

Bhutan

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

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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: 1

Although Bhutan has a national AMR plan, it does not adequately address surveillance, detection and reporting of priority AMR pathogens. Its "National Action Plan on Antimicrobial Resistance [2018-2022]" was released in May 2017. [1] Its third objective out of 7 main objectives reads "to institute (a) surveillance and monitoring system on AMR and antimicrobials use." [1] The document goes on to say that currently AMR testing capabilities for surveillance are "available only in the three referral Hospitals and Phuentsholing General Hospital for human health and National Center for Animal Health (NCAH) and Regional Livestock Development Center (RLDC) for animal health, respectively." [1] However, "there is (a) limited number of skilled human resource and no systematic reporting in place for antimicrobial resistance" and "although data is available, they are not analysed and used for influencing prescribing behaviour." [1] It also admits that currently "there is no system for monitoring antimicrobial utilization and sharing of information among the relevant stakeholders" and aims to change this. [1] According to the Joint External Evaluation for Bhutan, conducted in December 2017, "Bhutan has voted in favour of AMR resolutions at FAO, OIE and WHO, and in 2017 delivered a National Action Plan on AMR that follows the WHO/FAO/OIE Global Action Plan." [2] Furthermore, the JEE goes on to recognize many of Bhutan's strengths in this area such as the fact that "Molecular diagnostic capacity is in place: Bhutan has four Microbiology laboratories, The National Veterinary Laboratory has microbiology facilities, Bhutan conducts routine lab-based AMR surveillance, and that Bhutan participates in WHO's Global AMR Surveillance System." [2] However, it also notes that "no protocols and SOPs have been developed for antimicrobial resistance surveillance." [2]

[1] Royal Government of Bhutan. Ministry of Health. May 2017. "National Action Plan on Antimicrobial Resistance [2018-2022]".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=250157] Accessed 03 August 2020.

[2] World Health Organization. 2018. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. [<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>]. Accessed 03 August 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 evidence that Bhutan has a national laboratory, which tests for one but not all of the priority AMR pathogens. Bhutan's Royal Centre for Disease Control does conduct surveillance for resistant tuberculosis within its "Surveillance Protocol" as the "study is necessary to know the rate of drug resistance in the country" so that programs and strategies can be tailored for the necessary intervention. [8] The Joint External Evaluation for Bhutan, conducted in December 2017, states that "Bhutan conducts routine lab-based AMR surveillance." However, there is no information within the JEE on the pathogens for which it can test. The report also indicates that sentinel sites are not yet in place for the country, stating within its recommendations that "Bhutan needs to appoint designated national and sub-national sentinel sites in both the human and animal health sectors, and ensure that they conduct regular surveillance of infections caused by priority AMR pathogens." [1] However, there is no evidence of which AMR pathogens the country can test for in the "National Action Plan on Antimicrobial Resistance [2018-2022]" nor in their "National Health Policy." [2,3] Likewise, there is no evidence of this on their Ministry of Health, Ministry of Agriculture and Forests or Royal Centre for Disease Control websites. [4, 5, 6] Although the JEE reports that the country participates in the WHO's Global AMR Surveillance System (GLASS), there is no information available for Bhutan via the GLASS data portal. [1,7]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 03 August 2020.

[2] Royal Government of Bhutan Ministry of Health. "National Action Plan on Antimicrobial Resistance [2018-2022]". May 2017.

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=250157]. Accessed 03 August 2020.

[3] Royal Government of Bhutan.Ministry of Health. "National Health Policy". [<https://www.gnhc.gov.bt/en/wp-content/uploads/2017/05/nationalhpolicy.pdf>]. Accessed 03 August 2020.

[4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 03 August 2020.

[5] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 03 August 2020.

[6] Royal Government of Bhutan Ministry of Health. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/WEB/>]. Accessed 03 August 2020.

[7] World Health Organization. "Glass country profiles, 2017." [<http://apps.who.int/gho/tableau-public/tpc-frame.jsp?id=2004>]. Accessed 03 August 2020.

[8] Royal Government of Bhutan Royal Centre for Disease Control. "Surveillance Protocol." [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/Protocol-for-MDR-surveillance.pdf>]. Accessed 03 August 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

Although Bhutan has published standards for water quality and environment, there is no evidence that the country conducts detection or surveillance activities (e.g. in soil, waterways, etc.) for antimicrobial residues or AMR organisms. [1,2,8,9]. There is no mention of such surveillance activities in their "National Action Plan on Antimicrobial Resistance [2018-2022]." [3] Their "National Health Policy" calls upon the National Environment Commission (NEC) to guide "the government in making choice of pesticides use in public health," and no surveillance activities are described. [4] Furthermore, there is no mention of the NEC conducting any such tests either in their "National Environment Protection Act" from 2007 or in the Joint External Evaluation for Bhutan, conducted in December 2017. [5,6] No further evidence of such capabilities can be found on their National Environment Commission website. [7] Bhutan has a National Water Reference Laboratory with its goal being "to

provide complete scientific evidence on the safety of drinking water to protect consumer health;" however, the available reports such as the "Bhutan Drinking Water Quality Standard, 2016" do not mention any work on AMR. [8,9]

- [1] Royal Government of Bhutan.National Environment Commission. "Revised Water Quality Standards 2018" [http://www.nec.gov.bt/wp-content/uploads/2020/04/Revised-WQS_2018.pdf]. Accessed 03 August 2020.
- [2] Royal Government of Bhutan. National Environment Commission. "Environmental Standards, 2020".June 2020.[http://www.nec.gov.bt/wp-content/uploads/2020/07/ES-2020_Web.pdf]. Accessed 03 August 2020
- [3] Royal Government of Bhutan.Ministry of Health. "National Action Plan on Antimicrobial Resistance [2018-2022]". May 2017. [http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=250157]. Accessed 03 August 2020.
- [4] Royal Government of Bhutan.Ministry of Health. "National Health Policy". [http://www.health.gov.bt/wp-content/uploads/moh-files/2015/11/National-Health-Policy.pdf]. Accessed 03 August 2020.
- [5] Royal Government of Bhutan. National Environment Commission. "National Environment Protection Act". June 2007. [http://www.nec.gov.bt/wp-content/uploads/2019/04/NEPA_ENG.pdf] Accessed 03 August 2020.
- [6] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. [http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1]. Accessed 03 August 2020.
- [7] Royal Government of Bhutan.National Environment Commission. [http://www.nec.gov.bt/]. Accessed 03 August 2020.
- [8] Royal Government of Bhutan.Royal Centre for Disease Control. "Laboratory Service." [http://www.rcdc.gov.bt/web/laboratory-service/]. Accessed 03 August 2020.
- [9] Royal Government of Bhutan.National Environment Commission. "Bhutan Drinking Water Quality Standard, 2016." March 2016. [http://www.nec.gov.bt/nec1/wp-content/uploads/2016/04/BDWQS-final.pdf]. Accessed 03 August 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: 1

There is evidence that antibiotics for human use require prescriptions but there is evidence of gaps in enforcement of legislations on antibiotic use. Bhutan's "National Drug Policy 2007," put forth by the Department of Medical Services under their Ministry of Health, lists one of its objectives as promoting "good dispensing practices, prescribing practices and rational use of drugs." [1] To this effect, it outlines that "all drugs shall be prescribed and dispensed by their generic name or International Nonproprietary Name (INN) only." [1] In addition, Bhutan developed a National Antibiotic Guideline in 2018 which specifies that "an important strategy in combating the development and spread of antimicrobial resistance is optimisation of prescribing of antimicrobials in all clinical settings, ensuring antimicrobials are prescribed and utilised according to principles of evidence based medicine." [2] The guidelines go on to say that "when an antimicrobial is prescribed, the indication and intended duration of therapy should be documented" and divide the antibiotics into three categories, which are access, watch, and reserve groups depending on the severity of the disease, and medicine from any of the three groups require prescription to obtain. [2] Furthermore, The Joint External Evaluation on Bhutan also states that "Bhutan has banned the sale of antibiotics in private pharmacies." [3] Lastly, their "National Action Plan on Antimicrobial Resistance [2018-2022]" released in May 2017 states that "although there is no specific mention on regulation of antimicrobials in the Medicines Act of the Kingdom of Bhutan, 2003, antibiotics are classified under prescription-only medicines in the regulations and thus their sale in the private pharmacies is regulated.[4] However, a scan of available

journals and reports on the use of antibiotics in Bhutan still reveals gaps in enforcement of legislation on antibiotic use. "Enforcement of regulations on sale of antibiotics over the counter needs a revamp," according to a journal on 'Assessing the Knowledge, Attitudes, and Practices on Antibiotics Among the General Public Attending the Outpatient Pharmacy Units of Hospitals in Bhutan: A Cross-Sectional Survey' published in the Asia-Pacific Journal on Public Health.[5] Further, as stated in the article 'Bhutan observes the World Antibiotics Awareness Week' published under the Ministry of Agriculture and Forests, "Only a small fraction of antibiotics are sold from the private pharmacies which is well regulated and there is also a minimal use of antibiotics in agriculture sector. However, Bhutan needs to ensure the rational use of antibiotics and enhance public awareness".[6]

- [1] Royal Government of Bhutan.Department of Medical Services. "National Drug Policy 2007." 2007. [<http://dra.gov.bt/wp-content/uploads/2017/07/National-Drug-Policy-2007.pdf>]. Accessed 03 August 2020.
- [2] Royal Government of Bhutan.Department of Medical Services. "National Antibiotic Guideline." 2018.[<http://www.moh.gov.bt/wp-content/uploads/afd-files/2019/02/National-Antibiotic-Guideline-2018.pdf>]. Accessed 03 August 2020.
- [3] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 03 August 03 2020
- [4] Royal Government of Bhutan.Ministry of Health. "National Action Plan on Antimicrobial Resistance [2018-2022]". May 2017. [http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=250157]. Accessed 03 August 2020
- [5] Tshokey ,Teshokey. October 2017.'Assessing the Knowledge, Attitudes, and Practices on Antibiotics Among the General Public Attending the Outpatient Pharmacy Units of Hospitals in Bhutan: A Cross-Sectional Survey'.Asia-Pacific Journal of Public Health.[https://www.researchgate.net/publication/320289517_Assessing_the_Knowledge_Attitudes_and_Practices_on_Antibiotics_Among_the_General_Public_Attending_the_Outpatient_Pharmacy_Units_of_Hospitals_in_Bhutan_A_Cross-Sectional_Survey]. Accessed 07 September 2020.
- [6] Royal Government of Bhutan. Ministry of Agriculture and Forests. 17 November 2017.'Bhutan observes the World Antibiotics Awareness Week'. [<http://www.moaf.gov.bt/bhutan-observes-the-world-antibiotics-awareness-week/>] Accessed 07 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 not enough evidence to suggest that Bhutan has national legislation or regulation in place requiring prescriptions for antibiotic use for animals. Bhutan's "National Drug Policy 2007," put forth by the Department of Medical Services under their Ministry of Health, among other objectives, aims "to promote good dispensing practices, prescribing practices and rational use of drugs." [1] To this effect, they outline that "all drugs shall be prescribed and dispensed by their generic name or International Nonproprietary Name (INN) only." However, there is no mention of prescriptions for antibiotic use in animals.[1] In addition, Bhutan developed a National Antibiotic Guideline in 2018 which specifies that "an important strategy in combating the development and spread of antimicrobial resistance is optimisation of prescribing of antimicrobials in all clinical settings, ensuring antimicrobials are prescribed and utilised according to principles of evidence based medicine." [2] The guidelines go on to say that "when an antimicrobial is prescribed, the indication and intended duration of therapy should be documented" and divide the antibiotics into three categories being access, watch, and reserve groups depending

on the severity of the disease, and medicine from any of the three groups require prescriptions. The guidelines do not refer to a mandate for prescribing antibiotics for animals. [2] No evidence is also found in the Joint External Evaluation of Bhutan, which only states that "Bhutan has banned the sale of antibiotics in private pharmacies." [3] Their "National Action Plan on Antimicrobial Resistance [2018-2022]" released in May 2017 states that "although there is no specific mention on regulation of antimicrobials in the Medicines Act of the Kingdom of Bhutan, 2003, antibiotics are classified under prescription-only medicines in the regulations and thus their sale in the private pharmacies is regulated. However, there are no regulatory provisions on control of non-therapeutic use of antimicrobials use in animals and other agricultural practices. Therefore, there is a need to include such provisions under the medicines rules and regulations." [4] Lastly, their National Centre for Animal Health has "Antibiotic Guidelines for livestock in Bhutan" but the document could not be accessed. [5]

[1] Royal Government of Bhutan Department of Medical Services. "National Drug Policy 2007." 2007. [<http://dra.gov.bt/wp-content/uploads/2017/07/National-Drug-Policy-2007.pdf>]. Accessed 03 August 2020

[2] Royal Government of Bhutan Department of Medical Services. "National Antibiotic Guideline." 2018. [<http://www.moh.gov.bt/wp-content/uploads/afd-files/2019/02/National-Antibiotic-Guideline-2018.pdf>]. Accessed 03 August 2020.

[3] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 03 August 2020.

[4] Royal Government of Bhutan Ministry of Health. "National Action Plan on Antimicrobial Resistance [2018-2022]". May 2017.

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=250157]. Accessed 03 August 2020

[5] Royal Government of Bhutan. National Centre for Animal Health. [http://www.ncah.gov.bt/download_documents.php]. Accessed 03 August 2020.

