [3] World Health Organization. 2020. "Mali." [<https://www.who.int/countries/mli/>] Accessed 30 September 2020.

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: 0

There is insufficient evidence of 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 in Mali for either an active or future public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not address mention or create a joint plan or cooperative agreement between the public health system and border control authorities. [1] The Plan mentions the need to define the principles and measure of health control at Mali's borders as well as the need to prepare the airports to receive plane passengers and identifies the reactivation of 15 health check points at Mali's borders as an a response measure. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention or establish a joint plan or cooperative agreement between the health system and border control authorities. [2] According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available. [3] Moreover, the JEE recommended that Mali draft a protocol or memorandum of understanding between the public health and the security (including border control) agencies to define responsibilities, obligations and practical modalities of intervention for a public health emergency given that such a plan/protocol does not currently exist. There is no further information available on the websites of the of the Ministry of Health, Ministry of Defense, Ministry of Agriculture, or Ministry of Security and Civil Protection. [4,5,6,7] The National Institute for Research in Public Health, the National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[7] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

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

Mali has applied epidemiology training program (such as FETP) is available in country; its citizens can participate in applied epidemiology training programs (such as FETP) in other countries, but there is no evidence that the government provides financial support for such participants. According the WHO Joint External Evaluation for Mali conducted in June 2017, basic-level FETP exists in the country. [1] Additionally, the United States Center for Disease Control (CDC) and the African Field Epidemiology Network (AFENET) have both run FETPs in Mali. [2,3] For more advanced training, Malian health professionals can attend training sessions in Burkina Faso through an agreement with the University of Ouagadougou. There is no mention in the JEE that the government provides resources to send citizens to advanced FETP training abroad. [1] Mali is also part of the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) through the West Africa Field Epidemiology and Laboratory Training Program (which covers Benin, Burkina Faso, Cote d'Ivoire, Guinea, Mali, Niger, Senegal, and Togo). There is no indication on that participants from Mali are supported by the Malian government. [4]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 2 October 2020.

[2] Centers for Disease Control and Prevention (CDC). "Mali: A Wider Net Catches Polio". [https://www.cdc.gov/globalhealth/security/stories/mali_polio.html]. Accessed 2 October 2020.

[3] African Field Epidemiology Network (AFENET). "AFENET 2017". [http://www.afenet.net/images/profiles/AFENET_PROFILE_2018pdf.pdf]. Accessed 2 October 2020.

[4] Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET). "Burkina Faso Field Epidemiology Training Programs". [<https://www.tephinet.org/training-programs/burkina-faso-field-epidemiology-training-program>]. Accessed 2 October 2020.

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

There are available field epidemiology training programs in Mali that are explicitly inclusive of animal health professionals. The Joint External Evaluation for Mali from June 2017 mentions that the country holds basic field epidemiology training programs for physicians and veterinarians. [1] For more advanced training, Malian health professionals can attend training

sessions in Burkina Faso through an agreement with the University of Ouagadougou. [1, 2] Mali is also part of the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) through the West Africa Field Epidemiology and Laboratory Training Program (which covers Benin, Burkina Faso, Cote d'Ivoire, Guinea, Mali, Niger, Senegal, and Togo). [3] The Burkina Faso Field Epidemiology Training Program includes professionals in animal health; the West Africa Field Epidemiology and Laboratory Training Program does not explicitly include veterinarians. [2, 3] Additionally, in 2018, the 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 Mali. [4,5] The program is a four-month frontline field epidemiology program to train veterinary field epidemiologists. [6]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 2 October 2020.

[2] Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET). "Burkina Faso Field Epidemiology Training Programs". [<https://www.tephinet.org/training-programs/burkina-faso-field-epidemiology-training-program>]. Accessed 2 October 2020.

[3] African Field Epidemiology Network (AFENET). "West Africa Field Epidemiology and Laboratory Training Program". [<http://www.afenet.net/index.php/countries/west-africa>]. Accessed 2 October 2020.

[4] 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 2 October 2020.

[5] Institute for Infectious Animal Diseases. "Frontline ISAVET." [<https://iid.tamu.edu/frontline-isavet>]. Accessed 2 October 2020.

[6] 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 2 October 2020.

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: 1

There is insufficient evidence that Mali has an overarching national public health emergency response plan in place which addresses planning for multiple communicable diseases with epidemic or pandemic potential. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan addresses planning for several different diseases, specifically cholera and bird flu. It also indicates that the plans for cholera and bird flu could be used for meningitis and yellow fever [1] but it is not an overarching plan for any public health emergency. According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available and there is not evidence of the contents of this new plan. [2] The JEE indicated that Mali does not have a national overarching multi-risk preparedness and action plan in the event of a public health emergency. There is no further information available on the websites of the of the Ministry of Health, Ministry of Agriculture, or Ministry of Security and Civil Protection. [3,4,5] The National Institute for Research in Public Health and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

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 insufficient evidence that Mali has an overarching plan is in place or that it has been updated in the last 3 years. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan addresses planning for several different diseases,

specifically cholera and bird flu, but it is not an overarching plan for any health emergency. [1] According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available and there is not evidence available of the contents of this new plan and whether it is an overarching plan. [2] The JEE indicated that Mali does not have a national multi-risk preparedness and action plan in the event of a public health emergency. There is no further information available on the websites of the of the Ministry of Health, Ministry of Agriculture, or Ministry of Security and Civil Protection. [3,4,5] The National Institute for Research in Public Health and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

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: 0

There is insufficient evidence that Mali has an overarching plan is in place and that this plan includes considerations for pediatric and/or other vulnerable populations. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan addresses planning for several different diseases, specifically cholera and bird flu, but is not an overarching plan to cover any potential outbreak. [1] This plan does mention how women and children might be more vulnerable groups and has a few suggestions of how to consider them - specifically, targeting focus groups and other data collecting efforts to include them and to ensure routine vaccination of children. According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available and there is not evidence available of the contents of this new plan and whether it is an overarching plan. [2] The JEE indicated that Mali does not have a national multi-risk preparedness and action plan in the event of a public health emergency. There is no further information available on the websites of the of the Ministry of Health, Ministry of Agriculture, or Ministry of Security and Civil Protection. [3,4,5] The National Institute for Research in Public Health and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[5] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

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 no evidence that Mali has a specific mechanism for engaging with the private sector to assist with outbreak emergency preparedness and response. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not include any mention of engaging the private sector beyond budgeting to pass messaging through private radio and TV stations. [1] The Joint External Evaluation for Mali conducted in June 2017 notes that private sector participation in real-time disease surveillance is very limited. Additionally, the JEE notes that effective involvement of private sector personnel in international health regulation (IHR)-related activities remains a challenge. [2] There is no information about a mechanism for engaging the private sector during public emergencies available on the websites of Ministry of Health and Directorate General of Civil Protection, the latter of which functions as Mali's emergency management agency. [3,4] The National Institute for Research in Public Health does not have a website. There is no mention in the 2010 National Multi-Risk Plan for Disaster Preparedness and Response of a specific mechanism for engaging with the private sector to assist with outbreak emergency preparedness and response. [5]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 2 October 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 2 October 2020.

[3] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali). [<https://www.protectioncivile.ml/>]. Accessed 2 October 2020.

[4] Government of Mali. 2010. "National Multi-Risk Plan for Disaster Preparedness and Response (Plan National Multirisques de Préparation et de Réponse aux Catastrophes)".

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>]. Accessed 2 October 2020.

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: 1

There is evidence that Mali has a policy, plan and/or guidelines in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic but it is only for one disease. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan mentions non-pharmaceutical interventions including, increasing awareness of health personnel on covid-19; increasing public awareness of non-pharmaceutical measures (hygiene rules, sanitation , etc); limiting contact in places of high human concentration such as airports, schools, wedding ceremonies, death ceremonies, market, hotels, etc; creating a rumor management mechanism; advocacy with partners for more human resources if needed; and commitment and empowerment of communities in the fight against the epidemic. [1] Separately, Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan includes plans for increased communication and advocacy for more resources, but does not include other non-pharmaceutical interventions. [2] According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available. [3] Moreover, the JEE indicated that Mali does not have a national multi-risk preparedness and action plan in the event of a public health emergency. There is no further information available on the websites of the Ministry of Health, Ministry of Agriculture, or Ministry of Security and Civil Protection. [4,5,6] The National Institute for Research in Public Health and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPONSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

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 evidence that Mali has activated their national emergency response plan for an infectious disease outbreak in the past year but not of the country's completion of a national-level biological threat-focused exercise (either with WHO or separately) in the past year. Mali has a 2010 National Multi-Risk Preparation and Disaster-Response Plan, but it is not an overarching plan for any epidemic outbreak. [1] As a result, Mali had to develop its March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan in response to the COVID-19 pandemic. [2] According to the WHO's Joint External Evaluation (JEE) for the Republic of Mali, conducted in June 2017, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available. [3] The JEE indicated that Mali does not have a national multi-risk preparedness and action plan in the event of a public health emergency. According to the WHO, Mali's last national-level biological threat-focused exercise was conducted in April-May 2016 on Meningitis Response and there are not future exercises planned. [4] There is no further information available on the websites of the Ministry of Health, Ministry of Agriculture, Ministry of Security and Civil Protection, or National Centre for Scientific Research and Technology. [5,6,7,8] The National Institute for Research in Public Health and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[2] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] WHO. 2020. "Simulation Exercises." [<https://extranet.who.int/sph/simulation-exercise>] Accessed 2 October 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[6] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[7] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

[8] National Centre for Scientific Research and Technology (Centre National de la Recherche Scientifique et Technologie).

[<https://cnrst.edu.ml/>]. Accessed 28 September 2020.

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: 0

There is no evidence that Mali has in the past year 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. According to the WHO Strategic Partnerships Portal, Mali's last national-level biological threat-focused exercise was conducted in April-May 2016 on Meningitis Response and three other simulations exercises occurred between 2014 and 2016.. [1,2] According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali has conducted a crisis management response simulation jointly with Mauritania and also conducted bird flu management simulation in January 2017, but it recommended that more simulations were needed. [3] There is no further information available on the websites of the Ministry of Health, Ministry of Agriculture, or Ministry of Security and Civil Protection. [4,5,6] The National Institute for Research in Public Health and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] WHO. 2020. "Simulation Exercises." [<https://extranet.who.int/sph/simulation-exercise>] Accessed 2 October 2020.