1.2 ZOO NOTIC DISEASE

1.2.1 National planning for zoonotic diseases/pathogens

1.2.1a

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

Yes = 1 , No = 0

Current Year Score: 1

Although there is no evidence of comprehensive legislation on zoonotic disease, there is public evidence focused on the control of rabies in dogs, cats and in the wild as part of zoonotic disease management. According to the Joint External Evaluation of the IHR Core Capacities of Bhutan, conducted in December 2017, "there is a lack of legislation governing human disease surveillance (in the animal health sector, however, the Livestock Act and Livestock Rules and Regulations make all necessary provisions to cover disease surveillance)." [1] Bhutan's "The Livestock Act of Bhutan 2001" guides the country on livestock and animal health in the country and its "Livestock Rules and Regulation of Bhutan, 2008" is a direct result of it. [2,3] Chapter 9 of the "Livestock Rules and Regulation of Bhutan, 2008" put forth by their Ministry of Agriculture & Forests, is dedicated to "Zoonoses Management." [3] This chapter, addresses the control of zoonotic diseases through means such as "registration and vaccination of pet animals, registration of dog shelters, rabies vaccination, destruction of animals with proven threat to human health, dog and cat population management" and the control of rabies in the wild. [3] Furthermore, Bhutan also has legislation for individual diseases such as its latest "National Rabies Prevention and Control Plan" from 2017, put forth by their National Centre for Animal Health under their Department of Livestock in the Ministry of Agriculture &

Forests. [4] This document comprehensively covers the necessary aspects of both the disease itself and aspects such as "prevention and control strategies" and "surveillance system" for their aim of "elimination of rabies in Bhutan." [4] The document acknowledges that "Rabies is a zoonotic disease and it requires a close collaboration with Department of Public Health in terms of disease reporting and support for the prevention and control of the disease." [4] Bhutan Agriculture and Food Regulatory Authority (BAFRA) officials have expressed the fact that "Livestock rules and regulations of 2008 are out dated and need urgent revision." [5] To this effect, Bhutan has implemented "Bhutan One Health Strategic Plan 2017-2021" which may include updates on older legislation in a more comprehensive manner; however, this legislation is unavailable online. [6] [7]

[1] World Health Organization. 2018. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. [<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>]. Accessed 03 August 2020

[2] Bhutan Ministry of Agriculture. "The Livestock Act of Bhutan 2001." July 2001. [<https://www.wipo.int/edocs/lexdocs/laws/en/bt/bt017en.pdf>]. Accessed 03 August 2020

[3] Royal Government of Bhutan Ministry of Agriculture & Forests. "Livestock Rules and Regulation of Bhutan, 2008". 2008. [<http://www.moaf.gov.bt/download/Legislations/Livestock-Rules-and-Regulations-of-Bhutan-2008.pdf>]. Accessed 03 August 2020

[4] Royal Government of Bhutan National Centre for Animal Health. "National Rabies Prevention and Control Plan". January 2017. [http://www.ncah.gov.bt/Downloads/File_198.pdf]. Accessed 03 August 2020.

[5] Kuensel. "BAFRA proposes revision of livestock regulations." April 2016. [<http://www.kuenselonline.com/bafra-proposes-revision-of-livestock-regulations/>]. Accessed 03 August 2020.

[6] Kuensel. "Agencies come together to implement Bhutan One Health Strategy Plan." November 2017. [<http://www.kuenselonline.com/agencies-come-together-to-implement-bhutan-one-health-strategy-plan/>]. Accessed 03 August 2020

[7] National Bridging Workshop on the International Health Regulations(IHR) and the OIE Performance of the Veterinary Services (PVS) Pathway. March 2018 [<https://extranet.who.int/sph/sites/default/files/NBW%20Bhutan%20-%20Final%20Report.pdf>] Accessed 03 August 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: 1

There is evidence that Bhutan has national legislation which includes measures for risk identification and reduction for zoonotic disease spillover events from animals to humans. These regulations are explained in the 'Livestock Rules and Regulations of Bhutan, 2008. These regulations have defined registration and vaccinations for all pet animals, destruction of animals with proven threat to humans, regulations for slaughter houses wherein 'all retail meat sold in the country shall be inspected by the Regulatory Authority Inspector to determine whether or not it is fit for human consumption. Only meat found fit for human consumption shall be certified for sale'. Accordingly, 'slaughter for commercial purposes in the country shall be done only in the licensed and approved abattoir and shall undergo ante-mortem and post-mortem inspection'. 'Animals showing any signs of disease and where its place of origin could not be ascertained shall be kept outside the slaughterhouse with no contact with other stock. The Inspector shall be informed as soon as possible so that action shall be taken as per the recommended guidelines. Condemned carcass, meat and/or inedible other parts of slaughtered animal shall be disposed off safely in an especially constructed biological pit, incinerated or buried appropriately. No person shall be allowed to sell meat in an open street or market area, at open places including national highways or any other unhygienic

places'. The document also states that 'All employees who handle meat in the abattoir and retail meat shops in the course of their work shall undergo a medical examination in accordance with the requirement prescribed in this rules prior to their employment and thereafter every 6 months during the course of their employment to ensure that he/she is not suffering from, or is not a carrier of any contagious disease or condition which may contaminate or cross contaminate meat. The medical certificate stating the fitness of the individual to work in abattoirs and retail outlets issued by the government medical doctor shall then be submitted to the Regulatory Authority office concerned'. Further, there are regulations on control of zoonotic infections which states that 'The Livestock Office concerned shall ensure that all owners of livestock including farm managers and those have the custody of livestock to carry out regular vaccination of livestock against zoonotic diseases that are endemic in the area, while in low risk areas vaccination may be done as and when deemed necessary only. Active or passive surveillance using appropriate screening tests shall be carried for brucellosis, tuberculosis, salmonellosis, hydatidosis, cysticercosis and any other significant zoonotic diseases in the government, private commercial farms, and also in selected areas where the disease prevalence is high'. [1]

[1] Royal Government of Bhutan Ministry of Agriculture & Forests. "Livestock Rules and Regulation of Bhutan, 2008". 2008. [<http://www.moaf.gov.bt/download/Legislations/Livestock-Rules-and-Regulations-of-Bhutan-2008.pdf>]. Accessed 03 August,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: 1

There is evidence that Bhutan has plans that account for the surveillance and control of multiple zoonotic pathogens of public health concern. There are specific plans for 3 zoonotic diseases, namely Anthrax, Rabies and Foot and Mouth Disease. Both their "Guidelines for Preparedness, Surveillance and Control of Anthrax in Human and Animals in Bhutan" and "National Rabies Prevention and Control Plan" outline surveillance systems for their respective diseases. [1,2] The "Guidelines for Preparedness, Surveillance and Control of Anthrax in Human and Animals in Bhutan" put forth by the Department of Public Health under Bhutan's Ministry of Health in 2013 specifies a very detailed surveillance system for anthrax within the country. [1] It splits the surveillance into two main divisions, "surveillance during the preventive phase" and "surveillance during the outbreak and post-outbreak phase." [1] It also surveys both animals and humans for anthrax. [1] It advocates "quarantine and movement control on animal and animal products, farm workers; vehicles" and spreading awareness about the disease to farmers as means of controlling anthrax. Further, the "National Rabies Prevention and Control Plan" too dedicates a section to surveillance system for rabies in which it divides the surveillance into three main categories, these being "clinical surveillance," "laboratory surveillance," and "wildlife surveillance." [2] The document acknowledges that "Rabies is a zoonotic disease and it requires a close collaboration with Department of Public Health in terms of disease reporting and support for the prevention and control of the disease." [2] The plan also dedicates a chapter to "Prevention and Control Strategies" which aims to control rabies through measures such as "ban on the movement of livestock and livestock products" and identifying high risk zones and administering vaccinations.[2] The National Foot and Mouth Disease Prevention and Control Plan published under the Department of Livestock, Ministry of Agriculture and Forests is a document that focuses on the prevention and control of foot and mouth disease along with surveillance systems for the said disease. It discusses prevention strategies like vaccination programs for animals, regulation of import of livestock and livestock products, surveillance, outbreak investigation, reporting and control measures.[3] Their "Livestock Rules and Regulation of Bhutan, 2008" put forth by their Ministry of Agriculture & Forests, also discusses ways to control zoonotic diseases in a general sense such as establishing "appropriate quarantine facilities for different species of animals at official entry points and at any other locations deemed necessary for animal disease control within the country" as well as possible bans on "import of particular

animals, animal products and/or risk goods, and specifying the need to control the spread of disease within the country." Also, the manual dictates that "vaccination or treatment of notifiable zoonotic diseases shall be done" to further control zoonotic diseases.[4]

[1] Royal Government of Bhutan Department of Public Health. "Guidelines for Preparedness, Surveillance and Control of Anthrax in Human and Animals in Bhutan". 2013. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2015/07/Anthrax-Guideline-2013.pdf>]. Accessed 03 August, 2020.

[2] Royal Government of Bhutan National Centre for Animal Health. "National Rabies Prevention and Control Plan". January 2017. [http://www.ncah.gov.bt/Downloads/File_198.pdf]. Accessed 03, August 2020.

[3] Royal Government of Bhutan.Ministry of Agriculture & Forests.'National Foot and Mouth Disease Prevention and Control Plan'. [https://www.ncah.gov.bt/up_Files/pic_299.pdf] Accessed 24 February 2021

[4] Royal Government of Bhutan.Ministry of Agriculture & Forests. "Livestock Rules and Regulation of Bhutan, 2008". 2008. [<http://www.moaf.gov.bt/download/Legislations/Livestock-Rules-and-Regulations-of-Bhutan-2008.pdf>]. Accessed 03 August,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 insufficient evidence of a unit dedicated to zoonotic disease that functions across ministries in Bhutan.

The National Influenza Preparedness Plan (NIPP) published by the Government of Bhutan elaborates on an inter-ministerial committee, the National Steering Committee for an intersectoral response as a part of Bhutan's influenza pandemic preparedness . The National Steering Committee shall be chaired by the Prime Minister and shall include high-level decision makers from various Ministries including the Ministry of Health, Ministry of Agriculture, Ministry of Finance, Ministry of Foreign Affairs, Ministry of Home and Cultural Affairs among others and entities to make critical contributions to political decision making during the three main WHO pandemic Phases. In addition, a National Executive Committee (NEC) comprising of directors of relevant stakeholder agencies is essential to initiate contingency measures for prevention and response for Highly Pathogenic Avian Influenza(HPAI) and pandemic outbreaks. The Executive Committee will also oversee implementation of the NIPPP and projects supporting implementation of the NIPPP.[1] However, there is no evidence of a department, agency or similar unit dedicated to zoonotic disease that functions across ministries.

[1] Royal Government of Bhutan. National Influenza Preparedness Plan. 2011. [https://info.undp.org/docs/pdc/Documents/BTN/00060314_FINAL%20NIPPP.pdf] Accessed 24 February 2021

1.2.2 Surveillance systems for zoonotic diseases/pathogens

1.2.2a

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that Bhutan has a national mechanism for owners of livestock to conduct and report on disease surveillance to a central government agency. Their latest "Status of Notifiable Animal Diseases in Bhutan for 2017" report defines that a "notifiable disease means a disease listed by the Veterinary Administration in the country, and that, as soon as detected or suspected, must be reported to any of the animal health service Centres by the fastest means of communication to contain the disease." [1] Furthermore, "outbreaks of notifiable diseases have been reported every year from different parts of the country" according to the same report. [1] The wide application of the reporting system is evident as the report mentions that "for the first time, rabies cases in a dog and bull was also reported at Samrang village in Samdrup Jongkhar and Tendu village in Samtse." [1] A form exists for reporting general health related events on their Royal Centre for Disease Control website which may be used for reporting zoonotic instances. [2] No other recent evidence for any other mechanism to conduct and report on disease surveillance to a central government agency or updates on the mechanism mentioned above is found under the Ministry of Agriculture or the Ministry fo Health.[3,4]

[1] Royal Government of Bhutan.National Centre for Animal Health. "Status of Notifiable Animal Diseases in Bhutan for 2017". February 2018. [http://www.ncah.gov.bt/Downloads/File_218.pdf]. Accessed 03 August ,2020.

[2] Royal Government of Bhutan.Royal Centre for Disease Control. "Form Reporting Event." [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/Event-Reporting-Form-2.pdf>]. Accessed 03 August,2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 07 September, 2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 07 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 not enough evidence that Bhutan has laws or guidelines that safeguard the confidentiality of information generated through surveillance activities for animals (for owners). Chapter 21 of "Bhutan Information Communications and Media Bill, 2016" put forth by Bhutan's Ministry of Information and Communications, is dedicated to data protection. [1] However, it does not specifically address animal surveillance or even surveillance. [1] It generalizes the "principles governing collection of data electronically and its disclosure" to personal information and data and nothing more specific. [1] Furthermore, there is no evidence of such laws or guidelines in the Joint External Evaluation of IHR Core Capacities, conducted in December 2017. No evidence is also found on the Ministry of Health and Ministry of Agriculture and Forests websites. [2, 3, 4] A form on Bhutan's Royal Centre for Disease control website does ask for the name and mobile number of the reporting person. [5] However, in their reports, the Centre does not mention names, it rather just mentions where the report originates from. For example, "on 18 October 2016, the RRT [Rapid Response Team] got a call from Sakteng (remote yak grazing herd area) that a stray dog had bitten his yak sometime one month back. [6]

[1] Royal Government of Bhutan Ministry of Information and Communications. "Bhutan Information Communications and Media Bill, 2016". September 2016. [<http://www.nab.gov.bt/assets/uploads/docs/bills/2016/FinalBICMAbill2016Eng.pdf>]. Accessed 03 August ,2020

[2] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 03 August ,2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 03 August, 2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 03 August,2020.

- [5] Royal Government of Bhutan Royal Centre for Disease Control. "Form Reporting Event." [http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/Event-Reporting-Form-2.pdf]. Accessed 03 August,2020.
- [6] Royal Government of Bhutan National Centre for Animal Health. "Investigation and Control of Rabies Outbreak in Rangjung town, Trashigang". [http://www.ncah.gov.bt/Downloads/File_187.pdf]. Accessed 03 August,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: 1

Bhutan does conduct surveillance of zoonotic disease in wildlife. For example, their "National Rabies Prevention and Control Plan" from 2017 addresses wildlife surveillance under section 4.3. [1]. It states that "surveillance shall be conducted in collaboration with Wildlife Conservation Division under Department of Forests and Park Services." [1] Furthermore, "carcasses of wild animals not limiting to canid and felid species shall be collected to obtain brain tissue sample that will be tested for the presence of rabies virus using antigen detection tests." [1] There is evidence of rabies and other zoonotic diseases such as swine flu, anthrax, Avian Leucosis Complex, foot and mouth disease being surveyed throughout the country in their "Status of Notifiable Animal Diseases in Bhutan for 2017" report put forth by Bhutan's National Centre for Animal Health. [2] Canine, swine, bovine, and poultry birds are all among the animals surveyed and tabulated within the report. [2]

[1] Royal Government of Bhutan National Centre for Animal Health. "National Rabies Prevention and Control Plan". January 2017. [http://www.ncah.gov.bt/Downloads/File_198.pdf]. Accessed 03 August,2020.

[2] Royal Government of Bhutan National Centre for Animal Health. "Status of Notifiable Animal Diseases in Bhutan for 2017". February 2018. [http://www.ncah.gov.bt/Downloads/File_218.pdf]. Accessed 03 August,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: 11.4

2018

OIE WAHIS database

1.2.4b

Number of veterinary para-professionals per 100,000 people

Input number

Current Year Score: 96.97

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 evidence that Bhutan's national plan on zoonotic disease or other legislation, regulation or plan include mechanisms for working with the private sector in controlling or responding to zoonoses. There is no mention of any private-public partnerships in any of the following documents: "Livestock Rules and Regulation of Bhutan, 2008," "National Rabies Prevention and Control Plan," "Guidelines for Preparedness, Surveillance and Control of Anthrax in Human and Animals in Bhutan." [1,2,3] In addition, there is no evidence of any such partnerships for controlling or responding to zoonotic diseases on their Ministry of Health or Ministry of Agriculture and Forests. [4,5]

[1] Royal Government of Bhutan Ministry of Agriculture & Forests. "Livestock Rules and Regulation of Bhutan, 2008". 2008. [<http://www.moaf.gov.bt/download/Legislations/Livestock-Rules-and-Regulations-of-Bhutan-2008.pdf>]. Accessed 03 August ,2020.

[2] Royal Government of Bhutan National Centre for Animal Health. "National Rabies Prevention and Control Plan". January 2017. [http://www.ncah.gov.bt/Downloads/File_198.pdf]. Accessed 03 August ,2020.

[3] Royal Government of Bhutan Department of Public Health. "Guidelines for Preparedness, Surveillance and Control of Anthrax in Human and Animals in Bhutan". 2013. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2015/07/Anthrax-Guideline-2013.pdf>]. Accessed 03 August,2020

[4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 03 August, 2020

[5] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 03 August, 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 evidence that Bhutan has in place a record, updated within the past 5 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. According to the Joint External Evaluation for Bhutan, conducted in December 2017, Bhutan's "demonstrated capacity also includes maintaining inventories of all pathogens within facilities storing and processing dangerous pathogens" and that their "central laboratory of the Jigme Dorji Wangchuck National Referral Hospital and the national technical centres (RCDC [Royal Centre for Disease Control] & NCAH [National Centre for Animal Health]) maintain inventories of the pathogens they are storing and processing." [1] However, there is no evidence of Bhutan having a record at the national level, versus the facility level. There is no further information on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [2,3,4] Lastly, Bhutan does not have a ministry of defence or its equivalent in their government. [5] There is no evidence via studies or articles either. Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [6] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database.[7]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 03 August, 2020

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 03 August, 2020

[3] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 03 August ,2020.

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 03 August ,2020.

[5] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 03 August ,2020.

[6] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 03 August ,2020.

[7] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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

There is no evidence that Bhutan has in place legislation or regulations related to biosecurity which address requirements such as physical containment, operation practices, failure reporting systems or cybersecurity of facilities in which especially dangerous pathogens and toxins are stored or processed. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "a comprehensive national biosafety and biosecurity system is not in place in Bhutan" and "The Bhutan Biosecurity Act came into effect in 2015, but this only focuses on control of genetically modified organisms, and does not cover aspects of biosafety and biosecurity practices in laboratories." [1] Furthermore, they go on to say that "the RCDC [Royal Centre for Disease Control] is in the process of preparing national biosecurity guidelines. At the time of writing in December 2017, these are at final draft stage, but not yet in place." [1] No evidence of the guidelines can be found on their website as of yet. [2] Furthermore, no relevant documents can be found on their Ministry of Health, Ministry of Agriculture and Forests,

Jigme Dorji Wangchuck National Referral Hospital or Bhutan Agriculture and Food Regulatory Authority websites. [3, 4, 5, 6] Lastly, Bhutan does not have a ministry of defence or its equivalent in their government. [7] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [8] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database. [9]

- [1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>) Accessed 03 August, 2020.
- [2] Royal Government of Bhutan Royal Centre for Disease Control. "Guidelines/Manuals". [<http://www.rcdc.gov.bt/web/guidelines-manuals/>]. Accessed 03 August, 2020.
- [3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 03 August, 2020.
- [4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 03 August, 2020.
- [5] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 03 August, 2020.
- [6] Bhutan Agriculture and Food Regulatory Authority (BAFRA). "Guidelines and Standards". [<http://www.bafra.gov.bt/guideliense-standards/>]. Accessed 03 August, 2020.
- [7] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 03 August, 2020.
- [8] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 03 August, 2020
- [9] VERTIC. 'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 no evidence of an established agency responsible for the enforcement of biosecurity legislation and regulations. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "a comprehensive national biosafety and biosecurity system is not in place in Bhutan" and "The Bhutan Biosecurity Act came into effect in 2015, but this only focuses on control of genetically modified organisms (GMOs), and does not cover aspects of biosafety and biosecurity practices in laboratories." [1] Furthermore, the JEE mentions that "the RCDC [Royal Centre for Disease Control] is in the process of preparing national biosecurity guidelines. At the time of writing in December 2017, these are at final draft stage, but not yet in place." [1] No evidence of the guidelines can be found on the website of RCDC. [2] Furthermore, no relevant documents can be found on their Ministry of Health, Ministry of Agriculture and Forests, Jigme Dorji Wangchuck National Referral Hospital or Bhutan Agriculture and Food Regulatory Authority websites. The only guidelines on the Bhutan Agriculture and Food Regulatory Authority website pertaining to biosecurity focuses on In-Country Livestock Biosecurity [3, 4, 5, 6] Lastly, Bhutan does not have a ministry of defence or its equivalent in their government. [7] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [8] The only relevant legislations in Bhutan are pertinent to GMO and these are overseen by the Bhutan Agriculture and Food Regulatory Authority (BAFRA) under the Ministry of Agriculture and Forests. [6] Other than that, no agency exists to oversee biosecurity in Bhutan. No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database. [9]

- [1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. ([http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-](http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1)

2018.7-eng.pdf?sequence=1). Accessed 05 August ,2020

[2] Royal Government of Bhutan Royal Centre for Disease Control. "Guidelines/Manuals".

[<http://www.rcdc.gov.bt/web/guidelines-manuals/>]. Accessed 05 August,2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August ,2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August ,2020.

[5] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August ,2020.

[6] Bhutan Agriculture and Food Regulatory Authority (BAFRA). "Guidelines and Standards".

[<http://www.bafra.gov.bt/guideliense-standards/>]. Accessed 05 August,2020.

[7] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 05 August,2020

[8] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August ,2020

[9] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 no public evidence that shows that Bhutan has taken action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities. According to the Joint External Evaluation for Bhutan, conducted in December 2017, Bhutan's "demonstrated capacity also includes maintaining inventories of all pathogens within facilities storing and processing dangerous pathogens" and that their "central laboratory of the Jigme Dorji Wangchuck National Referral Hospital and the national technical centres (RCDC & NCAH) maintain inventories of the pathogens they are storing and processing." [1] However, there is no evidence of Bhutan having taken action to consolidate its inventories into a minimum number of facilities on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [2,3,4] Lastly, Bhutan does not have a ministry of defence or its equivalent in their government. [5] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [6] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database.[7]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 05 August,2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August ,2020.

[3] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August,2020.

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August ,2020.

[5] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 05 August,2020.

[6] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August,2020.

[7] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 Bhutan having in-country capacity to conduct Polymerase Chain Reaction (PCR)-based diagnostic testing for anthrax, which would preclude culturing a live pathogen. According to the "Guidelines for Preparedness, Surveillance and Control of Anthrax in Human and Animals in Bhutan" from 2013, one way to confirm the diagnosis of anthrax is to conduct PCR as a molecular diagnosis method. [1] Furthermore, cases of suspected anthrax can also be confirmed via "the detection of *Bacillus anthracis* in smears, culture, detection of four fold rise in antibodies titer by serology and PCR." [1] Further, the Joint External Evaluation of IHR Core Capacities of Bhutan, conducted in December 2017, states that "national laboratories have access to modern technology such as real-time/multiplex PCR and equipment to test for MDR-TB." [2] However, no evidence of Bhutan having in-country testing capabilities for Ebola can be found on their Ministry of Health, Ministry of Agriculture and Forests, Jigme Dorji Wangchuck National Referral Hospital or Royal Centre for Disease Control websites and Bhutan does not have a Ministry of Defense. [3,4,5,6,7]

[1] Royal Government of Bhutan. Department of Public Health. "Guidelines for Preparedness, Surveillance and Control of Anthrax in Human and Animals in Bhutan". 2013. [<http://www.health.gov.bt/wp-content/uploads/moh-files/2015/07/Anthrax-Guideline-2013.pdf>]. Accessed 05 August, 2020

[2] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 05 August, 2020

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August, 2020

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August, 2020.

[5] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital.

[<https://www.jdwnrh.gov.bt/departments/diagnostics/pathology/microbiology-section/>] Accessed 05 August, 2020.

[6] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/WEB/>]. Accessed 05 August, 2020.

[7] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 05 August, 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 of Bhutan requiring biosecurity training, using a standardised, 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. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "Bhutan has no biological biosafety and biosecurity training programme." [1] The report recommends that "a regular training programme is urgently needed for all facilities housing or working with dangerous pathogens and toxins, Biosafety and biosecurity stewardships are required, and a train-the-trainers programme

for biosafety and biosecurity should be implemented" among other things such as developing of national policies and guidelines on the matter. [1] Furthermore, there is no evidence of Bhutan having or requiring any such training on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [2,3,4] Lastly, Bhutan does not have a ministry of defence or its equivalent in its government. [5] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [6] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database. [7]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 05 August, 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August, 2020.

[3] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August, 2020.

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August, 2020.

[5] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 05 August, 2020.

[6] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August, 2020.

[7] VERTIC. 'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 Bhutan has regulations or licensing conditions which 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. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "there is a lack of awareness of the need for biosecurity assessment at health laboratories, both within the MOH and among laboratory personnel." [1] It is outlined in the report that "neither animal nor public health government laboratories are required to obtain licenses; nor are they subjected to any biosafety/biosecurity monitoring." [1] So much so that "some laboratory personnel are vaccinated on their own initiative, but there is no policy in place to protect them." [1] Furthermore, there is no evidence of Bhutan having or requiring any such checks on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [2,3,4] Lastly, Bhutan does not have a ministry of defence or its equivalent in its government. [5] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2016 and 2020, the submission records are locked and cannot be accessed. [6] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database. [7]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>)

2018.7-eng.pdf?sequence=1). Accessed 05 August ,2020

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August ,2020.

[3] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August, 2020

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August ,2020

[5] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 05 August,2020.

[6] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August,2020.

[7] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 evidence that Bhutan has publicly available information on national regulations on the safe and secure transport of infectious substances (Categories A and B). According to the Joint External Evaluation for Bhutan, conducted in December 2017, national laboratories in Bhutan "generally demonstrate good practice for processing, storage and transport of dangerous pathogens within the country, using the standard triple packaging method." [1] Furthermore, the report goes on to mention that "pathogen control measures are in place, including physical, transportation and personnel security" as well as "standard operating procedures are in place for transporting pathogenic organisms, specimens, and other biologically contaminated items." [1] However, it is not clear whether Bhutan has publicly available legislation on such practices and if they categorize the infectious substances while transporting them according to categories A and B as defined by the International Air Transport Association (IATA). Bhutan's "National Guideline on Infection Control and Medical Waste Management" put forth by their Ministry of Health in 2014 only has guidelines for the "transportation of Infectious/hazardous medical waste" and not for pathogens and other infectious substances. [2] Similarly, their "Draft National Biosafety Framework of the Kingdom of Bhutan" put forth by their National Environment Commission in August of 2006 only covers GMOs and their transportation. [3] Furthermore, there is no other evidence of Bhutan's specimen transport specifics on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [4,5,6] Lastly, Bhutan does not have a ministry of defence and ministry of transportation or their equivalent in their government. [7] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2016 to 2020, the submission records are locked and cannot be accessed.[8]No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database.[9]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 05 August ,2020.

[2] Royal Government of Bhutan Ministry of Health. "National Guideline on Infection Control and Medical Waste Management". 2014. [<http://www.moh.gov.bt/wp-content/uploads/afd-files/2014/11/ICMWM-guideline.pdf>]. Accessed 05 August ,2020.

[3] Royal Government of Bhutan National Environment Commission. "Draft National Biosafety Framework of the Kingdom of Bhutan". August 2006. [<http://www.biodiv.be/bhutan/legal-instruments/rules-regulations-and-guidelines/national-biosafety->

framework-for-bhutan.pdf/download/en/1/National%20Biosafety%20Framework%20for%20Bhutan.pdf]. Accessed 05 August ,2020.

[4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August,2020.

[5] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August,2020.

[6] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August ,2020.

[7] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 05 August ,2020.

[8] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August,2020

[9] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 evidence that Bhutan has a national legislation, regulation, or other guidance in place to oversee the cross-border transfer and end-user screening of especially dangerous pathogens, toxins and pathogens with pandemic potential. The Joint External Evaluation for Bhutan, conducted in December 2017, recommends that Bhutan "set up mechanisms to strengthen cross-border collaboration with neighbouring countries regarding public health hazards; for example, through memoranda of understanding (MOUs) on information sharing, and through developing official linkages such as formal intercountry policies."

[1] No evidence of any such legislation or guidance can be found on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [2,3,4] Bhutan does not have a ministry of defence or its equivalent in its government. [5] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [6] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database. [7]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 05 August, 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August, 2020.