[2] WHO. 2020. "After Action Review." [<https://extranet.who.int/sph/after-action-review>] Accessed 5 october 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 28 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 28 September 2020.

[6] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile).

[<https://www.securite.gouv.ml/>]. Accessed 29 September 2020.

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 evidence that Mali in the past year has undergone a national-level biological threat-focused exercise that has included private sector representatives. According to the WHO, Mali's last national-level biological threat-focused exercise was conducted in April-May 2016 on Meningitis Response. [1,2] A report on this simulation is not publically available and there is no indication that private sector representatives participated. According to the WHO's Joint External Evaluation (JEE) for Mali, conducted in June 2017, Mali has conducted a crisis management response simulation jointly with Mauritania and also conducted bird flu management simulation in January 2017, but there was no mention of the implication of the private sector in these simulations. [3] The JEE report also notes that private sector participation in real-time disease surveillance is very limited and that effective involvement of private sector personnel in international health regulation (IHR)-related activities remains a challenge. There is no further information available on the websites of the Ministry of Health, Ministry of

Agriculture, or Ministry of Security and Civil Protection. [4,5,6,7] The National Institute for Research in Public Health, National Centre for Scientific Research and Technology and the Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] WHO. 2020. "Simulation Exercises." [https://extranet.who.int/sph/simulation-exercise] Accessed 2 October 2020.

[2] WHO. 2020. "After Action Review." [https://extranet.who.int/sph/after-action-review] Accessed 5 October 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [http://www.sante.gov.ml/]. Accessed 28 September 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [https://ma.gouv.ml/]. Accessed 28 September 2020.

[6] Ministry of Security and Civil Protection (Ministère de la Sécurité et de la Protection Civile). [https://www.securite.gouv.ml/]. Accessed 29 September 2020.

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

Mali has in place an Emergency Operations Center (EOC). The WHO Joint External Evaluation for Mali from June 2017 notes that the country set up an EOC during the Ebola outbreak. Afterwards, the EOC was transferred to the Department of Public Health Emergency Operations (DOU-SP) under the Ministry of Health. [1] The EOC and the DOU-SP are briefly mentioned in various event updates on the website of the Ministry of Health, but there is no detailed explanation of how either operates. There is no additional information about the EOC or the DOU-SP on the websites of the Ministry of Health or the Directorate General of Civil Protection, the latter of which serves as a disaster management agency. [2, 3] Neither the EOC or the DOU-SP have an independent web presence. The National Institute for Research in Public Health does not have a website.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/]. Accessed 5 October 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [http://www.sante.gov.ml/]. Accessed 5 October 2020.

[3] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali). [https://www.protectioncivile.ml/]. Accessed 5 October 2020.

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 evidence that the Emergency Operations Center (EOC) is required to conduct a drill at least once per year or that it conducts a drill at least once per year. The WHO Joint External Evaluation (JEE) for the Republic of Mali conducted in June 2017 does not mention any simulation exercise procedures; in fact, the JEE recommends developing and implementing a simulation exercise program should be a national priority. [1] There is no information about EOC procedures available on the websites of the Ministry of Health or the Directorate General of Civil Protection, the latter of which serves as a disaster management agency. [2,3] Mali's EOC does not have its own website. The National Institute for Research in Public Health does not have a website.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 5 october 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 5 october 2020.

[3] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali). [<https://www.protectioncivile.ml/>]. Accessed 5 october 2020.

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 public evidence to show that the EOC can conduct, or 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. There was no mention of such an exercise in the WHO Joint External Evaluation for Mali conducted in June 2017. [1] Nor is there mention of such an exercise by the Ministry of Health or the Directorate General of Civil Protection of Mali on their websites, the latter of which serves as a disaster management agency. [2, 3] However, Mali has participated in regional EOC simulation exercises. In May 2018, Mali took part in a regional simulation exercise hosted by the Senegal Health Emergency Operations Center in partnership with the World Health Organisation, the American Agency for Threat Reduction (DTRA), and the United States Centres for Disease Control and Prevention. The nine countries involved were Cote d'Ivoire, Gambia, Guinea, Liberia, Mali, Nigeria, Senegal, Togo, and Zambia. There is no information about whether this May 2018 exercise involved activating an emergency response within 120 minutes of the simulated public health scenario. [4]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 5 october 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 5 october 2020.

[3] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali). [<https://www.protectioncivile.ml/>]. Accessed 5 october 2020.

[4] Health Emergency Operation Center of Senegal. "Health Emergency Operation Center Simulation Exercise Background". [<http://www.cousenegal.sn/en/exercice-de-simulation-du-centre-des-operations-durgence-sanitaire-cous/>]. Accessed 5 october 2020.

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 no public evidence that public health and national security authorities have carried out an exercise to respond to a potential deliberate biological event nor are there publicly available standard operating procedures, guidelines, MOUs or other agreements between the public health and security authorities to respond to a potential deliberate biological event. The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 does not mention any exercises to simulate responses to a bioterrorism attack or any guidelines about how public health and security authorities should respond in case of such an attack. [1] The JEE recommended that Mali draft a protocol or memorandum of understanding between the public health and the security (including border control) agencies to define responsibilities, obligations and practical modalities of intervention for a public health emergency given that such a plan/protocol does not currently exist. There is no such information available on the websites of the Ministry of Health and the Directorate General of Civil Protection, the latter of which serves as a disaster management agency. [2,3] The JEE mentions a couple of official documents that link public health and security authorities: Presidential Decree of 31 December 2015 (also known as the ORSEC Plan) and Presidential Decree No. 974/PRM of 27 December 2016 (concerning a national platform for disaster risk prevention and management). [1] Neither decree is available online. A follow-up decree, No. 2017-0798/PM-RM of 19 September 2017 (concerning the composition and operating procedures of the interministerial committee for crisis and disaster management) does not provide any guidelines for how public health and security authorities are to respond to a potential deliberate biological event. [4] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention or establish a joint plan or cooperative agreement between the health system and security authorities. [5] According to the JEE, Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available. [1]

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 5 october 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 5 october 2020.

[3] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali). [<https://www.protectioncivile.ml/>]. Accessed 5 october 2020.

[4] President of Mali. Decree No. 2017-0798/PM-RM of 19 September 2017. "Composition and Operating Procedures of the Interministerial Committee for Crisis and Disaster Management (Décret N. 2017-0798/PM-RM du 19 Septembre 2017 fixant la Composition et les Modalités de Fonctionnement du Comité Interministeriel de Gestion de Crises et Catastrophes)". [<http://extwprlegs1.fao.org/docs/pdf/Mli172036.pdf>]. Accessed 5 october 2020.

[5] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPONSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

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: 0

There is no evidence that Mali has a risk communication plan (or other legislation, regulation or strategy document used to guide national public health response) that outlines how messages will reach populations and sectors with different communications needs (eg different languages, location within the country, media reach). There is no publicly available evidence that Mali has a risk communication plan that is specifically intended for use during a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not mention or create a risk communication plan. [1] It mentions a few bullet points for its communication strategy during the COVID-19 pandemic. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention or establish a risk communication plan for public health emergencies. It only contains general statements about communication. [2] The WHO Joint External Evaluation for Mali conducted in June 2017 indicates that the country faces several challenges when it comes to risk communication: Mali has yet to establish a multisectoral risk communication coordination framework, to develop a national risk communication plan based on communication plans already existing in the health sector and other sectors, or to develop and disseminate risk communication procedures manuals, including a manual of rumour management procedures. [3] The websites of the Ministry of Health (which houses the public health emergency operations centre) and Directorate General of Civil Protection (which functions as the emergency management agency) provide no information about a risk communication plan specifically intended for use during a public health emergency. [4,5]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 5 october 2020.

[5] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 5 october 2020.

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: 0

There is no publicly available evidence that Mali has a risk communication plan that is specifically intended for use during a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not mention or create a risk communication plan. [1] It mentions a few bullet points for its communication strategy during the COVID-19 pandemic. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention or establish a risk communication plan for public health emergencies. [2] Similarly, it also contains general statements about communication. The WHO Joint External Evaluation for Mali conducted in June 2017 indicates that the country faces several challenges when it comes to risk communication: Mali has yet to establish a multisectoral risk communication coordination framework, to develop a national risk communication plan based on communication plans already existing in the health sector and other sectors, or to develop and disseminate risk communication procedures manuals, including a manual of rumour management procedures. [3] The websites of the Ministry of Health (which houses the public health emergency operations centre) and Directorate General of Civil Protection (which functions as the emergency management agency) provide no information about a risk communication plan specifically intended for use during a public health emergency. [4,5]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 5 october 2020.

[5] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 5 october 2020.

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: 0

There is no evidence that Mali has a risk communication plan (or other legislation, regulation or strategy document used to guide national public health response) that designates a specific position within the government to serve as the primary spokesperson to the public during a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and

Response Action Plan does not mention a primary government spokesperson to the public. [1] It mentions a few general bullet points for its communication strategy during the COVID-19 pandemic. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention or establish a primary government spokesperson for public health emergencies. [2] Similarly, it also contains general statements about communication. The WHO Joint External Evaluation for Mali conducted in June 2017 does not mention a primary government spokesperson for public health emergencies. It indicates that the country faces several challenges when it comes to risk communication: Mali has yet to establish a multisectoral risk communication coordination framework, to develop a national risk communication plan based on communication plans already existing in the health sector and other sectors, or to develop and disseminate risk communication procedures manuals, including a manual of rumour management procedures. [3] The websites of the Ministry of Health (which houses the public health emergency operations centre) and Directorate General of Civil Protection (which functions as the emergency management agency) provide no information about a risk communication plan specifically intended for use during a public health emergency. [4,5]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 28 September 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 5 october 2020.

[5] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 5 october 2020.