[3] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August ,2020

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August, 2020.

[5] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 05 August, 2020

[6] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August, 2020

[7] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 no evidence that Bhutan has in place national biosafety legislation and/or regulations. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "a comprehensive national biosafety and biosecurity system is not in place in Bhutan" and "The Bhutan Biosecurity Act came into effect in 2015, but this only focuses on control of genetically modified organisms, and does not cover aspects of biosafety and biosecurity practices in laboratories." [1] Furthermore, it mentions that "the RCDC [Royal Centre for Disease Control] is in the process of preparing national biosecurity guidelines. At time of writing in December 2017 these are at final draft stage, but not yet in place." [1] Bhutan has a biosafety act called the "Biosafety Act of Bhutan 2015", but this act applies to "all genetically modified organisms; products derived from genetically modified organisms; and all stages of import, export, and direct use of products that have genetically modified content within the Kingdom." [2, 7] It does not address laboratory safety for workers handling dangerous pathogens or accidents of that nature. Furthermore, no relevant documents can be found on their Ministry of Health, Ministry of Agriculture and Forests, Jigme Dorji Wangchuck National Referral Hospital or Bhutan Agriculture and Food Regulatory Authority websites. [3,4,5,6] Lastly, although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [8] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database.[9]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 05 August,2020.

[2] Royal Government of Bhutan Royal Centre for Disease Control. "Guidelines/Manuals". [<http://www.rcdc.gov.bt/web/guidelines-manuals/>]. Accessed 05 August,2020

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August, 2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August,2020.

[5] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August,2020.

[6] Bhutan Agriculture and Food Regulatory Authority (BAFRA). "Guidelines and Standards". [<http://www.bafra.gov.bt/guideliense-standards/>]. Accessed 05 August,2020.

[7] Parliament of Bhutan. "Biosafety Act of Bhutan 2015." May 2015. [<http://extwprlegs1.fao.org/docs/pdf/bhu155081.pdf>]. Accessed 05 August ,2020.

[8] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August,2020

[9] VERTIC. 'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 no evidence of an established agency responsible for the enforcement of biosafety legislation and regulations in Bhutan. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "a comprehensive national biosafety and biosecurity system is not in place in Bhutan" and "The Bhutan Biosecurity Act came into effect in 2015, but this only focuses on control of genetically modified organisms, and does not cover aspects of biosafety and biosecurity practices in laboratories." [1] The only relevant legislations are pertinent to genetically modified organisms (GMOs), which are overseen by the Bhutan Agriculture and Food Regulatory Authority (BAFRA) under the Ministry of Agriculture and Forests. [2] Bhutan also has a biosafety act called the "Biosafety Act of Bhutan 2015", but this act applies to "all genetically modified organisms; products derived from genetically modified organisms; and all stages of import, export, and direct use of products that have genetically modified content within the Kingdom. It does not address laboratory safety for workers handling dangerous pathogens or accidents of that nature.[3] Furthermore, no relevant agencies can be found on their Ministry of Health, Ministry of Agriculture and Forests, Jigme Dorji Wangchuck National Referral Hospital or Bhutan Agriculture and Food Regulatory Authority websites. [4,5,6,7] Other than that, no agency exists to oversee biosafety in Bhutan. Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [8]No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database.[9]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 05 August,2020

[2] Bhutan Agriculture and Food Regulatory Authority (BAFRA). "Guidelines and Standards". [<http://www.bafra.gov.bt/guideliense-standards/>]. Accessed 05 August ,2020.

[3] Parliament of Bhutan. "Biosafety Act of Bhutan 2015." May 2015. [<http://extwprlegs1.fao.org/docs/pdf/bhu155081.pdf>]. Accessed 05 August,2020.

[4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August ,2020.

[5] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August ,2020.

[6] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August ,2020.

[7] Bhutan Agriculture and Food Regulatory Authority (BAFRA). "Guidelines and Standards". [<http://www.bafra.gov.bt/guideliense-standards/>]. Accessed 05 August,2020

[8] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August ,2020

[9] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 of Bhutan requiring 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. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "Bhutan has no biological biosafety and biosecurity training programme." [1] The report recommends that "a regular training programme is urgently needed for all facilities housing or working with dangerous pathogens and toxins, Biosafety and biosecurity stewardships are required, and a train-the-trainers programme for biosafety and biosecurity should be implemented" among other things such as developing of national policies and guidelines on the matter. [1] Bhutan also has a biosafety act called the "Biosafety Act of Bhutan 2015", but this act applies to "all genetically modified organisms; products derived from genetically modified organisms; and all stages of import, export, and direct use of products that have genetically modified content within the Kingdom. It does not address laboratory safety for workers handling dangerous pathogens or accidents of that nature.[2] Furthermore, there is no evidence of Bhutan having or requiring any such training on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [3,4,5] Bhutan does not have a ministry of defence or its equivalent in their government. [6] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [7] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database. [8]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 05 August ,2020.

[2] Parliament of Bhutan. "Biosafety Act of Bhutan 2015." May 2015. [<http://extwprlegs1.fao.org/docs/pdf/bhu155081.pdf>]. Accessed 05 August, 2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 05 August, 2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 05 August,2020.

[5] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 05 August ,2020

[6] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 05 August ,2020.

[7] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 05 August,2020.

[8] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 Bhutan 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. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "guidelines and a responsible code of

conduct are required for biosecurity oversight of dual use research of concern" in Bhutan. [1] There is no other evidence of any such assessments conducted by Bhutan on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [2,3,4] Lastly, Bhutan does not have a ministry of defence or its equivalent in their government and although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [5,6] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database.[7]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 06 August,2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 06 August,2020.

[3] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 06 August ,2020.

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 06 August,2020.

[5] Royal Government of Bhutan. Ministries. [<https://www.gov.bt/ministry-directory/>]. Accessed 06 August ,2020.

[6] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 06 August,2020.

[7] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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 that Bhutan has a national policy requiring oversight of dual use research, such as research with especially dangerous pathogens, toxins, and/or pathogens with pandemic potential. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "guidelines and a responsible code of conduct are required for biosecurity oversight of dual use research of concern" in Bhutan. [1] There is no other evidence of any such policies on their Royal Centre for Disease Control, Ministry of Health, Ministry of Agriculture and Forests, Jigme Dorji Wangchuck National Referral Hospital or Bhutan Agriculture and Food Regulatory Authority website. [2,3,4,5,6] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [7] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database.[8]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 06 August ,2020.

[2] Royal Government of Bhutan Royal Centre for Disease Control. "Guidelines/Manuals". [<http://www.rcdc.gov.bt/web/guidelines-manuals/>]. Accessed 06 August ,2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 06 August ,2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 06 August,2020.

[5] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 06 August ,2020.

[6] Bhutan Agriculture and Food Regulatory Authority (BAFRA). "Guidelines and Standards".

[<http://www.bafra.gov.bt/guideliense-standards/>]. Accessed 06 August,2020.

[7] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [https://bwc-ecbm.unog.ch/state/Bhutan]. Accessed 06 August ,2020

[8] VERTIC.'Bhutan'. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/] Accessed 07 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 that Bhutan has an agency responsible for oversight of research with especially dangerous pathogens, pathogens with pandemic potential, and/or other dual use research. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "guidelines and a responsible code of conduct are required for biosecurity oversight of dual use research of concern" in Bhutan. [1] There is no further evidence of any such agency in Bhutan on their Ministry of Health, Ministry of Agriculture and Forests or Jigme Dorji Wangchuck National Referral Hospital website. [2,3,4] Lastly, Bhutan does not have a ministry of defence or its equivalent in their government and although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [5,6] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database. [7]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1). Accessed 06 August ,2020.

[2] Royal Government of Bhutan. Ministry of Health. [http://www.moh.gov.bt/]. Accessed 06 August ,2020.

[3] Royal Government of Bhutan. Ministry of Agriculture and Forests. [http://www.moaf.gov.bt/]. Accessed 06 August ,2020.

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [https://www.jdwnrh.gov.bt/]. Accessed 06 August ,2020.

[5] Royal Government of Bhutan. Ministries. [https://www.gov.bt/ministry-directory/]. Accessed 06 August,2020.

[6] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [https://bwc-ecbm.unog.ch/state/Bhutan]. Accessed 06 August,2020

[7] VERTIC.'Bhutan'. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/] Accessed 07 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

There is no evidence of Bhutan having a national legislation, regulation, policy, or other guidance, requiring the screening of synthesized DNA before it is sold. Bhutan has a biosafety act called the "Biosafety Act of Bhutan 2015", but this act applies to "all genetically modified organisms; products derived from genetically modified organisms; and all stages of import, export, and direct use of products that have genetically modified content within the Kingdom." [1] However, it does not address the

specific screening of the codes of synthetic DNA through a screener or code reader. There is no evidence of any such policies on the websites of the Royal Centre for Disease Control, Ministry of Health, Ministry of Agriculture and Forests, Jigme Dorji Wangchuck National Referral Hospital or the Bhutan Agriculture and Food Regulatory Authority. [2,3,4,5,6] Although Bhutan has submitted Confidence Building Measure (CBM) reports for 2019 and 2020, the submission records are locked and cannot be accessed. [7] No evidence of a record was found on the Verification Research, Training and Information Centre (VERTIC) database. [8]

[1] Parliament of Bhutan. "Biosafety Act of Bhutan 2015." May 2015. [<http://extwprlegs1.fao.org/docs/pdf/bhu155081.pdf>]. Accessed 06 August ,2020

[2] Royal Government of Bhutan Royal Centre for Disease Control. "Guidelines/Manuals". [<http://www.rcdc.gov.bt/web/guidelines-manuals/>]. Accessed 06 August, 2020

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 06 August,2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 06 August ,2020.

[5] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 06 August,2020.

[6] Bhutan Agriculture and Food Regulatory Authority (BAFRA). "Guidelines and Standards". [<http://www.bafra.gov.bt/guideliense-standards/>]. Accessed 06 August,2020.

[7] United Nations Office in Geneva (UNOG) Electronic Confidence Building Measures Portal. "Bhutan." [<https://bwc-ecbm.unog.ch/state/Bhutan>]. Accessed 07 September 2020

[8] VERTIC.'Bhutan'. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/b/>] Accessed 07 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: 1

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: 2

There is evidence that Bhutan's national laboratory system has the capacity to conduct diagnostic tests for at least 5 of the 10 WHO-defined core tests. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "Bhutan has three national laboratories: the Royal Centre for Disease Control (RCDC), the National Centre for Animal Health (NCAH), and the National Food Testing Lab (NFTL)." [1] Only the RCDC deals with the human health and diseases on a national level. To this effect, "the human sector national laboratories are capable of performing five of the six obligatory core tests, namely, polymerase chain reaction (PCR) testing for Influenza virus (flu); serology for HIV; microscopy for mycobacterium tuberculosis (tuberculosis/TB); rapid diagnostic testing for plasmodium spp. (malaria); and bacterial culture for Salmonella enteritidis serotype Typhi (typhoid). Notably, the ability for polio culture, and therefore polio surveillance, is lacking." [1] Microscopy for TB, serology for HIV and Rapid tests for Scrub typhus are listed on the Jigme Dorji Wangchuck National Referral Hospital website [2] There is evidence on the RCDC website that Bhutan conducts PCR for influenza, microscopy for TB, bacterial culture for Salmonella and Rapid Diagnostic tests for Plasmodium spp [3,4,5,6] In addition, The South Asian Association for Regional Cooperation (SAARC) has a regional reference laboratory for HIV/AIDS of which Bhutan is a part. [7] The Public Health Laboratory at the Department of Health is the national reference lab for TB in Bhutan. [8] There is no evidence of the 4 country-specific tests via the websites of their Ministry of Health or Ministry of Agriculture and Forests [8,9]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 06 August, 2020.

[2] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. "Microbiology Section". [<https://www.jdwnrh.gov.bt/departments/diagnostics/pathology/microbiology-section/>]. Accessed 06 August, 2020.

[3] Royal Government of Bhutan Royal Centre for Disease Control. "Laboratory Service". [<http://www.rcdc.gov.bt/web/laboratory-service/>]. Accessed 06 August, 2020.

[4] Royal Government of Bhutan Royal Centre for Disease Control. 'Guidelines and Manuals'. [<http://www.rcdc.gov.bt/web/guidelines-manuals/>] Accessed 24 February 2021

[5] Royal Government of Bhutan Royal Centre for Disease Control. 'Relying on Widal test alone could lead to over diagnosis of typhoid fever: Findings from a records review of febrile patients at Damphu Hospital, Bhutan, 2011-2012'. [<http://www.rcdc.gov.bt/web/relying-on-widal-test-alone-could-lead-to-over-diagnosis-of-typhoid-fever-findings-from-a-records-review-of-febrile-patients-at-damphu-hospital-bhutan-2011-2012/>] Accessed 24 February 2021

[6] Royal Government of Bhutan Royal Centre for Disease Control. 'Malaria elimination in Bhutan: asymptomatic malaria cases in the Bhutanese population living in malaria-risk areas and in migrant workers from India'. [<http://www.rcdc.gov.bt/web/malaria-elimination-in-bhutan-asymptomatic-malaria-cases-in-the-bhutanese-population-living->

in-malaria-risk-areas-and-in-migrant-workers-from-india/] Accessed 24 February 2021

[7] SAARC Tuberculosis and HIV/AIDS Centre (STAC). "SAARC Ref. Lab". 2016. (<https://www.saarctb.org/new/saarc-ref-lab/>). Accessed 06 August, 2020.

[8] Royal Government of Bhutan. Ministry of Health. "Department of Public Health."