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

In the past year, there is evidence that the public health system in Mali 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. Every few days during the COVID-19 pandemic, the Ministry of Health and Social Affairs has posted its official update (Communiqué) on COVID-19 in the country. [1,2] These updates detail the number of people being monitored for COVID-19 following contact tracing, the number of people tested, the number of positive cases, the location of positive cases, the number of healed cases, and the number of deaths since the last official statement as well as the total number of positive cases, healed cases and deaths in the country since the beginning of the outbreak. [2] The Ministry of Health and Social Affairs website has press releases and official communications to the public dating back to 2013,

which include information about ongoing public health concerns and which is updated on a regular basis. [3] The Ministry of Health's posts on Facebook range from workshops on healthcare worker socialisation and reports on equipment shortages to awareness building events on sanitation and hygiene and oral hygiene. [1] However, the Ministry of Health and Social Affairs website does not regularly address rumors, misinformation or disinformation.

[1] Mali Ministry of Health and Social Affairs. 2018-2020. [<https://www.facebook.com/msdsmali1>] Accessed 7 April 2021.

[2] Mali Ministry of Health. 28 September 2020. "COMMUNIQUE N ° 210 FROM THE MINISTRY OF HEALTH AND SOCIAL AFFAIRS ON THE FOLLOW-UP OF PREVENTION AND RESPONSE ACTIONS TO CORONAVIRUS DISEASE" ("COMMUNIQUE N°210 DU MINISTERE DE LA SANTE ET DES AFFAIRES SOCIALES SUR LE SUIVI DES ACTIONS DE PREVENTION ET DE RIPOSTE FACE A LA MALADIE A CORONAVIRUS") [<http://www.sante.gov.ml/index.php/actualites/communiques/item/5821-communiqué-n-210-du-ministere-de-la-sante-et-des-affaires-sociales-sur-le-suivi-des-actions-de-prevention-et-de-riposte-face-a-la-maladie-a-coronavirus>] Accessed 30 September 2020.

[3] Mali Ministry of Health and Social Affairs. 2020. "News." ("Actualités.") [<http://www.sante.gov.ml/index.php/actualites>] Accessed 5 October 2020.

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 public evidence that senior leaders (president or ministers) have shared misinformation or disinformation on infectious diseases in the past two years in Mali. Although misinformation about the COVID-19 pandemic appears common and has been reported on by various sources in the main international and national news outlets, there is no evidence that senior leaders in the government have been sharing this information. [1,2,] Ministry of Health and Social Affairs Facebook page is no longer functional.

[1] United Nations Info. 14 April 2020. "Covid-19: the UN fights against disinformation in the face of the pandemic." ("Covid-19 : l'ONU lutte contre la désinformation face à la pandémie") [<https://news.un.org/fr/audio/2020/04/1066552>] Accessed 5 October 2020.

[2] Free Press Unlimited. 13 May 2020. "Challenging COVID-19 by debunking fake news."

[<https://www.freepressunlimited.org/en/news/challenging-covid-19-by-debunking-fake-news>] Accessed 5 October 2020.

3.6 ACCESS TO COMMUNICATIONS INFRASTRUCTURE

3.6.1 Internet users

3.6.1a

Percentage of households with Internet

Input number

Current Year Score: 13

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: 115.08

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: 19.0

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 evidence that in the past year, Mali has 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. There are no indications from the Ministry of Health, Ministry of Agriculture, World Organisation for Animal Health, or World Health Organisation that Mali restricted medical goods from another country due to an infectious disease outbreak in the past year. [1,2,3,4] The COVID-19 border closures have caused difficulties for traders, but there is no evidence that Mali has issued a restriction on the export/import of medical goods (e.g. medicines, oxygen, medical supplies, PPE) due to this infectious disease outbreak. [5,6,7]

1] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[2] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 5 October 2020.

[3] World Organisation for Animal Health (OIE). "Weekly disease information".

[https://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/WI]. Accessed 5 October 2020.

[4] World Health Organisation. "Emergencies preparedness, response - Côte d'Ivoire".

[<http://www.who.int/csr/don/archive/country/mli/en/>]. Accessed 5 October 2020.

[5] AFRICAN REGIONAL ORGANISATION OF THE INTERNATIONAL TRADE UNION CONFEDERATION. 16 May 2020. "Mali's response to the COVID-19 pandemic." [<http://www.ituc-africa.org/Mali-s-response-to-the-COVID-19-pandemic.html>] Accessed 5 October 2020.

[6] Croner-i. 20 May 2020. "Special Notice." [<https://app.croneri.co.uk/countries/mali>] Accessed 5 October 2020.

[7] Ross, Aaron. 27 May 2020. "REFILE-West African food trade under strain as COVID-19 shuts borders." Reuters.

[<https://uk.reuters.com/article/health-coronavirus-food-africa-idUKL8N2D13HK>] Accessed 5 October 2020.

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

In the past year, there is no evidence that Mali has 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. There are no indications from the Ministry of Health, Ministry of Agriculture, World Organisation for Animal Health, or World Health Organisation that Mali restricted non-medical goods from another country due to an infectious disease outbreak in the past year. [1,2,3,4] The COVID-19 border closures have caused difficulties for traders, but there is no evidence that Mali has issued a restriction on the export/import of non-medical goods (e.g. food, textiles, etc) due to this infectious disease outbreak. [5,6,7]

1] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[2] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 5 October 2020.

[3] World Organisation for Animal Health (OIE). "Weekly disease information".

[https://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/WI]. Accessed 5 October 2020.

[4] World Health Organisation. "Emergencies preparedness, response - Côte d'Ivoire".

[<http://www.who.int/csr/don/archive/country/mli/en/>]. Accessed 5 October 2020.

[5] AFRICAN REGIONAL ORGANISATION OF THE INTERNATIONAL TRADE UNION CONFEDERATION. 16 May 2020. "Mali's response to the COVID-19 pandemic." [<http://www.ituc-africa.org/Mali-s-response-to-the-COVID-19-pandemic.html>]

Accessed 5 October 2020.

[6] Croner-i. 20 May 2020. "Special Notice." [<https://app.croneri.co.uk/countries/mali>] Accessed 5 October 2020.

[7] Ross, Aaron. 27 May 2020. "REFILE-West African food trade under strain as COVID-19 shuts borders." Reuters. [<https://uk.reuters.com/article/health-coronavirus-food-africa-idUKL8N2D13HK>] Accessed 5 October 2020.

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: 0

In the past year, there is evidence that Mali implemented a ban, without international/bilateral support, on travelers arriving from a specific country or countries due to an infectious disease outbreak. During the COVID-19 pandemic, Mali closed its borders to all travelers (land and air) in April 2020 to limit the spread of COVID-19 to the country [1,2]. Its borders were reopened to air travel on July 25th, 2020 and to land passengers on July 31st, 2020. [3] There is no further information from the Ministry of Health, Ministry of Agriculture, World Organisation for Animal Health, or World Health Organisation [4,5,6,7]

[1] AFRICAN REGIONAL ORGANISATION OF THE INTERNATIONAL TRADE UNION CONFEDERATION. 16 May 2020. "Mali's response to the COVID-19 pandemic." [<http://www.ituc-africa.org/Mali-s-response-to-the-COVID-19-pandemic.html>] Accessed 5 October 2020.

[2] Croner-i. 20 May 2020. "Special Notice." [<https://app.croneri.co.uk/countries/mali>] Accessed 5 October 2020.

[3] U.S. Embassy in Mali. 24 September 2020. "COVID-19 Information." [<https://ml.usembassy.gov/covid-19-information/>] Accessed 5 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[5] Ministry of Agriculture of Mali (Ministère de l'Agriculture de Mali). [<https://ma.gouv.ml/>]. Accessed 5 October 2020.

[6] World Organisation for Animal Health (OIE). "Weekly disease information".

[https://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/WI]. Accessed 5 October 2020.

[7] World Health Organisation. "Emergencies preparedness, response - Côte d'Ivoire".

[<http://www.who.int/csr/don/archive/country/mli/en/>]. Accessed 5 October 2020.

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: 12.86

2018

WHO; national sources

4.1.1b

Nurses and midwives per 100,000 people

Input number

Current Year Score: 35.85

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 no evidence that Mali has a public workforce strategy that has been updated in the past five years to identify fields where there is an insufficient workforce and strategies to address these shortcomings. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not include a public workforce strategy. [1] The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 notes the existence of a plan for the continued training of health personnel and other staff as well as the existence of a National Scholarship Commission created by the Ministry of Health and Public Hygiene. [2] There was a "Strategic Plan for the Development of Human Resources for Health, 2009-2015." [3] There is no information about a public health workforce strategy available on the websites of the Ministry of Health, Ministry of Labour, and Ministry of Education. [4, 5.6]

- [1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")
[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.
- [2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 5 October 2020.
- [3] Ministry of Health (Ministère de la Santé). January 2009. "Strategic Plan for the Development of Human Resources for Health, 2009-2015 (Plan stratégique de développement des ressources humaines pour la santé, 2009-2015)"
[http://www.who.int/workforcealliance/countries/Mali_HRHPlan_2009.pdf]. Accessed 5 October 2020.
- [4] Ministry of Health and Public Hygiene (Ministère de la Santé et de l'Hygiène Publique). [<http://www.sante.gov.ml/>]. Accessed 5 October 2020.
- [5] Ministry of Labour and Public Service (Ministère du Travail et de la Fonction Publique).
[<http://www.fonctionpublique.gouv.ml/>]. Accessed 5 October 2020.
- [6] Ministry of National Education and Literacy (Ministère de l'Education Nationale et de l'Alphabétisation).
[<http://www.education.gouv.ml/>]. Accessed 5 October 2020.

4.1.2 Facilities capacity

4.1.2a

Hospital beds per 100,000 people

Input number

Current Year Score: 10

2010

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: 0

There is insufficient evidence that the country has the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit and/or patient isolation facility located within the country. According to news reports and Doctors without Borders, a patient isolation unit with 8 beds at the University Hospital Center (CHU) of Point G in Bamako has been established in April 2020 to treat COVID-19 patients. [1,2] However, there is insufficient public evidence that this patient isolation unit isolates individual patients from each other or whether at-risk patients are placed in the same room. During the Ebola outbreak in 2014, patients infected and suspected of being infected had to be quarantined in makeshift isolation wards since there were no formal isolation facilities available within the country. [3] There is no information about biocontainment patient care unit and patient isolation facilities on the website of the Ministry of Health. [4] The two biggest hospitals in the country, Gabriel Touré CHU and CHU of Point G, do not have websites. [5]

[1] Studio Tamani. 24 March 2020. "Coronavirus: discovering the treatment and isolation units in Mali..." ("Coronavirus : à la découverte des unités de traitement et d'isolement au Mali...")