[<http://www.moh.gov.bt/departments/dept-of-public-health/>]. Accessed 06 August, 2020

[9] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 06 August, 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: 1

There is a national plan, strategy or similar document for conducting testing during a public health emergency, but the plan is specific to COVID-19 and there is insufficient evidence that it includes considerations for testing for novel pathogens or scaling capacity. In light of the current Covid-19 pandemic, Bhutan has a national plan for testing and defining goals for testing in place where-in the roles and responsibilities of the agencies responsible for investigating, screening and confirmation of suspected cases for COVID-19 are clearly defined. COVID-19 infection is confirmed by laboratory testing by the Royal Center for Disease Control. This plan is explained in the "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" March 2020 under the Ministry of Health. However, there is no consideration for scaling testing capacity in the above mentioned plan for COVID-19. [1] Also, prior to Covid-19 there is no 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 under the Ministry of Health, Royal Center for Disease Control, Ministry of Agriculture or the Jigme Dorji Wangchuck National Referral Hospital websites.[2,3,4,5]. Further, no evidence is found under the Health Emergency and Contingency plan, 2016 under the Ministry of Health.[6]

[1] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 07 September, 2020

[2] Royal Government of Bhutan. Ministry of Health. "Department of Public Health."

[<http://www.moh.gov.bt/departments/dept-of-public-health/>]. Accessed 06 August, 2020

[3] Royal Government of Bhutan Royal Centre for Disease Control. "Laboratory Service".

[<http://www.rcdc.gov.bt/web/laboratory-service/>]. Accessed 06 August, 2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 06 August, 2020.

[5] Royal Government of Bhutan Jigme Dorji Wangchuck National Referral Hospital. "Microbiology Section".

[<https://www.jdwnrh.gov.bt/departments/diagnostics/pathology/microbiology-section/>]. Accessed 06 August, 2020.

[6] Royal Government of Bhutan. Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 06 August, 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 no evidence that Bhutan's Jigme Dorji Wangchuck National Referral Hospital is accredited. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "Bhutan's National Referral Hospital is identified as a national reference laboratory, and three major hospitals are designated surveillance sites." The JEE also notes that "Bhutan does not yet have any independent accrediting body to expedite accreditation of national and peripheral laboratories." [1] Hence, the designation of "a national/international accrediting body for laboratories in Bhutan, and [implementing] a systematic, time-bound accreditation process starting with central national facilities and spreading out to the peripheral human and animal laboratories" is recommendation for priority action. [1] Lastly, there is no evidence of an accreditation on the Jigme Dorji Wangchuck National Referral Hospital, Ministry of Health or Ministry of Agriculture and Forests website. [2,3,4]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 06 August, 2020.

[2] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 06 August, 2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 06 August, 2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 06 August, 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 laboratory that serves as a reference facility in Bhutan is subject to external quality assurance review. According to the Joint External Evaluation for Bhutan, conducted in December 2017, Bhutan's Jigme Dorji Wangchuck National Referral Hospital is identified as a national reference laboratory and that "all national reference labs participate in external quality assessment through collaboration with several external laboratories. This is not, however, mandatory or enforced." [1] Furthermore, "most laboratories participate in disease specific external quality assurance programmes" and these quality assessments are undertaken by the Quality Assurance and Standardization Division (QASD) under their Ministry of Health. [1] The QASD has its own mandate such as vision, mission, objectives, and guiding principles under their "Quality Assurance and Standardization Program." [2] However, Jigme Dorji Wangchuck National Referral Hospital's website does not indicate it has been part of any EQA activities. [3] 'Jigme Dorji Wangchuck National Referral Hospital (JDWNRH) is working towards earning an accreditation from the National Accreditation Board for Hospitals & Healthcare Providers (NABH), based in India, to ensure quality care. JDWNRH will apply for NABH by the end of 2020. Once the hospital is accredited with NABH, it will ensure good quality and efficient services. Public recognition by the accreditation body can be seen as an achievement of standards'.[4]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP->

2018.7-eng.pdf?sequence=1). Accessed 06 August, 2020.

[2] Royal Government of Bhutan Quality Assurance and Standardization Division. "Quality Assurance and Standardization Program". [<http://www.moh.gov.bt/wp-content/uploads/ftps/program-profiles/QASD%20%20Program%20Profile.pdf>]. Accessed 06 August ,2020.

[3] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 06 August ,2020.

[4] The Bhutanese. 11 January 2020. 'JDWNRH working towards foreign accreditation for quality care'. [<https://thebhutanese.bt/jdwnrh-working-towards-foreign-accreditation-for-quality-care/>] Accessed 08 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 not enough evidence that Bhutan has a specimen transport system which reaches nationwide. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "transportation of category B/BSL [Biosafety Level] 1-3 samples is partly undertaken through a contract with the Bhutan postal service." Bhutan also scores a 3 on the JEE metric evaluating the country's specimen referral and transport system, implying that coverage is less than 80%. [1] Furthermore, their "Operational guideline for ARI [Acute Respiratory Illness], ILI [Influenza Like Illness] & SARI [Severe Acute Respiratory Illness] surveillance" put forth by their Ministry of Health in 2012, gives a detailed procedure of how to transport specimens in their annexure 8. [2] These steps are divided into two sub sections, "domestic transport (district labs to Referral labs/PHL [Public Health Laboratory])" and "transportation from PHL to Reference lab." [2] However, "WHO guidelines require a designated road courier and, in case of air transport, airport-stationed safety-trained human resources for the transportation of category A/BSL4 suspected pathogens. These are not in place, and referral of such samples is therefore not currently possible in Bhutan." [1] Lastly, there is no evidence of such a transport system on their Ministry of Agriculture and Forests either. [3]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 06 August ,2020.

[2] Royal Government of Bhutan Ministry of Health. "Operational guideline for ARI, ILI & SARI surveillance". 2012. [http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/Operational_guideline-for-ARI_ILI_SARI.pdf]. Accessed 06 August,2020

[3] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 06 August,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 to rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak in Bhutan. No evidence of such a plan, either specific to COVID-19 or applicable to other contagious disease outbreaks, is found in the "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" (March 2020) under the Ministry of Health, released in light of the present Covid-19 pandemic.[1] No evidence is found under the Ministry of Health, Royal Center for Disease Control, Ministry of Agriculture or the Jigme Dorji Wangchuck National Referral Hospital websites.[2,3,4,5]. Further, no evidence is found under the Health Emergency and Contingency plan, 2016 under the Ministry of Health.[6]

[1] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 06 August 2020

[2] Royal Government of Bhutan.Ministry of Health. "Department of Public Health." [<http://www.moh.gov.bt/departments/dept-of-public-health/>]. Accessed 06 August 2020

[3] Royal Government of Bhutan Royal Centre for Disease Control. "Laboratory Service". [<http://www.rcdc.gov.bt/web/laboratory-service/>]. Accessed 06 August 2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 06 August 2020.

[5] Royal Government of Bhutan Jigme Dorji Wangchuck National Referral Hospital. "Microbiology Section". [<https://www.jdwnrh.gov.bt/departments/diagnostics/pathology/microbiology-section/>]. Accessed 06 August 2020.

[6] Royal Government of Bhutan.Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 06 August 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: 1

There is evidence of ongoing event-based surveillance, but there is no evidence that it is being analyzed on a daily basis - the data is being analysed on a monthly, weekly or immediate basis--and at present in during the Covid-19 pandemic, on a daily basis. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "EOC-related functions of routine event-based surveillance and reporting are already carried out by the Royal Centre for Disease Control (RCDC)." [1] This system is called the "National Early Warning, Alert and Response Surveillance system (NEWARS), a nationwide system that includes both indicator and event-based surveillance." [1] The goals of the NEWARS guideline are clearly identified and state that "this guide is intended to provide reference and practical assistance to conduct notifiable disease and event based surveillance for all levels of health centers including Surveillance Focal Points (SFP) and Rapid Response Teams (RRTs). The target audiences include clinicians, district health officers, laboratory personnel and other health workers." [2] Furthermore, "the goal of the guideline is to explain the structure and procedures of the national notifiable disease surveillance system (NDS) and Event Based Surveillance (EBS) for diseases which have potential to cause outbreaks or events of public health

concern." [2] This defines Event Based Surveillance as ad-hoc and that it "involves reporting of any ‘unusual' event, unusual cluster of cases or suspected outbreak. It is reported immediately by anyone i.e. health care workers, general public, media, civil organizations, NGOs, etc to National Disease Surveillance and Epidemiology (NADSAE) Unit at PHL or health centers who in turn report to NADSAE." [2] To this effect, "all clinicians including specialists and health workers in every hospital and BHU should: identify and collect information on notifiable diseases on daily basis according to the case definitions in the daily case reporting form (Annex 2) and hand over the duly filled forms (daily case reporting forms) to the Surveillance focal points of BHU's and hospital on daily basis." [2] The guideline states that "to understand specific patterns of notifiable diseases occurrence and take necessary public health action at respective BHU's, and hospitals, SFPs at DHO national, BHUs, and hospitals should analyse and interpret the compiled data in their respective health facility regularly". [3] NEWARS allows weekly and immediate data to be notified which is then analysed. [4] With regards to the present Covid-19 pandemic, the Royal Centre for Disease Control (RCDC) provides "Weekly COVID-19 Integrated Fluvview" which provides ongoing event based surveillance and analysis on a weekly or monthly basis. [5] Further, the Department of Disaster Management provides a "National Situational Update" which includes a surveillance and analysis of the infectious disease spread in the country on a 24 hour basis. Hence, it is noteworthy that on the RCDC and Department of Disaster Management Websites monthly epidemiological report, weekly integrated fluvview and daily updates are made available during the present pandemic.[4,5]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 12 August 2020.

[2] Royal Government of Bhutan.Public Health Laboratory. "National Notifiable Disease Surveillance System and Epidemiology Unit". 2014. [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/NEWARS-Guideline.pdf>]. Accessed 12 August 2020.

[3] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/nndss-Manual.pdf>].Accessed 12 August 2020

[4] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/web/weekly-covid-19-integrated-fluvview-week-30-2020/>]. Accessed 12 August 2020

[5] Royal Government of Bhutan. Ministry of Home and Cultural Affairs. Department of Disaster Management. "National Situational Updates on Covid-19".[<https://www.ddm.gov.bt/>] Accessed 12 August 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: 0

There is no publicly available evidence that the Bhutan reported a potential public health emergency of international concern (PHEIC) to the World Health Organization (WHO) within the last two years. According to the WHO's "Emergencies preparedness, response" page for Bhutan, its last outbreak was of Cholera in 1998. [1] The country is battling the Covid-19 pandemic, first case of the disease was confirmed in the country on March 5, 2020 and at present and public alerts, and updates on the outbreak in the country are provided on the websites of Ministry of Health, Royal Centre for Disease Control, Department of Disaster Management and the WHO websites. [1, 2,3,4,5]

[1] World Health Organization. "Emergencies preparedness, response Bhutan".

[<https://www.who.int/csr/don/archive/country/btn/en/>]. Accessed 12 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 12 August 2020.

[3] Royal Government of Bhutan.Ministry of Health. Royal Centre For Disease Control.[<http://www.rcdc.gov.bt/web/news->

events/] Accessed 12 August 2020

[4] Royal Government of Bhutan. Ministry of Home and Cultural Affairs. Department of Disaster Management. "National Situational Updates on Covid-19" [<https://www.ddm.gov.bt/>] Accessed 12 August 2020

[5] World Health Organization. WHO Coronavirus Disease (COVID-19) Dashboard. Bhutan. [<https://covid19.who.int/table>] Accessed 24 February 2021

2.3.2 Interoperable, interconnected, electronic real-time reporting systems

2.3.2a

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that Bhutan operates an electronic reporting surveillance system at both the national and sub-national level. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "an electronic reporting system is in place (Both SMS and web-based), with reports produced weekly, quarterly and yearly in addition to real time feedback. Disease alerts are auto-generated." [1] For example, the Royal Centre for Disease Control in Bhutan very recently conducted a "training of Health Professionals on NEWARS [National Notifiable Disease Surveillance System and Epidemiology Unit] Guideline and Web-SMS Integrated Reporting System at Gelephu." [2] The "National Notifiable Disease Surveillance System and Epidemiology Unit" guideline states that "all health professionals and health workers working in different health centers are responsible for implementing NEWARS including village health workers because they act as link between health centers and communities." [3] The NEWARS guideline states that village health workers are responsible for "reporting public health events to the health center" but how they do the reporting is not defined. [3] The National Notifiable Disease Surveillance System and Event Reporting Information System User Manual provides information on how the electronic reporting is done at the Basic Health Unit (BHU) level. [4] There is no additional evidence of the NEWARS system's operations on their Ministry of Health website. [5]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 12 August 2020.

[2] Royal Government of Bhutan Royal Centre for Disease Control. "Training of Health Professionals on NEWARS Guideline and Web-SMS Integrated Reporting System at Gelephu". December 2018. [<http://www.rcdc.gov.bt/web/training-of-health-professionals-on-newars-guideline-and-web-sms-integrated-reporting-system-at-gelephu-2/>]. Accessed 12 August 2020.

[3] Royal Government of Bhutan Public Health Laboratory. "NEWARS National Notifiable Disease Surveillance System and Epidemiology Unit". 2014. [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/NEWARS-Guideline.pdf>]. Accessed 12 August 2020.

[4] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/nndss-Manual.pdf>]. Accessed 12 August 2020

[5] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 12 August 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 not enough evidence that Bhutan has a system to collect ongoing or real-time laboratory data. According to the Joint External Evaluation for Bhutan, conducted in December 2017, their "National Early Warning, Alert and Response Surveillance system (NEWARS), [is] a nationwide system that includes both indicator and event-based surveillance." [1] As per the NEWARS guideline, the National Early Warning Alert and Response Surveillance (NEWARS) involves "ongoing systematic and ad-hoc collection of health related data on selected diseases of public health importance and their associated syndromes which is then collated, analysed, interpreted and the relevant information are disseminated for action." [2] However, no evidence of NEWARS collecting ongoing or real-time laboratory data is available in the NEWARS guideline, NEWARS User Manual, Ministry of Health or Royal Centre for Disease Control website. [2,3,4,5]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 12 August 2020.

[2] Royal Government of Bhutan Public Health Laboratory. "NEWARS National Notifiable Disease Surveillance System and Epidemiology Unit". 2014. [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/NEWARS-Guideline.pdf>]. Accessed 12 August 2020.