[<https://www.studiotamani.org/index.php/themes/societe/23184-coronavirus-a-la-decouverte-des-unites-de-traitement-et-d-isolement-au-mali>] Accessed 5 October 2020.

[2] Doctors Without Borders (Medecins sans frontieres). 20 April 2020. "Mali: treating Covid-19 patients in Bamako" ("Mali: soigner les malades du Covid-19 à Bamako") [<https://www.msf.ch/nos-actualites/articles/mali-soigner-malades-du-covid-19-bamako>] Accessed 5 October 2020.

[3] Wells, Crystal. 25 January 2016. "Infectious Disease in Mali". [<https://internationalmedicalcorps.org/story/infectious-disease-in-mali/>]. Accessed 5 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "Public Hospital Establishments (Etablissements Publics Hospitaliers)".

[http://mail.cnom.sante.gov.ml/index.php?option=com_content&view=article&id=1589:annuaire-chu-point-g&catid=88&Itemid=134]. Accessed 5 October 2020.

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: 1

There is some evidence that Mali has demonstrated capacity to expand isolation capacity in response to an infectious disease outbreak in the past two years but not that that Mali has developed, updated or tested a plan to expand isolation capacity in response to an infectious disease outbreak in the past two years. According to news reports and Doctors without Borders, a patient isolation unit with 8 beds at the University Hospital Center (CHU) of Point G in Bamako has been established in April 2020 to treat COVID-19 patients. [1,2] However, there is insufficient public evidence that this patient isolation unit isolates individual patients from each other or whether at-risk patients are placed in the same room. During the Ebola outbreak in 2014, patients infected and suspected of being infected had to be quarantined in makeshift isolation wards since there were no formal isolation facilities available within the country. [3] There is no information about biocontainment patient care unit and patient isolation facilities on the website of the Ministry of Health. [4] The two biggest hospitals in the country, Gabriel Touré CHU and CHU of Point G, do not have websites. [5]

[1] Studio Tamani. 24 March 2020. "Coronavirus: discovering the treatment and isolation units in Mali..." ("Coronavirus : à la découverte des unités de traitement et d'isolement au Mali...")

[<https://www.studiotamani.org/index.php/themes/societe/23184-coronavirus-a-la-decouverte-des-unites-de-traitement-et-d-isolement-au-mali>] Accessed 5 October 2020.

[2] Doctors Without Borders (Medecins sans frontieres). 20 April 2020. "Mali: treating Covid-19 patients in Bamako" ("Mali: soigner les malades du Covid-19 à Bamako") [<https://www.msf.ch/nos-actualites/articles/mali-soigner-malades-du-covid-19-bamako>] Accessed 5 October 2020.

[3] Wells, Crystal. 25 January 2016. "Infectious Disease in Mali". [<https://internationalmedicalcorps.org/story/infectious-disease-in-mali/>]. Accessed 5 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "Public Hospital

Establishments (Etablissements Publics Hospitaliers)".

[http://mail.cnom.sante.gov.ml/index.php?option=com_content&view=article&id=1589:annuaire-chu-point-g&catid=88&Itemid=134]. Accessed 5 October 2020.

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: 0

There is no evidence of a national procurement protocol in place which can be utilized by both, the Ministry of Health and the Ministry of Agriculture for the acquisition of medical (e.g. equipment, PPE) and laboratory (such as equipment, reagents and media) supplies. The Joint External Evaluation (JEE) for Mali, conducted June 2017, indicates that there is a Master Plan for the Supply and Distribution of Essential Medicines (SDAME/SDADME: Schéma Directeur d'Approvisionnement et de distribution des Médicaments Essentiels) that also covers reagents and laboratory consumables and medical equipment, especially diagnostic tests for malaria and HIV. SDADME is a national-level plan that involves several government bodies, including the Direction de la Pharmacie et du Médicament (DPM), Pharmacie Populaire du Mali (PPM), and the Centre Nationale d'Information d'Education et de Communication pour la Santé (CНИЕCS). [1, 2, 3] The PPM is in charge of medical equipment. However, the JEE indicates that laboratories have trouble with obtaining reagents and laboratory consumables and recommends that establishing a regular supply mechanism for laboratory inputs throughout the country should be a priority going forward. Mali is not party to the Government Procurement Agreement (GPA) within the framework of the World Trade Organization (WTO). [4] There is no information about a national procurement protocol that can be utilized to acquire laboratory needs on the websites of the Ministry of Health and the Ministry of Agriculture. [5,6] The National Institute for Research in Public Health does not have a website.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 5 October 2020.

[2] Directorate of Pharmacy and Medicine (Direction de la Pharmacie et du Médicament). 2008. "Mapping and in-depth evaluation of the supply and distribution system for drugs and other health products in Mali (Cartographie et évaluation approfondie du système d'approvisionnement et de distribution des médicaments et autres produits de santé au Mali)". [<http://digicollection.org/hss/en/m/abstract/Js17535fr/>]. Accessed 5 October 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "Master Plan to Combat Neglected Tropical Diseases (Plan Directeur de lutte contre les maladies tropicales négligées)". [http://espen.afro.who.int/system/files/content/resources/MALI_NTD_Master_Plan_2017_2021.pdf]. Accessed 5 October 2020.

[4] International Trade Administration, United States Department of Commerce. 10 August 2017. "Mali - 7-State Owned Enterprises". [<https://www.export.gov/article?id=Mali-State-Owned-Enterprises>]. Accessed 5 October 2020..

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[6] Ministry of Agriculture of Mali (Ministere de l'Agriculture du Mali). [<https://ma.gouv.ml/>]. Accessed 5 October 2020.

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

Mali maintains a stockpile of medical supplies (e.g. MCMs, medicines, vaccines, medical equipment, PPE) for national use during a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan mentions the need to create a stockpile of health products, medical equipment and means of protection. [1] This plan qualified the stockpile of medical supplies in 2020 as follows: masks (nose shield): 600,000 available with for a need for 5,400,000; Personal protective equipment with cap (disposable gown): 30,800 available with a 2,000,000 requirement; Hydro-alcoholic gel 600 liters available with a need for 500,000 liters; Gloves: 2,651,781 available with a requirement of 3,000,000; Wall gel device: 900 available with a need of 3000. [1] According to the Joint External Evaluation for Mali conducted in June 2017, Mali has stockpiles of vaccines and medical countermeasures for epidemics and disasters. Procurement is overseen by the Ministry of Health; maintenance of the warehouses is overseen by the Ministry of Health's Division for Disease Control and Prevention. [2,3] However, the JEE does not mention a stockpile of medical supplies. The JEE notes inadequate material resources, including personal protective equipment, for healthcare staff and at isolation centres and that the Mali Radiation Protection Agency (AMARAP) was created by Ordinance No. 02-060 / P-RM of 5 June 2002. AMARAP carries emergency response kits containing PPE, dry decontamination equipment, and basic fluids for use during emergencies. [2] The full text of Ordinance No. 02-060 / P-RM of 5 June 2002 is not available online. Mali has laboratories that can produce vaccines against epizootic diseases, but not antibiotics and vaccines for human use. The government procures the latter through agreements with manufacturers (such as Sanofi Pasteur) and distributors (such as UNICEF). [2] There is no information about the stockpile of medical countermeasure or procurement agreements in case of public health emergencies available on the websites of the Ministry of Health, Directorate General of Civil Protection (which serves as the emergency management agency), or Ministry of Defence. [4,5,6] The Directorate of Pharmacy and Medicine is part of the Ministry of Health and does not have its own website. [4,7] The National Institute for Research in Public Health does not have a website.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 5 October 2020.

[3] President of Mali. Decree No. 01-219 / P-RM of May 2001. "On the organization and operating procedures of the National Directorate of Health (Décret N. 01-219 / P-RM du 24 mai 2001 Fixant l'organisation et les modalités de fonctionnement de la Direction nationale de la santé)".

[http://mail.cnom.sante.gov.ml/index.php?option=com_content&task=view&id=282&Itemid=88]. Accessed 5 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[5] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 5 October 2020.

[6] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 5 October 2020.

[7] Directorate of Pharmacy and Medicine of Mali (Direction de la Pharmacie et du Médicament du Mali). [http://mail.cnom.sante.gov.ml/index.php?option=com_directorix&view=entrydetails&id=164&Itemid=55]. Accessed 5 October 2020.

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 to show that Mali has a stockpile of laboratory supplies for national use during a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not mention laboratory supplies (e.g. reagents, media) for national use. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention laboratory supplies (e.g. reagents, media). [2] The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 does not mention laboratory supplies. [3] The JEE indicated that there is a Master Plan for the Supply and Distribution of Essential Medicines (SDAME/SDADME: Schéma Directeur d'Approvisionnement et de distribution des Médicaments Essentiels) that also covers reagents and laboratory consumables, especially diagnostic tests for malaria and HIV. SDADME is a national-level plan that involves several government bodies, including the Direction de la Pharmacie et du Médicament (DPM), Pharmacie Populaire du Mali (PPM), and the Centre Nationale d'Information d'Education et de Communication pour la Santé (CNIECS). [3,4,5] The JEE indicated that Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publically available. The JEE also mentioned that Mali does not have a national multi-risk preparedness and action plan in the event of a public health emergency. There is no information on the websites of the Ministry of Health, the Directorate General of Civil Protection (which serves as the emergency management agency), or Ministry of Defense. [6,7,8] The Directorate of Pharmacy and Medicine is part of the Ministry of Health and does not have its own website. [6,9] The National Institute for Research in Public Health does not have a website.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 6 October 2020.

[4] Directorate of Pharmacy and Medicine (Direction de la Pharmacie et du Médicament). 2008. "Mapping and in-depth evaluation of the supply and distribution system for drugs and other health products in Mali (Cartographie et évaluation approfondie du système d'approvisionnement et de distribution des médicaments et autres produits de santé au Mali)". [<http://digicollection.org/hss/en/m/abstract/Js17535fr/>]. Accessed 5 October 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "Master Plan to Combat Neglected Tropical Diseases (Plan Directeur de lutte contre les maladies tropicales négligées)".