[3] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/nndss-Manual.pdf>]. Accessed 12 August 2020

[4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 12 August 2020.

[5] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/WEB/>]. Accessed 12 August 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: 0

There is no evidence that electronic health records are commonly in use in Bhutan. A 2019 study suggests that work is in progress for creating the infrastructure for electronic health records. It notes, "The eHealth enterprise architecture - the blueprint for the HIS - is currently in development and will encompass IT infrastructure development, data integration and technical standards for health data exchange. Both the National health policy and the Healthcare ICT master plan advocate an electronic medical records system in every health facility. The first iteration of this information system, along with an electronic patient information system, has been completed by Bhutanese experts. It is envisaged that the electronic health records will retrieve data prospectively, ensuring patient monitoring across several providers from different information systems integrated with the District Health Information Software 2 (DHIS2). The core platform, a centralized national health data warehouse, will link data from multiple sources and present it in a standard format via the electronic portal, thereby ensuring that all aspects of health data are interoperable." [1] According to a World Health Organization e-health profile of Bhutan from 2015, there is no "National EHR system" nor "legislation governing the use of the national EHR system." [2] The WHO e-health profile also shows 0% EHR coverage in primary, secondary and tertiary medical facilities. [2] According to the website of Bhutan's Jigme Dorji Wangchuck National Referral Hospital, "there is a vision of fully computerizing the medical record keeping system through local area network (LAN)." [3] However, there is no evidence of this having being implemented yet on their website nor on their Ministry of Health or Royal Centre for Disease Control website. [4,5]

[1] Gurung,Dorji,Khetrapal,Ra,Babu,Krishnamurthy. 2019. "Transforming health care through Bhutan's digital health strategy: progress to date".WHO.South East Asia Journal of Public Health 2:77-82.[<http://www.who-seajph.org/article.asp?issn=2224-3151;year=2019;volume=8;issue=2;spage=77;epage=82;aulast=Gurung#:~:text=The%20digital%20health%20strategy%20ref%20orms,the%20%E2%80%9COne%20Health%E2%80%9D%20approach.>] Accessed 08 September 2020

[2] World Health Organization. "Atlas of eHealth country profiles The use of eHealth in support of universal health coverage." August 2015. [https://apps.who.int/iris/bitstream/handle/10665/204523/9789241565219_eng.pdf?sequence=1]. Accessed 12 August 2020.

[3] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. "Medical Record". [<https://www.jdwnrh.gov.bt/departments/other-units/medical-record/>]. Accessed 12 August 2020.

[4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 12 August 2020.

[5] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/WEB/>]. Accessed 12 August 2020.

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 not enough evidence that Bhutan's national public health system has access to electronic health records of individuals in their country. A 2019 study suggests that work is in progress for creating the infrastructure for electronic health records. It notes, "The eHealth enterprise architecture - the blueprint for the HIS - is currently in development and will encompass IT infrastructure development, data integration and technical standards for health data exchange.Both the National health policy and the Healthcare ICT master plan advocate an electronic medical records system in every health facility. The first iteration of this information system, along with an electronic patient information system, has been completed by Bhutanese experts. It is envisaged that the electronic health records will retrieve data prospectively, ensuring patient monitoring across several providers from different information systems integrated with the District Health Information Software 2 (DHIS2). The core platform, a centralized national health data warehouse, will link data from multiple sources and present it in a standard format via the electronic portal, thereby ensuring that all aspects of health data are interoperable." [1] According to Jigme Dorji Wangchuck National Referral Hospital's (JDWNRH) website, "there is a vision of fully computerizing the medical record keeping system through local area network (LAN). All patients attending JDWNRH will be registered using computerized system in the Registration counter and disease & treatment recorded in the Pharmacy unit. This type of computerized Individualized Patient Record (IPR) system will show a lifetime record of hospital visit with all the information of illness that one has visited for. Gradually all the wards, Doctor's chambers, OPD chambers will be fully connected by LAN and all sorts of information can be accessed from the authorized computers." [2] However, there is no evidence that this has been completed as of yet on their JDWNRH, Ministry of Health or Royal Centre for Disease Control website. [3,4,5] Lastly, the JDWNRH website states that it is "in the process of upgrading the software to accommodate new changes. But this requires logistic as well as Technical support, which PPD, in the Ministry of Health is extending all possible help." [2] Also, according to a World Health Organization e-health profile of Bhutan from 2015, there is no "National EHR system" nor "legislation governing the use of the national EHR system."The WHO e-health profile also shows 0% EHR coverage in primary, secondary and tertiary medical facilities.[6]

[1] Gurung,Dorji,Khetrapal,Ra,Babu,Krishnamurthy. 2019. "Transforming health care through Bhutan's digital health strategy: progress to date".WHO.South East Asia Journal of Public Health 2:77-82.[<http://www.who-seajph.org/article.asp?issn=2224-3151;year=2019;volume=8;issue=2;spage=77;epage=82;aulast=Gurung#:~:text=The%20digital%20health%20strategy%20ref%20orms,the%20%E2%80%9COne%20Health%E2%80%9D%20approach.>] Accessed 08 September 2020

[2] Royal Government of Bhutan Jigme Dorji Wangchuck National Referral Hospital. "Medical Record".

[https://www.jdwnrh.gov.bt/departments/other-units/medical-record/]. Accessed 12 August 2020.

[3] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [https://www.jdwnrh.gov.bt/]. Accessed 12 August 2020.

[4] Royal Government of Bhutan. Ministry of Health. [http://www.moh.gov.bt/]. Accessed 12 August 2020.

[5] Royal Government of Bhutan. Royal Centre for Disease Control. [http://www.rcdc.gov.bt/WEB/]. Accessed 12 August 2020.

[6] World Health Organization. "Atlas of eHealth country profiles The use of eHealth in support of universal health coverage." August 2015. [https://apps.who.int/iris/bitstream/handle/10665/204523/9789241565219_eng.pdf?sequence=1]. Accessed 12 August 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 that Bhutan employs data standards to ensure data is comparable. A 2019 study suggests that work is in progress for creating the infrastructure for electronic health records. It notes, "The eHealth enterprise architecture - the blueprint for the HIS - is currently in development and will encompass IT infrastructure development, data integration and technical standards for health data exchange. Both the National health policy and the Healthcare ICT master plan advocate an electronic medical records system in every health facility. The first iteration of this information system, along with an electronic patient information system, has been completed by Bhutanese experts. It is envisaged that the electronic health records will retrieve data prospectively, ensuring patient monitoring across several providers from different information systems integrated with the District Health Information Software 2 (DHIS2). The core platform, a centralized national health data warehouse, will link data from multiple sources and present it in a standard format via the electronic portal, thereby ensuring that all aspects of health data are interoperable." [1] According to a World Health Organization survey from 2015, there is no "National EHR system" nor "legislation governing the use of the national EHR system." The WHO e-health profile also shows 0% EHR coverage in primary, secondary and tertiary medical facilities. [2] There is no declaration of the standards being used nor the existence of any such standards in use on their Ministry of Health, Jigme Dorji Wangchuck National Referral Hospital or Royal Centre for Disease Control websites. [3,4,5]

[1] Gurung, Dorji, Khetrapal, Ra, Babu, Krishnamurthy. 2019. "Transforming health care through Bhutan's digital health strategy: progress to date". WHO. South East Asia Journal of Public Health 2:77-82. [http://www.who-seajph.org/article.asp?issn=2224-3151;year=2019;volume=8;issue=2;spage=77;epage=82;aualast=Gurung#:~:text=The%20digital%20health%20strategy%20reforms,the%20%E2%80%9COne%20Health%E2%80%9D%20approach.] Accessed 08 September 2020

[2] World Health Organization. "Atlas of eHealth country profiles The use of eHealth in support of universal health coverage." August 2015. [https://apps.who.int/iris/bitstream/handle/10665/204523/9789241565219_eng.pdf?sequence=1]. Accessed 12 August 2020

[3] Royal Government of Bhutan. Ministry of Health. [http://www.moh.gov.bt/]. Accessed 12 August 2020.

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [https://www.jdwnrh.gov.bt/]. Accessed 12 August 2020.

[5] Royal Government of Bhutan. Royal Centre for Disease Control. [http://www.rcdc.gov.bt/WEB/]. Accessed 12 August 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 not enough evidence of established mechanisms at the relevant ministries responsible for animal, human and wildlife surveillance to share data in Bhutan. The country's 4th National One Health Conference "from 19 to 21 December 2018 with financial support from World Health Organization (WHO) at Namsay Choeling Resort, Paro" brought together the "Department of Livestock, Ministry of Agriculture and Forests, Department of Public Health, Department of Medical Services, Ministry of Health" for this recurring conference. [1]"The conference aspires to further strengthen collaboration amongst the stakeholders to facilitate the effective coordination during the outbreak response, surveillance, information sharing and risk mitigation actions to the emerging and re-emerging infectious and zoonotic threats and to develop a clear action plan for implementation of one health related activities". [1] However, it is not clear whether surveillance data is shared at such conferences or after, as an outcome of the proposed collaboration. Furthermore, there is no other evidence of mechanisms for such data sharing on their Ministry of Health, Jigme Dorji Wangchuck National Referral Hospital, Royal Centre for Disease Control, Ministry of Agriculture and Forests or Department of Forests and Park Services websites. [2,3,4,5,6]

[1] Royal Government of Bhutan. Ministry of Agriculture and Forests. "Fourth National One Health Workshop". December 2018. [<http://www.moaf.gov.bt/fourth-national-one-health-workshop/>]. Accessed 12 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 12 August 2020.

[3] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 12 August 2020.

[4] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/WEB/>]. Accessed 12 August 2020.

[5] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 12 August 2020.

[6] Royal Government of Bhutan. Department of Forests and Park Services. [<http://www.dofps.gov.bt/>]. Accessed 12 August 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 Bhutan makes de-identified health surveillance data on disease outbreaks publicly available via reports on their Royal Centre for Disease Control website on a weekly basis. The RCDC has monthly reports archived on their website for both surveillance and epidemiology reports. [1] For example their latest "Monthly Epidemiology Report for May 2020" includes de-identified health surveillance data for diseases such as Covid-19, Acute Encephalitis Syndrome, Malaria, Dengue Fever, Measles among others while monthly and weekly reports on Covid-19 are also available

on their website.[2,1]

[1] Royal Government of Bhutan. Royal Centre for Disease Control. "Category: Report".

[<http://www.rcdc.gov.bt/web/category/report/>] Accessed 12 August 2020

[2] Royal Government of Bhutan. Royal Centre for Disease Control. "Monthly Epidemiology Report for May 2020". June 2020

[<http://www.rcdc.gov.bt/web/wp-content/uploads/2020/06/Monthly-Disease-Epidemiology-Report-May-2020.pdf>]

Accessed 12 August 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: 1

There is evidence that Bhutan makes de-identified COVID-19 surveillance data (including details such as daily case count, mortality rate, etc) available via daily reports on the Department of Disaster Management Website. The daily reports state the number of newly detected cases, areas these cases were detected, new cases in the preceding 24 hours, total number of cases in the country, number of active cases, recovered cases, number of deaths as well as newly quarantined, suspected and tested cases in the preceding 24 hours [1] Further, the Royal Centre For Disease Control has weekly and monthly Epidemiology Reports for Covid-19 on their website.[2]

[1] Royal Government of Bhutan. Ministry Of Home and Cultural Affairs. Department of Disaster Management.[<https://www.ddm.gov.bt/922-2/>] Accessed 12 August 2020.

[2] Royal Government of Bhutan. Royal Centre for Disease Control. "Category: Report".

[<http://www.rcdc.gov.bt/web/category/report/>] Accessed 12 August 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: 0

Although there is evidence that the publicly available health surveillance data is de-identified on its Royal Centre for Disease Control and Department of Disaster Management websites, there is not enough evidence that Bhutan has laws that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities.[1,2] The "Bhutan Information Communications and Media Bill, 2016" put forth by Bhutan's Ministry of Information and Communications lays out the foundation for data privacy for "sensitive personal data or information." [3] Furthermore, it is clearly stated that "physical, physiological and mental health condition" and "medical records and history" are types of personal information and data covered by this bill among other more well-known personal data such as "passwords" and "financial information" of individuals. [3] However, this bill has not been passed into law yet according to the National Council of Bhutan. [4] The "Bhutan Information Communications and Media Act, 2006" is the predecessor to the 2016 bill; however, it does not safeguard the confidentiality of identifiable health information for individuals. [5] There is no

information of such laws on their Ministry of Health website either. [6]

[1] Royal Government of Bhutan. Royal Centre for Disease Control. "Category: Report".

[<http://www.rcdc.gov.bt/web/category/report/>] Accessed 12 August 2020

[2] Royal Government of Bhutan. Ministry Of Home and Cultural Affairs. Department of Disaster Management. [<https://www.ddm.gov.bt/922-2/>] Accessed 12 August 2020.

[3] Royal Government of Bhutan Ministry of Information and Communications. "Bhutan Information Communications and Media Bill, 2016". September 2016. [<http://www.nab.gov.bt/assets/uploads/docs/bills/2016/FinalBICMAbill2016Eng.pdf>]. Accessed by August 12, 2020

[4] National Council of Bhutan. "Acts." [<http://www.nationalcouncil.bt/en/business/acts>]. Accessed 12 August 2020

[5] Royal Government of Bhutan Ministry of Information and Communications. "Bhutan Information Communications and Media Act, 2006". July 2006. [<http://www.asianlii.org/bt/legis/laws/bicama2006402/>]. Accessed 12 August 2020.