[http://espen.afro.who.int/system/files/content/resources/MALI_NTD_Master_Plan_2017_2021.pdf]. Accessed 5 October 2020.

[6] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

[7] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 6 October 2020.

[8] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 6 October 2020.

[9] Directorate of Pharmacy and Medicine of Mali (Direction de la Pharmacie et du Médicament du Mali).

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 evidence that Mali conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan mentions the need to create a stockpile of health products and states the quantities of the stockpile at that time, although there is insufficient evidence that this tallying was the result of an annual review of the national stockpile [1] The WHO Joint External Evaluation for the Republic of Mali conducted in June 2017 does not mention an annual review of the national stockpile, only that Mali has stockpiles of vaccines and medical countermeasures for epidemics and disasters. [2] The JEE notes inadequate material resources, including personal protective equipment, for healthcare staff and at isolation centers. There is no information of an annual stockpile review on the websites of the Ministry of Health, the Directorate General of Civil Protection (which serves as the emergency management agency), or Ministry of Defense. [3, 4, 5] The Directorate of Pharmacy and Medicine is part of the Ministry of Health and does not have its own website. [4] The National Institute for Research in Public Health does not have a website.

1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[3] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 5 October 2020.

[4] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 5 October 2020.

[5] Directorate of Pharmacy and Medicine of Mali (Direction de la Pharmacie et du Médicament du Mali).

[http://mail.cnom.sante.gov.ml/index.php?option=com_directorix&view=entrydetails&id=164&Itemid=55]. Accessed 5 October 2020.

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: 1

There is evidence Mali has a plan/agreement to procure or leverage domestic manufacturing capacity to produce medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency. According to the Joint External Evaluation for Mali conducted in June 2017, Mali has stockpiles of vaccines and medical countermeasures for epidemics and disasters and an agreement to procure MCMs when needed. [1] Procurement is overseen by the Ministry of Health; maintenance of the warehouses is overseen by the Ministry of Health's Division for Disease Control and Prevention. [1, 2] Although Mali has laboratories that can produce vaccines against epizootic diseases, it was not able to produce antibiotics and vaccines for human use at the time the JEE was conducted. [1] The government procures the latter through agreements with manufacturers (such as Sanofi Pasteur) and distributors (such as UNICEF), which is noted as a best practice for Mali in its JEE report. [1] There is no information about the stockpile of medical countermeasure or procurement agreements in case of public health emergencies available on the websites of the Ministry of Health, Directorate General of Civil Protection (which serves as the emergency management agency), or Ministry of Defence. [3,4,5] The Directorate of Pharmacy and Medicine is part of the Ministry of Health and does not have its own website. [3,6] The National Institute for Research in Public Health does not have a website.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 5 October 2020.

[2] President of Mali. Decree No. 01-219 / P-RM of May 2001. "On the organization and operating procedures of the National Directorate of Health (Décret N. 01-219 / P-RM du 24 mai 2001 Fixant l'organisation et les modalités de fonctionnement de la Direction nationale de la santé)".

[http://mail.cnom.sante.gov.ml/index.php?option=com_content&task=view&id=282&Itemid=88]. Accessed 5 October 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 5 October 2020.

[4] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 5 October 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 5 October 2020.

[6] Directorate of Pharmacy and Medicine of Mali (Direction de la Pharmacie et du Médicament du Mali).

[http://mail.cnom.sante.gov.ml/index.php?option=com_directorix&view=entrydetails&id=164&Itemid=55]. Accessed 5 October 2020.

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 evidence of a plan/agreement to leverage domestic manufacturing capacity to produce or procure laboratory supplies (e.g. reagents, media) for national use during a public health emergency. The March 2020 COVID-19 Disease (COVID-

19) Prevention and Response Action Plan does not mention the need to produce or procure laboratory supplies (e.g. reagents, media) for national use. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention the need to produce or procure laboratory supplies (e.g. reagents, media). [2] The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 does not mention a plan to produce or procure laboratory supplies, only that Mali has stockpiles of vaccines and medical countermeasures for epidemics and disasters. [3] The JEE indicated that Mali updated its National Risk and Disaster Management Plan in February 2017, although this plan is not publicly available. The JEE also mentioned that Mali does not have a national multi-risk preparedness and action plan in the event of a public health emergency. There is no information on the websites of the Ministry of Health, the Directorate General of Civil Protection (which serves as the emergency management agency), or Ministry of Defense. [3,4,5] The Directorate of Pharmacy and Medicine is part of the Ministry of Health and does not have its own website. [3,6] The National Institute for Research in Public Health does not have a website.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

[4] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 6 October 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 6 October 2020.

[6] Directorate of Pharmacy and Medicine of Mali (Direction de la Pharmacie et du Médicament du Mali).

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 publicly available evidence that Mali has a plan in place for dispensing medical countermeasures for national use during a public health emergency (i.e., antibiotics, vaccines, therapeutics and diagnostics). The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan mentions that a logistics plan for the distribution of materials and equipment needs to be created. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention or establish a plan for dispensing medical countermeasures. [2] The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 noted the lack of procedures for sending, distributing, and managing medical countermeasures during public health emergencies. [3] Mali maintains stockpiles of vaccines and medical countermeasures for epidemics and disasters, overseen by the Ministry of Health. There is no information on the Ministry of Health website on how the stockpile

is to be dispensed should the need arise. [4] Nor is there relevant information on the websites of the Directorate General of Civil Protection (which serves as the emergency management agency) or Ministry of Defence. [5,6] The Directorate of Pharmacy and Medicine is part of the Ministry of Health and does not have its own website. [5,7] The National Institute for Research in Public Health does not have a website.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 6 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

[5] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 6 October 2020.

[6] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [<https://defense.gouv.ml/>]. Accessed 6 October 2020.

[7] Directorate of Pharmacy and Medicine of Mali (Direction de la Pharmacie et du Médicament du Mali).

[http://mail.cnom.sante.gov.ml/index.php?option=com_directorix&view=entrydetails&id=164&Itemid=55]. Accessed 6 October 2020.

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 evidence of a public plan in place to receive health personnel from other countries. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not mention a public plan to receive health personnel from other countries. [1] It indicates if Mali has a severe outbreak that it would advocate to receive health personnel regionally or international but does not include information on how it would receive or manage additional health personnel from other countries. Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not include guidelines on receiving health personnel from other countries. [2] The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 does not mention any plans regarding receiving health personnel from other countries. According to the JEE, the development of staff mobilization procedures at all levels in the event of a health emergency in Mali is an ongoing challenge. [3] There is no information about work permissions for foreign health personnel during public health emergencies from the websites of the Ministry of Health, Ministry of Defense, or Directorate General of Civil Protection of Mali. [4,5,6]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la->

pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPONSE AUX CATASTROPHES")

[https://www.preventionweb.net/english/professional/policies/v.php?id=60115] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/]. Accessed 6 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[http://www.sante.gov.ml/]. Accessed 6 October 2020.

[5] Ministry of Defence and Veterans (Ministère de la Défense et des Anciens Combattants). [https://defense.gouv.ml/]. Accessed 6 October 2020.

[6] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[https://www.protectioncivile.ml/]. Accessed 6 October 2020.

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: 0

2020

World Policy Analysis Center

4.4.1b

Access to skilled birth attendants (% of population)

Input number

Current Year Score: 67.3

2018

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: 29.55

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 evidence of a policy committing to provide prioritized health care services to healthcare workers who become sick as a result of responding to a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not mention providing prioritized health care services to healthcare workers who become sick. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not include a policy committing to provide prioritized health care services to healthcare workers who become sick as a result of responding to a public health emergency. [2] The WHO Joint External Evaluation (JEE) for Mali conducted in June 2017 does not mention a policy to prioritize health care workers who become sick during a public health emergency. [3]. There were no public statements to that effect found on the Ministry of Health website, the Directorate General of Civil Protection website, or the official government website. [4,5,6]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 6 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

[5] Official Portal of the Government of Mali (Portal Officiel du Gouvernement du Mali). [<http://primature.gov.ml/>]. Accessed 6 October 2020.

[6] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 6 October 2020.

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 no publicly available evidence of a system in place for public health officials and healthcare workers in Mali to communicate during a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not mention the creation or existence of a system for public health officials and healthcare workers in Mali to communicate during a public health emergency. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention a system for public health officials and healthcare workers to communicate during a public health emergency. [2] The WHO Joint External Evaluation for Mali conducted in June 2017 does not mention a system for public health officials and healthcare workers to communicate during a public health emergency. In fact, the JEE for Mali recommends that the country develops a national risk communication plan based on communication plans already existing in the health sector and other sectors, develop and implement a capacity building plan for communication actors identified from a multisectoral and multilevel human resources map, and develop and implement a resource mobilization plan (human, material and financial) for the dissemination of messages, especially in times of health emergency. [3] There is no mention of such a system on the websites of the Ministry of Health (which houses the public health emergency operations centre), the Directorate General of Civil Protection (which functions as the emergency management agency), or the official government website. [4, 5, 6]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 6 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

[5] Official Portal of the Government of Mali (Portal Officiel du Gouvernement du Mali). [<http://primature.gov.ml/>]. Accessed 6 October 2020.

[6] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 6 October 2020.

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 no evidence of a system for public health officials and healthcare workers to communicate during an emergency that encompasses healthcare workers in both the public and private sector. In fact, there is no publicly available evidence of a system in place for public health officials and healthcare workers in Mali to communicate during a public health emergency. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan does not mention the creation or existence of a system for public health officials and healthcare workers in Mali to communicate during a public health emergency. [1] Mali's 2010 National Multi-Risk Preparation and Disaster-Response Plan does not mention a system for public health officials and healthcare workers to communicate during a public health emergency. [2] The WHO Joint External Evaluation for the Republic of Mali conducted in June 2017 does not mention a system for public health officials and healthcare workers to communicate during a public health emergency. In fact, it states that Mali should strengthen its risk communication capacity through the establishment of a multi-sectoral risk communication coordination framework, the development of a multi-risk and multi-sector communication plan taking into account the plans existing sectors, and establishment of a multisectoral collaboration framework at all levels (central and decentralized) of risk communication. [3] There is no mention of such a system on the websites of the Ministry of Health (which houses the public health emergency operations centre), the Directorate General of Civil Protection (which functions as the emergency management agency), or the official government website. [4, 5, 6]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Government of Mali. 2010. "National Multi-Risk Preparation and Disaster-Response Plan." ("PLAN NATIONAL MULTI RISQUES DE PREPARATION ET DE REPOSE AUX CATASTROPHES")

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>] Accessed 28 September 2020.

[3] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 6 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

[5] Official Portal of the Government of Mali (Portal Officiel du Gouvernement du Mali). [<http://primature.gov.ml/>]. Accessed 6 October 2020.

[6] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali).

[<https://www.protectioncivile.ml/>]. Accessed 6 October 2020.

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 evidence that the national public health system is monitoring for and tracking the number of health care associated infections (HCAI) that take place in healthcare facilities. The Joint External Evaluation for Mali conducted in June 2017 notes that in terms of preventing and fighting nosocomial infections, Mali has had a strategic plan since 2011, but judges the plan to be insufficiently implemented. [1] The text of the Strategic Plan to Prevent and Combat Nosocomial Infections (Plan stratégique de prévention et de lutte contre les infections nosocomiales) is not available online. A 2016 survey on HCAI in Mali found approximately 10.5% of patients with HCAI at the teaching hospital Gabriel Toure. [2] A World Health Organisation report from 2015 states that "few recent data exist on the burden of HCAI in Mali but what exists shows the level to be high." [3] A survey conducted in 2003 showed that only 35.7% of healthcare workers washed their hands and only 41.4% wore gloves. At one national hospital (Hôpital du Point G, Bamako), the prevalence of HCAI from surgical and intensive care services was 14% in 2001 and 9.7% in 2004. [3] There is no information on the website of the Ministry of Health of the national public health system monitoring for and tracking the number of HCAI. [4] The National Institute for Research in Public Health does not have a functioning website.

[1] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 6 October 2020.

[2] Konaté M, Traoré A, Bah A, Diop ThM, Karembé B, Amadou I, Mangané MI, Samaké M, Dembelé SB, DickoFB, Diakité I, Koné T, Maïga A, Sidibé B, Saye Z, Konaté S, DembeléBT, Traoré, Kanté L, Togo A. 2020. "Health care-associated infections in teaching hospital Gabriel TOURE." ("LES INFECTIONS ASSOCIÉES AUX SOINS DANS LE SERVICE DE CHIRURGIE GENERALE DU CHU GABRIEL TOURE.") Mali Medical. TOME XXXV N1.

[<https://web.a.ebscohost.com/abstract?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=04647874&AN=143522086&h=%2bddWsDtxm2X3yycy%2f8emE6xbg6AlodBGzgXfzdKEyGMYHcS8RzVZiM30kmbSYkjW54v0zPatJXo5kkZlIhA6OQ%3d%3d&crl=c&resultNs=AdminWebAuth&resultLocal=ErrCrlNotAuth&crlhashurl=login.aspx%3fdirect%3dtrue%26profile%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d04647874%26AN%3d143522086>] Accessed 6 October 2020.

[3] World Health Organisation (WHO). November 2015. "Situational analysis of water, sanitation and hygiene and trachoma in Mali: implications and next steps". [<http://www.washinhc.org/wp-content/uploads/2019/03/Situational-Analysis-WASH-in-HCF-Mali-Oct-2015-Eng.pdf>]. Accessed 6 October 2020.

[4] Ministry of Health and Public Hygiene (Ministère de la Santé et de l'Hygiène Publique). [www.sante.gov.ml/]. Accessed 6 October 2020.

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 a national requirement for ethical review before beginning a clinical trial. Law No. 09-059 of 28 December 2009 requires all clinical trials to obtain approval from a scientific committee and an ethics committee before commencing. The ethic committee's approval must be obtained first because it needs to be included in the application submitted to the Ministry of Health for review. The law does not state any requirements about the composition of the scientific and ethics committees, but it does state that a research committee can be any centre that is approved by the Minister of Health for one or more types of biomedical research and that there are both Institutional and National Ethics Committees. [1]

[1] President of Mali. Law No. 09-059 of 28 December 2009. "On Governing Biomedical Research on Human (Loi n°09-059 /du 28 décembre 2009 Régissant la recherche biomédicale sur l'être humain)".
[<https://clinregs.niaid.nih.gov/sites/default/files/documents/mali/LawNo09-059.pdf>]. Accessed 6 October 2020.

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: 0

There is no evidence of an expedited process for approving clinical trials for unregistered medical countermeasures to treat ongoing pandemics. Law No. 09-059 of 28 December 2009, which governs biomedical research on humans does not mention any expedited processes. [1] The website of the Ministry of Health does not have information about an expedited process for approving clinical trials for unregistered medical countermeasures to treat ongoing pandemics. [2] The Directorate of Pharmacy and Medicine is under the jurisdiction of the Ministry of Health and does not have its own website. [2]

[1] President of Mali. Law No. 09-059 of 28 December 2009. "On Governing Biomedical Research on Human (Loi n°09-059 /du 28 décembre 2009 Régissant la recherche biomédicale sur l'être humain)".
[<https://clinregs.niaid.nih.gov/sites/default/files/documents/mali/LawNo09-059.pdf>]. Accessed 6 October 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).
[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "Direction de la Pharmacie et du Médicament (DPM)".
[http://mail.cnom.sante.gov.ml/index.php?option=com_directorix&view=entrydetails&id=164&Itemid=55]. Accessed 6 October 2020.

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: 0

There is no evidence of a government body responsible for approving new medical countermeasures for humans. Decree No. 2011-753 on the Organization and Modalities of Operation of the Directorate of Pharmacy and Medicine states the Directorate of Pharmacy and Medicine within the Ministry of Health oversees pharmacovigilance, clinical trials applications, and applications for registering domestic and imported medicines. However, there is no evidence regarding approval of medicines. [1] Law No. 09-059 of 28 December 2009 governs biomedical research and requires all clinical trials to obtain approval from a scientific committee and an ethics committee before commencing. This law does not mention approval processes for new medications, drugs, or devices. [2] There is no further information on the website of the Ministry of Health. [3] Mali's National Institute for Research in Public Health, National Centre for Scientific Research and Technology and Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Council of Ministers, Republic of Mali. Decree No. 2011-753/P-RM of 17 November 2011. "Fixing the Organization and Modalities of Operation of the Directorate of Pharmacy and Medicine (Decret N. 2011-753/P-RM due 17 Novembre 2011 Fixant l'Organisation et les Modalites de Fonctionnement de la Direction de la Pharmacie et du Medicament)".

[<https://clinregs.niaid.nih.gov/sites/default/files/documents/mali/DecreeNo2011-753.pdf>]. Accessed 6 October 2020.

[2] President of Mali. Law No. 09-059 of 28 December 2009. "On Governing Biomedical Research on Human (Loi n°09-059 /du 28 décembre 2009 Régissant la recherche biomédicale sur l'être humain)".

[<https://clinregs.niaid.nih.gov/sites/default/files/documents/mali/LawNo09-059.pdf>]. Accessed 6 October 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

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: 0

There is no evidence of an expedited process for approving medical countermeasures for human use during public health emergencies. Decree No. 2011-753, which governs clinical trials and medicine registrations in Mali, does not include provisions for an expedited review process in the case of a public health emergency. [1] There is no information about an expedited process for approving medical countermeasures for human use on the websites of the Ministry of Health or National Centre for Scientific Research and Technology. [2, 3] The Directorate of Pharmacy and Medicine is housed within the Ministry of Health and does not have an independent website. [4] Mali's National Institute for Research in Public Health and Ministry of Higher Education and Scientific Research do not have functioning websites.

[1] Council of Ministers, Republic of Mali. Decree No. 2011-753/P-RM of 17 November 2011. "Fixing the Organization and Modalities of Operation of the Directorate of Pharmacy and Medicine (Decret N. 2011-753/P-RM due 17 Novembre 2011 Fixant l'Organisation et les Modalites de Fonctionnement de la Direction de la Pharmacie et du Medicament)".

[<https://clinregs.niaid.nih.gov/sites/default/files/documents/mali/DecreeNo2011-753.pdf>]. Accessed 6 October 2020.

[2] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali).

[<http://www.sante.gov.ml/>]. Accessed 6 October 2020.

[3] National Centre for Scientific Research and Technology (Centre National de la Recherche Scientifique et Technologie). [<https://cnrst.edu.ml/>]. Accessed 6 October 2020.

[4] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). "Direction de la Pharmacie et du Medicament (DPM)".

[http://mail.cnom.sante.gov.ml/index.php?option=com_directorix&view=entrydetails&id=164&Itemid=55]. Accessed 6 October 2020.

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

Pandemics are integrated into Mali's national risk reduction strategy. Mali's disaster risk reduction strategy is comprised of several different documents, including Decree No. 2015-0889/P-RM of 31 December 2015 (Plan d'Organisation des Secours, or Plan ORSEC); Presidential Decree No. 0974/PRM of 27 December 2016 (regarding a national platform for disaster risk prevention and management); and National Multi-Risk Plan for Disaster Preparedness and Response. The text of the National Multi-Risk Plan for Disaster Preparedness and Response is not available online. [1, 2, 3] The Plan ORSEC covers epidemics. [2] The National Multi-Risk Plan for Disaster Preparedness and Response identifies and lists risk reduction measures for potential emergency situations, including multiple communicable diseases with pandemic potential, specifically cholera and bird flu. It

also indicates that the plans for cholera and bird flu could be used for meningitis and yellow fever. [3] The National Platform for Disaster Risk Reduction has been launched and is administered by the Directorate General of Civil Protection, which serves as the country's emergency management agency. [4, 5]

[1] Tamboura, Djibril. 2014. "Presentation du Mali relative a la Reduction des Risques et Catastrophes". Statement made at the Preparatory Committee (PrepCom 2) of the Third UN World Conference on Disaster Risk Reduction.

[<https://www.preventionweb.net/english/professional/policies/v.php?id=40567>]. Accessed 6 October 2020.

[2] President of the Republic of Mali. Decree No. 2015-0889/P-RM of 31 December 2015. "On the Relief Organisation Plan in Mali, Plan ORSEC (Decret N. 2015-0889/P-RM du 31 Decembre 2015 determinant le Plan d'Organisation des Secours au Mali, Plan ORSEC)". [<http://extwprlegs1.fao.org/docs/pdf/mli153187.pdf>]. Accessed 6 October 2020.