[6] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 12 August 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

There is not enough evidence that Bhutan has laws safeguarding the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities, or that they include mention of protections from cyber attacks. The "Bhutan Information Communications and Media Bill, 2016" put forth by Bhutan's Ministry of Information and Communications dedicates chapter 20 to Cyber Security and states that "all forms of personal rights and security accorded to the citizens shall be protected in the cyber world" and that "a person shall not intentionally or without the authority interfere with data so as to cause the data to be modified, destroyed or otherwise rendered in effective." [1] However, this bill has not been passed into law yet according to the National Council of Bhutan. [2] Their "Bhutan Information Communications and Media Act, 2006" is the predecessor to the 2016 bill; however, it does not safeguard the confidentiality of identifiable health information for individuals. [3] There is no information of such laws on their Ministry of Health website either. [4]

[1] Royal Government of Bhutan Ministry of Information and Communications. "Bhutan Information Communications and Media Bill, 2016". September 2016. [<http://www.nab.gov.bt/assets/uploads/docs/bills/2016/FinalBICMAbill2016Eng.pdf>]. Accessed 12 August 2020

[2] National Council of Bhutan. "Acts." [<http://www.nationalcouncil.bt/en/business/acts>]. Accessed 12 August 2020.

[3] Royal Government of Bhutan Ministry of Information and Communications. "Bhutan Information Communications and Media Act, 2006". July 2006. [<http://www.asianlii.org/bt/legis/laws/bicama2006402/>]. Accessed 12 August 2020

[4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 12 August 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 no public evidence that Bhutan has made a commitment via public statements, legislation, or a cooperative agreement to share surveillance data on any disease, during a public health emergency with other countries in the region. The only evidence of a commitment Bhutan has made is to share surveillance data during a public health emergency with the World Health Organization (WHO) country office. The NEWARS [National Early Warning Alert and Response Surveillance] National Notifiable Disease Surveillance System and Epidemiology Unit guidelines 2018 state that information and reports about events based surveillance should be shared with stakeholders along with notifiable disease surveillance reports.” [1] However, these stakeholders are local such as Bhutan’s Communicable Disease Division and the WHO Country Office. “As per the IHR 2005 guideline, any disease or events of international concern should be reported to WHO through National IHR focal Point that may constitute a Public Health Emergency of International Concern (PHEIC)”. It further states that the National IHR Focal Point should “Notify WHO country office if the event constitutes a PHEIC and help implement response measures and provide all relevant public health information to WHO if there is evidence of an unexpected or unusual public health event in the country”. [1] Lastly, no evidence of any commitments to share data with other countries in the region is available on their Ministry of Health or Royal Centre for Disease Control websites. [2,3]

[1] Royal Government of Bhutan. Royal Center for Disease Control. NEWARS. National Disease Surveillance and Epidemiology Unit (NADSAE).2018 Revised NEWARS Guidelines.[<http://www.rcdc.gov.bt/web/wp-content/uploads/2019/06/NEWARS-Guideline-V2-2018.pdf>] Accessed 12 August 2020

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 08 September 2020

[3] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/WEB/>]. Accessed 08 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 no evidence that Bhutan has a national system or plan 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. No evidence is found to support the existence of such a system under the Ministry of Health, Department of Disaster Management, Royal Centre for Disease Control or the National Referral Hospital websites. [1,2,3,4]. In light of the present COVID-19 pandemic, Bhutan has developed the “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)” under the Ministry of Health. However, there is no evidence that Bhutan has a plan in place to provide support at the sub national level to conduct and expand contact tracing. [5]

- [1] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt>] Accessed 12 August 2020
- [2] Royal Government of Bhutan. Ministry Of Home and Cultural Affairs. Department of Disaster Management. [<https://www.ddm.gov.bt/preparedness-and-response-division/>]. Accessed 12 August 2020
- [3] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.moh.gov.bt/publications/guidelines-2/>]. Accessed 12 August 2020
- [4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 12 August 2020
- [5] Royal Government of Bhutan. Ministry of Health. “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)” March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 12 August 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 Bhutan provides wraparound services to enable infected people and their contacts to self-isolate or quarantine as recommended, neither economic support (paycheck, job security) nor medical attention. In the present Covid-19 pandemic, although self isolation and quarantining of cases and suspected cases has been stressed and medical attention to these cases has been given importance, the other services particularly economic support related ones have not been mentioned. No evidence for such wraparound services has been mentioned in the “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)” under the Ministry of Health. [1] No evidence is found under the Royal Centre for Disease Control, Department of Disaster Management or the National Referral Hospital websites.[2,3,4]

- [1] Royal Government of Bhutan. Ministry of Health. “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)” March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 12 August 2020.
- [2] Royal Government of Bhutan. Royal Centre for Disease Control [<http://www.moh.gov.bt/publications/guidelines-2/>] Accessed 12 August 2020
- [3] Royal Government of Bhutan. Ministry Of Home and Cultural Affairs. Department of Disaster Management. [<https://www.ddm.gov.bt/preparedness-and-response-division/>] Accessed 12 August 2020
- [4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 12 August 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 no evidence that Bhutan makes de-identified data on contact tracing efforts for COVID-19 available via daily reports on government websites. The government shares daily situational updates on Covid-19 are available on the Department of

Disaster Management and Ministry of Health websites. These include the total number of cases, deaths, recovered cases, quarantined cases, tested cases etc.[1,2] All cases reported so far have been imported cases with '0' sporadic or community spreads and the de-identified data on the number of cases is explicitly given on the Department of Disaster Management website. [1]Bhutan has stressed on contact tracing, quarantining and testing of suspected cases since the early stages of the pandemic. [3] However, although there is evidence that surveillance, contact tracing, quarantining and testing efforts on the quarantined/isolated cases are being done, there is no publicly available data on such cases. [1,3]

[1] Royal Government of Bhutan. Ministry Of Home and Cultural Affairs. Department of Disaster Management [https://www.ddm.gov.bt/922-2/]. Accessed 15 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [http://www.moh.gov.bt/]. Accessed 15 August 2020.

[3] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf] Accessed 15 August 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: 1

There is 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 but only in response to active public health emergencies. In light of the Covid-19 pandemic, there is evidence of a joint plan between the public health system and the border control authorities to identify suspected and potential cases in international travellers and trace and quarantine their contacts. Guidelines for Screening at Ports of Entry, both airport and ground have been given in the 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)' under the Ministry of Health. [1] Bhutan has effectively been able to control the pandemic, limiting the cases to imported ones and community spread has so far not been reported in the country.[2] No evidence of such a plan or agreement for public health emergencies prior to the COVID-19 pandemic is found under the Ministry of Health, Department of Disaster Management, Royal Centre for Disease Control or the National Referral Hospital websites. [3,4,5,6]

[1] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf] Accessed 15 August 2020

[2] Royal Government of Bhutan. Ministry Of Home and Cultural Affairs. Department of Disaster Management [https://www.ddm.gov.bt/922-2/]. Accessed 15 August 2020.

[3] Royal Government of Bhutan. Ministry of Health[http://www.moh.gov.bt]. Accessed 15 August 2020

[4] Royal Government of Bhutan. Ministry Of Home and Cultural Affairs. Department of Disaster Management.[https://www.ddm.gov.bt/preparedness-and-response-division/] Accessed 15 August 2020

[5] Royal Government of Bhutan. Royal Centre for Disease Control [http://www.rcdc.gov.bt/web/guidelines-manuals/] Accessed 15 August 2020

[6] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [https://www.jdwnrh.gov.bt/].Accessed

15 August 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

There is no evidence that an applied epidemiology training program (such as FETP) is available in Bhutan, but there are resources provided by the government to send citizens to another country to participate in applied epidemiology training programs (such as FETP). The National Centre for Disease Control (NCDC), India, organizes an annual Regional Field Epidemiology Training Program, in which individuals from Bhutan participate, among other countries in the Asian region. [1] According to the Joint External Evaluation for Bhutan, conducted in December 2017, "there is a need for a field epidemiology training programme (FETP) for health professionals" in Bhutan and also that their "The current human resource master plan does not comprehensively cover public health disciplines or address training programmes (such as FETP) that contribute to the development of this workforce." [2] "Although, there is no FETP in place, all health assistants and BPH students are trained in basic epidemiology." [1] There is no evidence of any applied epidemiology training programs being present in Bhutan from their Ministry of Health, Jigme Dorji Wangchuck National Referral Hospital, Royal Centre for Disease Control or the TEPHINET website. [3,4,5,6]

[1] National Centre for Disease Control (NCDC). 2021. Regional Field Epidemiology Training Program For Health Personnel of South East Asia Region. [<https://ncdc.gov.in/showfile.php?lid=640>] Accessed 14 September 2021.

[2] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 15 August 2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 15 August 2020.

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 15 August 2020.

[5] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/WEB/>]. Accessed 15 August 2020

[6] TEPHINET. "Training Programs". [<https://www.tephinet.org/training-programs>]. Accessed 15 August 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: 0

There is no evidence that Bhutan has a FETP that includes animals health professionals , although it is a member, alongside other Southeast Asian countries, of the 'Regional Field Epidemiology Training Program for Veterinarians', since 2018. The program offers basic, intermediate and advanced training levels. [1] This is a two-year program and according to Bhutan's 'Joint External Evaluation of IHR Core Capacities of the Kingdom of Bhutan' (JEE), Mission Report, December 2017; the country has 15 epidemiologists although it is unclear how many of them graduated from this program. [1,2]

[1] TEPHINET. "Regional Field Epidemiology Training Program for Veterinarians (Southeast Asia)".

[<https://www.tephinet.org/training-programs/regional-field-epidemiology-training-program-for-veterinarians-southeast-asia>]. Accessed 15 August 2020.

[2] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 15 August 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: 1

2020

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

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

3.1 EMERGENCY PREPAREDNESS AND RESPONSE PLANNING

3.1.1 National public health emergency preparedness and response plan

3.1.1a

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

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

Current Year Score: 2

Bhutan has a publicly available national public health emergency response plan in place which addresses planning for multiple communicable diseases with pandemic potential. Bhutan has a "Health Emergency and Disaster Contingency Plan" from 2016, put forth by the Emergency Medical Services Division under their Ministry of Health. Risk analysis of multiple communicable diseases is conducted within the document, such as: influenza, dengue, malaria, chicken pox, mumps, typhoid, and Ebola among others. [1] In addition, the health services in mass casualty management for communicable disease control include "surveillance, tracking, treatment, prophylaxis, isolation and quarantine." [1] A dedicated Health Rapid Response Team has been set up at the national level in case of both natural and man made disasters as well as for disease outbreak, such as communicable diseases. [1] Response types include "Rapid Health Assessment, Medical Surge Capacity, Mass Casualty Management, Ambulance Services" in chapter 3.3. [1] Lastly, chapter 4 delineates the roles and responsibilities of different stakeholders in the health sector in the case of a health emergency. [1]

[1] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 15 August 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

Bhutan has a publicly available national public health emergency response plan in place which addresses planning for multiple communicable diseases with pandemic potential, but it has not been updated within the past 3 years. Bhutan has a "Health Emergency and Disaster Contingency Plan" from 2016, put forth by the Emergency Medical Services Division under their Ministry of Health.[1] However, this plan has not been updated since its first edition in 2016. An individual National Preparedness and Response Plan for Outbreak of Novel Corona Virus was released in March 2020.No overarching national public health emergency plan updated in the past 3 years is available on the Royal Centre for Disease Control and the Department of Disaster Management websites.[2,3]

[1] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 15 August 2020

[2] Royal Government of Bhutan. Royal Centre for Disease Control [<http://www.rcdc.gov.bt/web/guidelines-manuals/>] Accessed 15 August 2020

[3] Royal Government of Bhutan. Ministry Of Home and Cultural Affairs. Department of Disaster Management. [<https://www.ddm.gov.bt/acts-rules-and-publications/>] Accessed 15 August 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: 1

Bhutan's "Health Emergency and Disaster Contingency Plan" does include considerations for the vulnerable populations such as children and the elderly. The plan recommends that a security plan for vulnerable communities is to be set up. This "Security and Evacuation Plan is to be developed by the village-chiefs (Gups) in consultation with Disaster Management Departmental officials." [1] Furthermore, "priority treatment to children, women, elderly & handicapped" is called for when

delivering first-aid.” [1] Lastly, under its risk communication section, the plan states that different communication approaches will be identified to reach different target population including vulnerable and at risk populations.” [1]

[1] Royal Government of Bhutan Emergency Medical Services Division. “Health Emergency and Disaster Contingency Plan”. 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 15 August 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: 1

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 Bhutan has a specific mechanism for engaging with the private sector to assist with outbreak emergency preparedness and response. None of Bhutan's disaster management related documents such as: "National Disaster Risk Management Framework," "Disaster Management Planning Guidelines," "Disaster Risk Management Strategy," "Disaster Management Act of Bhutan 2013" or "Health Emergency and Disaster Contingency Plan" make any mention of working with the private sector to assist with outbreak emergency preparedness and response. [1,2,3,4,5] On the other hand, Bhutan's Ministry of Health does have an action plan for non-communicable diseases called "The Multisectoral National Action Plan for the Prevention and Control of Noncommunicable Diseases 2015-2020" which addresses public-private partnerships for things such as building sports complexes to promote physical activity thereby reducing health risks. [6] However, none of the publications on their Department of Disaster Management website address private partnerships in the case of an emergency health outbreak. [7]

[1] Royal Government of Bhutan Department of Local Governance. "National Disaster Risk Management Framework".

[https://www.ddm.gov.bt/wp-content/uploads/downloads/acts&rules/DRMF_Final.pdf]. Accessed 15 August 2020.

[2] Royal Government of Bhutan Department of Disaster Management. "Disaster Management Planning Guidelines". 2014.

[https://www.ddm.gov.bt/wp-content/uploads/downloads/acts&rules/dm_plan_guideline.pdf]. Accessed 15 August 2020.

[3] Royal Government of Bhutan Department of Disaster Management. "Disaster Risk Management Strategy".

[[https://www.ddm.gov.bt/wp-content/uploads/downloads/acts&rules/Final_NDRMS\(NDMA\).pdf](https://www.ddm.gov.bt/wp-content/uploads/downloads/acts&rules/Final_NDRMS(NDMA).pdf)]. Accessed 15 August 2020.

[4] Royal Government of Bhutan Department of Disaster Management. "Disaster Management Act of Bhutan 2013". 2013.

[https://www.ddm.gov.bt/wp-content/uploads/downloads/acts&rules/dm_act_2013.pdf]. Accessed 15 August 2020.

[5] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan".