[3] Government of Mali. 2010. "National Multi-Risk Plan for Disaster Preparedness and Response (Plan National Multirisques de Preparation et de Reponse aux Catastrophes)".

[<https://www.preventionweb.net/english/professional/policies/v.php?id=60115>]. Accessed 6 October 2020.

[4] Konaté, Jean Joseph. 7 August 2017. "Disaster risk reduction in Mali: National platform moves up a gear (Réduction des risques de catastrophes au Mali: La Plateforme Nationale passe à la vitesse supérieure)". Maliweb.

[<https://www.maliweb.net/societe/reduction-risques-de-catastrophes-mali-plateforme-nationale-passe-a-vitesse-superieure-2449512.html>]. Accessed 6 October 2020.

[5] Ouattara, Abdoulaye. 30 August 2018. "Reduction of Risks and Disasters in Africa: Mali Prepares for Meeting in Tunis (Réduction des risques et catastrophes en Afrique: le Mali prépare le rendez-vous de Tunis)". Info-Matin. [<http://info-matin.ml/reduction-risques-catastrophes-afrique-mali-prepare-rendez-de-tunis/>]. Accessed 6 October 2020.

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: 1

Mali does have cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to public health emergencies. Mali is a member of the West African Health Organization (WAHO), whose mission is "the harmonisation of the policies of the Member States, pooling of resources, and cooperation with one another and with others for a collective and strategic combat against the health problems of the sub-region." [1] One of WAHO programs specifically focuses on epidemics and public health emergencies. Its program objective is to "build the capacities for surveillance, disease prevention, response and resilience to epidemics and emergencies." [2] The major interventions of this program include: the "establishment of the Regional Center for Disease Prevention and Control including strengthening of the network of laboratories; strengthening cross border and inter-sectorial collaboration; establishment of a regional early warning and rapid intervention unit; and establishment of a regional fund for epidemic control." [2] Mali is also a member of the Economic Community of West African States (ECOWAS), whose Ministers of Health held an Emergency Meeting in February 2020 in Mali to harmonize and coordinate regional preparations and responses to the COVID-19 pandemic. [3] This meeting was held in coordination with WAHO. Mali is also a party to the Ouagadougou Protocol for Controlling Epidemics in West Africa, Algeria and Chad, which was signed in 1996. [4] The WHO Joint External Evaluation for Mali conducted in June 2017 points out that Mali's cross-border agreements are essentially focused on animal health and predate 2008. It considers

existing cross-border collaboration needs to be improved. [5]

[1] West African Health Organization. 2020. "Who We Are." [https://www.wahooas.org/web-ooas/en/who-we-are] Accessed 7 October 2020.

[2] WAHO. 2019. "P03 Epidemics and Other Health Emergencies." [https://www.wahooas.org/web-ooas/en/programmes/p03-epidemics-and-other-health-emergencies] Accessed 23 October 2020.

[3] Economic Community of West African States (ECOWAS). 14 February 2020. "Novel Coronavirus (COVID-19), ECOWAS Ministers of Health in Emergency Meeting In Bamako To Harmonize and Coordinate Regional Preparedness and Response." [https://www.ecowas.int/novel-coronavirus-covid-19-ecowas-ministers-of-health-in-emergency-meeting-in-bamako-to-harmonize-and-coordinate-regional-preparedness-and-response/] Accessed 7 October 2020.

[4] Ministry of Health and Public Hygiene of Mali. 25 October 1996. "Ouagadougou Protocol for epidemics control in West Africa, Algeria and Chad (Le protocole de Ouagadougou pour contrôle des épidémies en Afrique de l'Ouest, en Algérie et au Tchad)". [http://mail.cnom.sante.gov.ml/index.php?option=com_content&task=view&id=349&Itemid=87]. Accessed 7 October 2020.

[5] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/]. Accessed 7 October 2020.

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 insufficient evidence that Mali has cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to animal health emergencies.

Since 2017, the West African Health Organization (WAHO), of which Mali is a member, has operated the Regional Disease Surveillance Systems Enhancement (REDISSE) Project in West Africa. REDISSE objectives are to "Build national and regional inter-sectoral capacities for enhanced collaborative disease surveillance and epidemics preparedness in West Africa by overcoming the weaknesses of the human and animal health systems that hinder efficient surveillance of diseases and response, and in case of emergency, provide immediate and effective response to the said emergency." [1] Since 2007, the Economic Community of West African States (ECOWAS), the World Organisation for Animal Health (OIE), Food and Agricultural Organisation (FAO) and The African Union Inter-African Bureau for Animal Resources (AU-IBAR) have operated the Regional Animal Health Center (RAHC) based in Bamako, Mali. [2,3] One of the objectives of the RAHC is to assist countries with national and regional emergency plans in case of a major disease emergency. [4] The WHO Joint External Evaluation for Mali conducted in June 2017 points out that Mali's cross-border agreements are essentially focused on animal health and predate 2008. [5] It considers existing cross-border collaboration needs to be improved. There is no relevant information on the websites of the Ministry of Health and the Directorate General of Civil Protection. [6,7]

[1] WAHO. 2020. "REDISSE" [https://www.wahooas.org/web-ooas-prod/en/projets/redisse-regional-disease-surveillance-systems-enhancement-project-west-africa] Accessed 23 October 2020.

[2] FAO Regional Office for Africa. 19 September 2016. "ECOWAS and FAO discuss Animal Health and Production Networks." [http://www.fao.org/africa/news/detail-news/en/c/434386/] Accessed 7 October 2020.

[3] World Organization for Animal Health. 30 March 2007. "First Regional Animal Health Center (RAHC) established in Bamako." [https://rr-africa.oie.int/en/news/first-regional-animal-health-center-rahc-established-in-bamako/] Accessed 7 October 2020.

[4] FAO. 2016. "Regional Animal Health Centres" [First Regional Animal Health Center (RAHC) established in Bamako] Accessed 7 October 2020.

[5] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 7 October 2020.

[6] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 7 October 2020.

[7] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali). [<https://www.protectioncivile.ml/>]. Accessed 7 October 2020.

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: 1

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: 0

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: 1

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: 0

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: 1

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 insufficient evidence that Mali has allocated national funds to improve capacity to address epidemic threats within the past three years. The Citizens' Budgets, which breaks down the government's yearly budget, for the past three years

(2018, 2019, 2020) does not indicate any spending to address epidemic threats. [1,2] Mali launched its OneHealth platform, which combines human, animal, and environmental health data into a comprehensive multi-sectoral framework, in June of 2018. [3] There is no further publically available evidence to indicate whether the OneHealth platform is functional and whether it can be used to address epidemic threats as opposed to regular health surveillance. The WHO Joint External Evaluation for Mali from June 2017 notes that the country set up an Emergency Operations Center (EOC) during the Ebola outbreak in 2014. [4] Afterwards, the EOC was transferred to the Department of Public Health Emergency Operations (DOU-SP) under the Ministry of Health. The EOC and the DOU-SP are briefly mentioned in various event updates on the website of the Ministry of Health, but there is no detailed explanation of how either operates or whether either received national funds to improve capacity to address epidemic threats. There is no additional information about the EOC or the DOU-SP on the websites of the Ministry of Health or the Directorate General of Civil Protection, the latter of which serves as a disaster management agency. [5,6] Neither the EOC or the DOU-SP have an independent web presence. The National Institute for Research in Public Health does not have a website.

[1] Ministry of Economy and Finance. (Ministère de l'économie et des Finances.) 2020. "Citizen's Budget." ("Budget citoyen") [<https://www.finances.gov.ml/budget-citoyen>] Accessed 23 October 2020.

[2] Ministry of Economy and Finance. (Ministère de l'économie et des Finances.) 2020. "Citizen's Budget of Mali." ("LE BUDGET CITOYENS DU MALI") [<https://budget.gov.ml/?q=content/le-budget-citoyens-2020>]

[3] USAID. 27 June 2018. "One Health Platform Launch." [<https://www.usaid.gov/mali/press-releases/june-27-2018-one-health-platform-launch>] Accessed 30 September 2020.

[4] World Health Organisation (WHO). 27-30 June 2017. "Joint External Evaluation of IHR Core Capacities of the Republic of Mali". [<http://www.who.int/ihr/publications/WHO-WHE-CPI-REP-2017.58/fr/>]. Accessed 5 october 2020.

[5] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 5 october 2020.

[6] Directorate General of Civil Protection of Mali (Direction Générale de la Protection Civile du Mali). [<https://www.protectioncivile.ml/>]. Accessed 5 october 2020.

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 a publicly identified special emergency public financing mechanism from which Mali can borrow if facing a public health emergency. Mali is an International Development Association (IDA) eligible borrowing country, so it is eligible for the World Bank pandemic financing facility. [1, 2]

[1] International Development Association (IDA). "IDA Borrowing Countries". [<http://ida.worldbank.org/about/borrowing-countries>]. Accessed 7 October 2020.

[2] World Bank. "Pandemic Financing Facility". [<http://pubdocs.worldbank.org/en/119961516647620597/PEF-Operational-Brief-Dec-2017.pdf>]. Accessed 7 October 2020.

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 insufficient evidence that Malian senior leaders have made requests for support to improve capacity to address epidemic threats in the past three years. There is no evidence of Malian leaders expressed commitments to support other countries. In March 2020, Malian leaders created the COVID-19 Disease (COVID-19) Prevention and Response Action Plan to build its capacity to address epidemic threats and to utilize the document as a tool to request funding. [1,2] Most of Mali's other public commitments and focus for infectious disease has been on HIV/AIDS. Mali's Ministry of Health and the National High Council for the Fight against AIDS have both requested and received several grants from the Global Fund over the past decade. [3] The country has also requested support from the United States President's Emergency Plan for AIDS Relief (PEPFAR). The requested PEPFAR funding will be used to support surveys and operational research to identify additional high-risk groups for HIV/AIDS; preventive programs to address the needs of these populations; laboratory strengthening and

accreditation; scale-up of a laboratory quality control algorithm for voluntary counselling and testing; and strategic planning efforts for HIV/AIDS prevention programs. [4]

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] The World Bank. 2020. "Mali - COVID-19 Emergency Response Project."

[<https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/635471587158934802/mali-covid-19-emergency-response-project>] Accessed 7 October 2020.

[3] The Global Fund. "MLI-H-HCNLS For HIV/AIDS - National High Council for the Fight against AIDS in the Republic of Mali".

[<https://www.theglobalfund.org/en/portfolio/country/grant/?k=ea16ed74-b558-48de-b62f-f623f1224d71&grant=MLI-H-HCNLS>]. Accessed 7 October 2020.

[4] U.S. President's Emergency Plan for AIDS Relief (PEPFAR). 2016. "Congressional Budget Justification Supplement: PEPFAR".

[<https://www.pepfar.gov/documents/organization/241600.pdf>]. Accessed 7 October 2020.

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 evidence that Mali requested financing or technical support from donors to improve the country's domestic capacity to address epidemic threats in the past three years; there is no evidence that Mali provided other countries with financing or technical support to improve capacity to address epidemic threats in the past three years. In early 2020, Mali requested and later received a loan and a grant from the World Bank to support its fight against COVID-19 and to build its capacity to respond to epidemic threats. [1] Part of the objective of these funds is "improving Case Detection, Confirmation, Contact Tracing, Recording and Reporting." [2] Mali has received technical and financial support to improve its domestic capacity to address epidemic threats in each of the past three years. The country received \$169 million in 2017, \$124.97 million in 2018, \$125 million in 2019, and \$57.56 million in 2020 (as of September 30th) to improve its domestic capacity to address epidemic threats. [3] Specifically, Mali received support from USAID for the Global Health Support Initiatives III and the PREDICT II project. Mali has also received technical assistance and programming support from the United States and the Global Fund to fight the national AIDS epidemic over the past several years. [4,5] There is no record that Mali has invested finances or provided technical support to help other countries combat epidemic threats. [6]

[1] World Bank. 10 April 2020. "Mali to Receive \$25.8 Million for Covid-19 Response."

[<https://www.worldbank.org/en/news/press-release/2020/04/10/mali-to-receive-25-8-million-for-covid-19-response>] Accessed 7 October 2020.

[2] The World Bank. 2020. "Mali - COVID-19 Emergency Response Project."

[<https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/635471587158934802/mali-covid-19-emergency-response-project>] Accessed 7 October 2020.

[3] Georgetown Center for Global Health Science and Security Global Health Security Funding Tracking Dashboard. "Mali: Recipient Profile". [<https://tracking.ghscosting.org/#analysis/ML/r>]. Accessed 7 October 2020.

[4] U.S. President's Emergency Plan for AIDS Relief (PEPFAR). 2016. "Congressional Budget Justification Supplement: PEPFAR".

[https://www.pepfar.gov/documents/organization/241600.pdf]. Accessed 7 October 2020.

[5] The Global Fund. "MLI-H-HCNLS For HIV/AIDS - National High Council for the Fight against AIDS in the Republic of Mali".

[https://www.theglobalfund.org/en/portfolio/country/grant/?k=ea16ed74-b558-48de-b62f-f623f1224d71&grant=MLI-H-HCNLS]. Accessed 7 October 2020.

[6] Georgetown Center for Global Health Science and Security Global Health Security Funding Tracking Dashboard. "Mali: Funder Profile". [https://tracking.ghscosting.org/#analysis/ML/d]. Accessed 7 October 2020.

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: 1

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 insufficient evidence of a publicly available plan or policy for sharing genetic data, epidemiological data, clinical specimens, and/or isolated specimens (biological materials) with international organisations and/or other countries that goes beyond influenza. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan commits Mali to sharing information about the pandemic with the WHO country office, the West African Health Organization (WAHO), and Africa Center for Disease Control. [1] However, it does not specify what type of information it will share. Mali is a member of WAHO, which prior to the COVID-19 outbreak in the region organized a meeting with all the Ministers of Health to assess regional and national preparedness in terms of surveillance, case management, infection prevention and control, laboratory and risk communication. [2] However, there is no information available for whether a plan or policy for sharing genetic data, epidemiological data, clinical specimens, and/or isolated specimens with other members was developed. There is no evidence of a plan or policy for sharing data and specimens on the websites of the Ministry of Health, and Ministry of Agriculture. [3,4,5] The Ministry of Higher Education and Scientific Research and National Centre for Scientific Research and Technology do not have a functioning website.

[1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)")

[<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.

[2] Economic Community of West African States (ECOWAS). 14 February 2020. "Novel Coronavirus (COVID-19), ECOWAS Ministers of Health in Emergency Meeting In Bamako To Harmonize and Coordinate Regional Preparedness and Response." [<https://www.ecowas.int/novel-coronavirus-covid-19-ecowas-ministers-of-health-in-emergency-meeting-in-bamako-to-harmonize-and-coordinate-regional-preparedness-and-response/>] Accessed 7 October 2020.

[3] Ministry of Health and Public Hygiene of Mali (Ministère de la Santé et de l'Hygiène Publique du Mali). [<http://www.sante.gov.ml/>]. Accessed 7 October 2020.

[4] Ministry of Agriculture of Mali (Ministère de l'Agriculture du Mali). [<https://ma.gouv.ml/>]. Accessed 7 October 2020.

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 the country has not shared samples in accordance with the PIP framework in the past two years. Mali is part of the African Regional (AFR) influenza laboratory network and was one of 19 member states to share influenza virological data in 2016, in accordance with the PIP framework. The AFR influenza laboratory network was established in 2006 and is charged with biological monitoring of circulating viral type/subtype so that the World Health Organisation (WHO), working together with partners and the pharmaceutical industry, can better define the choice of viruses for inclusion in future influenza vaccines. [1] There is no evidence of media reports about Mali not sharing samples in accordance with the PIP framework in the past two years.

[1] World Health Organisation (WHO) Africa. 12 January 2017. "Influenza Surveillance In the WHO African Region: Epi Weeks 1 to 52, 2016". [https://afro.who.int/sites/default/files/2017-06/afr-influenza-surveillance_epi-weeks-1-to-52.pdf]. Accessed 7 October 2020.

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 public evidence that Mali has not shared pandemic pathogen samples during an outbreak in the past two years. The March 2020 COVID-19 Disease (COVID-19) Prevention and Response Action Plan commits Mali to sharing information about the pandemic with the WHO country office, the West African Health Organization (WAHO), and Africa Center for Disease Control. [1] However, it does not specify what type of information it will share. Mali is a member of WAHO, which prior to the COVID-19 outbreak in the region organized a meeting with all the Ministers of Health to assess regional and national preparedness in terms of surveillance, case management, infection prevention and control, laboratory and risk communication. [2] However, sharing pandemic samples was not specifically mentioned. There was no information on this topic on the websites of the Ministry of Health or the Ministry of Foreign Affairs. [3,4] Neither is there information from the World Health Organisation that would indicate that Mali did not share pandemic pathogen samples during a outbreak within the past two years. [5]

- [1] Mali Ministry of Health and Social Affairs. March 2020. "COVID-19 Disease (COVID-19) Prevention and Response Action Plan" ("Plan d'Actions pour la Prévention et la Réponse à la Maladie à COVID-19 (COVID-19)") [<https://www.humanitarianresponse.info/ru/operations/mali/document/mali-plan-d%E2%80%99actions-pour-la-pr%C3%A9vention-et-la-r%C3%A9ponse-%C3%A0-la-maladie-%C3%A0-covid>] Accessed 28 September 2020.
- [2] Economic Community of West African States (ECOWAS). 14 February 2020. "Novel Coronavirus (COVID-19), ECOWAS Ministers of Health in Emergency Meeting In Bamako To Harmonize and Coordinate Regional Preparedness and Response." [<https://www.ecowas.int/novel-coronavirus-covid-19-ecowas-ministers-of-health-in-emergency-meeting-in-bamako-to-harmonize-and-coordinate-regional-preparedness-and-response/>] Accessed 7 October 2020.
- [3] Ministry of Health and Public Hygiene (Ministère de la Santé et de l'Hygiène Publique). [www.sante.gov.ml/]. Accessed 7 October 2020.
- [4] Ministry of Foreign Affairs, International Cooperation, and African Integration (Ministère des Affaires Etrangères, de la Coopération Internationale et de l'Intégration Africaine). [<https://diplomatie.gouv.ml/>]. Accessed 7 October 2020.
- [5] World Health Organisation (WHO). "WHO Disease Outbreak News". [<http://www.who.int/csr/don/en/>]. Accessed 7 October 2020.

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: 2

2020

Economist Intelligence

6.1.1b

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

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.1c

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

Input number

Current Year Score: 1

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: 30

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: 2

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: 1

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: 2

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: 0

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: 1

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: 1

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: 35.47

2018

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: 0.32

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: 15.8

2009

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: 2

Mali's informal sector is over 50% of its employment sector. According to the International Labor Organization statistics (ILOSTAT), Mali's share of the informal employment was 91.1% in 2018, the latest figure available for the country. [1]

[1] International Labor Organization (ILOSTAT). 2018. "Statistics on the informal economy."

[<https://ilostat.ilo.org/topics/informality/>] Accessed 7 October 2020.

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: 0

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: 1

2021

Economist Intelligence Democracy Index

6.2.6 Inequality

6.2.6a

Gini coefficient

Scored 0-1, where 0=best

Current Year Score: 0.33

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: 0

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: 1

2021

Economist Intelligence

6.4 ENVIRONMENTAL RISKS

6.4.1 Urbanization

6.4.1a

Urban population (% of total population)

Input number

Current Year Score: 43.14

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

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: 0

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: 58.89

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: 611.4

2019

WHO

6.5.1c

Population ages 65 and above (% of total population)

Input number

Current Year Score: 2.5

2019

World Bank

6.5.1d

Prevalence of current tobacco use (% of adults)

Input number

Current Year Score: 12

2018

World Bank

6.5.1e

Prevalence of obesity among adults

Input number

Current Year Score: 8.6

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: 78.26

2017

UNICEF; Economist Impact

6.5.2b

Percentage of homes with access to at least basic sanitation facilities

Input number

Current Year Score: 39.34

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: 25.4

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: 1

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: 1

2018

Wellcome Trust Global Monitor 2018