2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 15 August 2020

[6] Royal Government of Bhutan. Ministry of Health. "The Multisectoral National Action Plan for the Prevention and Control of Noncommunicable Diseases 2015-2020". July 2015. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2015/12/The-Multisectoral-National-Action-Plan-for-the-Prevention-and-Control-of-NCDs-2015-2020.pdf>]. Accessed 15 August 2020.

[7] Royal Government of Bhutan Department of Disaster Management. "Acts, Rules and Publications". [<https://www.ddm.gov.bt/acts-rules-and-publications/>]. Accessed 15 August 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: 2

Bhutan has guidelines in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic which could be used for multiple infectious diseases. These guidelines are outlined in the 'Disease Outbreak Investigation and Control Manual, Annexure 7' under the Royal Center for Disease Control. NPIs for prevention and control of an outbreak include control measures aimed at: the outbreak source (food, water, environment, animal contact, human sources eg: food premises closure, swimming pool filtration, ban on consumption of contaminated meat/burial of dead animals, culling of poultry, euthanize dogs in case of rabies, temporary restrictions placed on food handlers or health care workers with gastroenteritis symptoms; control measures aimed at contaminated vehicles and vectors eg freeze, ban sale of poultry from all affected areas, indoor residual spraying, clearing clogged drains; control measures aimed at susceptible humans eg. education on handwashing, sanitation, implementation of food safety measures and correct malnutrition or vitamin deficiency to reduce the effects of measles. [1] Bhutan also has national guidelines on infection control which further emphasizes use of NPIs during a disease outbreak. Under the Outbreaks Investigation and Management, the guidelines emphasize on 'identifying the common features of all cases such as person, place, period, risk factors and sources of infection and manage cases and implement appropriate control measures to prevent further outbreaks'. [2] In light of the present COVID-19 pandemic, 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)' was released in March 2020 with guidelines to implement NPIs to control the spread of the disease. [3]

[1] Royal Government of Bhutan. Royal Center for Disease Control. 'Disease Outbreak Investigation and Control Manual'. 2015. [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/OUTBREAK-INVESTIGATION-MANUAL-FINAL.pdf>] Accessed 10 September 2020

[2] Royal Government of Bhutan. Ministry of Health. 'National Guideline on Infection Control and Medical Waste Management'. [<http://www.moh.gov.bt/wp-content/uploads/afd-files/2014/11/ICMWM-guideline.pdf>]. Accessed 10 September 2020

[3] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 15 August 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

Bhutan has activated their national emergency response plan for an infectious disease outbreak in the past year but there is insufficient evidence that the country has completed a national-level biological threat-focused exercise with the WHO in the past year. In light of the ongoing pandemic Covid-19, Bhutan has activated their national emergency response plan. Bhutan already has a 'Health Emergency and Disaster Contingency Plan' in place since 2016 and it was expanded specifically into the 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)' to control the spread of the disease in the country. [1,2] There is also evidence that the country has completed a national-level exercise with WHO in November 2019, 'Airport POE Exercise' although the details could not be elucidated.[3] No evidence of such an exercise is seen under the Ministry of Health, Department of Disaster Management or the Royal Centre for Disease Control.[4,5,6]

[1] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 15 August 2020

[2] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 15 August 2020

[3] World Health Organization (WHO). Strategic Partnership For International Health Regulations (2005) and Health Security (SPH) [https://extranet.who.int/sph/simulation-exercise-list?field_region_tid=All&tid=324&field_simulation_status_tid=1790&field_simulation_type_tid=All&title=] Accessed 15 August 2020

[4] Royal Government of Bhutan. Ministry of Health [<http://www.moh.gov.bt/>] Accessed 15 August 2020

[5] Royal Government of Bhutan. Department of Disaster Management [<https://www.ddm.gov.bt/preparedness-and-response-division/>] Accessed 15 August 2020

[6] Royal Government of Bhutan. Royal Center For Disease Control [<http://www.rcdc.gov.bt/web/news-events/>] Accessed 15 August 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 Bhutan 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) or developed a plan to improve response capabilities. No evidence of such an exercise is seen on the World Health Organization's After Action Review database, Bhutan page or South-East Asia office website.[1,2,3] No further evidence of such response plans or exercise have been mentioned under the Department of Disaster Management or the Ministry of Health[4,5].

[1] World Health Organization (WHO) Strategic Partnership for International Health Regulations (2005) and Health Security (SPH). "After Action Review". 2020, [https://extranet.who.int/sph/after-action-review]. Accessed 15 August 2020.

[2] World Health Organization. "Bhutan." [https://www.who.int/countries/btn/en/]. Accessed 15 August 2020.

[3] World Health Organization Regional Office for South-East Asia. [http://www.searo.who.int/en/]. Accessed 15 August 2020

[4] Royal Government of Bhutan.Department of Disaster Management [https://www.ddm.gov.bt/preparedness-and-response-division/] Accessed 17 August 2020

[5] Royal Government of Bhutan. Ministry of Health. [http://www.moh.gov.bt/] Accessed 10 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 the country in the past year has undergone a national-level biological threat-focused exercise that has included private sector representatives. There is evidence that the country has completed a national-level exercise with World Health Organization (WHO) in November 2019, 'Airport POE Exercise' although the details could not be elucidated [1] No evidence of such an exercise is seen on the WHO's Simulation Exercise database, Bhutan page or South-East Asia office website. [2,3,4] Furthermore, no evidence of such exercises are found under the Ministry of Health and Department of Disaster Management websites. [5,6]

[1] World Health Organization (WHO). Strategic Partnership For International Health Regulations (2005) and Health Security (SPH) [https://extranet.who.int/sph/simulation-exercise-list?field_region_tid=All&tid=324&field_simulation_status_tid=1790&field_simulation_type_tid=All&title=] Accessed 17 August 2020

[2] World Health Organization (WHO) Strategic Partnership for International Health Regulations (2005) and Health Security (SPH). "Simulation Exercise". 2020, [https://extranet.who.int/sph/simulation-exercise] Accessed 17 August 2020.

[3] World Health Organization. "Bhutan." [https://www.who.int/countries/btn/en/] Accessed 17 August 2020.

[4] World Health Organization Regional Office for South-East Asia. [http://www.searo.who.int/en/] Accessed 17 August 2020

[5] Royal Government of Bhutan. Ministry of Health. [http://www.moh.gov.bt/] Accessed 17 August 2020

[6] Royal Government of Bhutan. Department of Disaster Management [https://www.ddm.gov.bt/preparedness-and-response-division/] Accessed 17 August 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

Bhutan does have in place an Emergency Operations Center. The World Health Organization "handed over the Health Emergency Operations Center (HEOC) to the Ministry of Health, Royal Government of Bhutan" in June of 2018. [1] "This Health Emergency Operations Center is equipped with communication facilities including video conferencing, VHF radios, satellite phones, cameras, Broadband Global Area Network." [1] It is also mentioned in their "Health Emergency and Disaster Contingency Plan" as "a central command, control and communication facility for the effective administration of emergency response and disaster management in any emergency situation. It will be managed and operated by the Emergency Medical Services Division under the directives of Health Emergency Management Committee (HEMC) during the times of emergencies and disasters." [2] In light of the present Covid-19 Pandemic, the 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) released in March 2020 under the Ministry of Health' states that "Health Emergency Management Committee (HEMC) shall be the highest decision-making body in the Health Ministry for any health emergency (including health emergencies arising from disaster). The HEMC shall be responsible for the command, control and coordination during preparedness, response and recovery operations. The HEMC shall function from the Health Emergency Operation Center (HEOC)". [3]

[1] World Health Organization. "Handing over of Health Emergency Operations Center (HEOC) to Ministry of Health". June 2018. [<http://www.searo.who.int/bhutan/health-emergency-operations-center/en/>]. Accessed 17 August 2020.

[2] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 17 August 2020.

[3] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 17 August 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: 1

There is evidence that the Emergency Operations Center in Bhutan is required to conduct a drill at least once per year. In their "Guideline for Conducting Emergency and Disaster Simulations and Drills in Health Facilities" for the Emergency Medical Services Division in Bhutan, the division in charge of Bhutan's Health Emergency Operations Center (HEOC), urges "districts and hospitals to conduct simulation and drill exercises at least two times in a year." [1] This is also mandated by their HEOC in their "Health Emergency and Disaster Contingency Plan" from 2016. [2]

[1] Royal Government of Bhutan Emergency Medical Services Division. "Guideline for Conducting Emergency and Disaster Simulations and Drills in Health Facilities". 2018. [<http://www.moh.gov.bt/wp-content/uploads/afd-files/2017/10/drill.pdf>]. Accessed 17 August 2020.

[2] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 17 August 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 in Bhutan 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. Its first mass simulation drill, conducted by the Jigme Dorji Wangchuk National Referral Hospital, took place in September of 2017. [1] "The Mass Simulation drill was conducted with financial support from ECHO and WHO and facilitated by Geo Hazard International (GHI) in collaboration with MoH under the Health Sector Preparedness Project" and was based around a 7.6 magnitude earthquake with 100 drill participants. No evidence exists on the response time of the hospital. [1] The hospital drills are mandated by Bhutan's HEOC (Health Emergency Operation Centre) in their "Health Emergency and Disaster Contingency Plan" from 2016. [2] No other evidence of drills conducted in Bhutan pertaining to public health or the present Covid-19 pandemic can be found on the 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) released in March 2020 under the Ministry of Health' or the Ministry of Health, Department of Disaster Management or Royal Center for Disease Control websites. [3,4,5,6]

[1] The Bhutanese. "JDWRH conducts Mass Simulation Drill for first time". September 2017.

[<https://thebhutanese.bt/jdwrh-conducts-mass-simulation-drill-for-first-time/>]. Accessed 17August 2020

[2] Royal Government of Bhutan. Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 17August 2020.

[3] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 17August 2020

[4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 17August 2020

[5] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 17August 2020

[6] Royal Government of Bhutan. Royal Center For Disease Control [<http://www.rcdc.gov.bt/web/news-events/>] Accessed 17 August 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 neither public evidence of Bhutan's public health or national security authorities having carried out an exercise to respond to a potential deliberate biological event (i.e. bioterrorism attack) 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 (i.e. bioterrorism attack). Bhutan's "Health Emergency and Disaster Contingency Plan" does not address any guidelines or standard operating procedures to combat deliberate biological events. [1] Similarly, there is no mention of any exercises done in order to prepare for bioterrorism on their Ministry of Health or Department of Disaster Management websites. [2,3] Their JEE, states that "no formal MOU or agreement is currently in place linking public health and security authorities during a suspect or confirmed biological event" and that while "Bhutan's public health and security authorities have worked together successfully ad hoc during emergency response operations in the past without agreements and plans in place," these were "not in response to an intentional biological attack, or in an exercise simulating such a scenario." [4]

[1] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 17August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 17August 2020.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 17August 2020.

[4] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 17August 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: 1

There is evidence that Bhutan’s ‘Risk Communication Guideline for Health Sector- In Public Health Emergency & Disaster’, published by the Ministry of Health in 2019 outlines how messages will reach populations and sectors with different communications needs. The plan has a section on community engagement, where it emphasizes the following actions for appropriate communication with affected communities: "(i) Understand the community's culture, perception, economic condition, demographic trends, and past experiences (ii) Seek support of the local leaders and other influential figures including religious heads in the affected area for mobilizing the community (iii) Involve the community to make decisions to implement and manage social and behavioral change. (iv) Disseminate relevant risk communication messages through community awareness and meetings." Furthermore, according to the Joint External Evaluation for Bhutan, conducted in December 2017, “community and village health workers are in place to disseminate messages to the community.” [2]

[1] Royal Government of Bhutan. Ministry of Health. Department of Medical Services. Emergency Medical Services Division. Risk Communication Guideline for Health Sector. 2019. [<http://www.moh.gov.bt/wp-content/uploads/ict-files/2014/11/Risk-Communication-Guideline-for-Health-Sector-MoH-Bhutan.pdf>] Accessed 27 February 2021

[2] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 17 August 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: 1

Bhutan has a risk communication plan in place that is specifically intended for use during a public health emergency. It is entitled ‘Risk Communication Guideline for Health Sector- In Public Health Emergency & Disaster’, published by the Ministry of Health in 2019. ‘The purpose of this guideline is to provide a resource for health professionals on the basic tenets of effective communication and media engagement. The guideline is also expected to provide an easy reference on the basic skills and techniques needed for clear and effective communications, information dissemination, and message delivery. This guideline focuses on providing health professionals with a brief introduction on risk communication, identification of communication channels, content development, rumor management and working with media in disseminating right messages, before, during, and after a public health emergency’. [1]

[1] Royal Government of Bhutan. Ministry of Health. Department of Medical Services. Emergency Medical Services Division. Risk Communication Guideline for Health Sector. 2019. [<http://www.moh.gov.bt/wp-content/uploads/ict-files/2014/11/Risk-Communication-Guideline-for-Health-Sector-MoH-Bhutan.pdf>] Accessed 27 February 2021

3.5.1c

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Bhutan's 'Risk Communication Guideline for Health Sector- In Public Health Emergency & Disaster', published by the Ministry of Health in 2019 designates a specific position within the government to serve as the primary spokesperson to the public during a public health emergency. [1] It mentions that the "Ministry of Health should take a lead role in collecting, verifying and disseminating information prior to communicating the risk. But it does not designate a specific position within the government. There is no evidence in the 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) released in March 2020 under the Ministry of Health in light of the Covid-19 pandemic. Although the response plan mentions that the Health Emergency Management Committee (HEMC) shall be responsible for the command, control and coordination during preparedness, response and recovery operations during a health emergency, there is no mention of a specific position within the government to serve as the primary spokesperson to the public during a public health emergency [4] Lastly, their 'Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan (JEE) Mission report, December 2017' mentions that "there is no integrated multi-hazard risk communication strategy and a plan is required for all IHR-related hazards." [5]

[1] Royal Government of Bhutan. Ministry of Health. Department of Medical Services. Emergency Medical Services Division. Risk Communication Guideline for Health Sector. 2019. [<http://www.moh.gov.bt/wp-content/uploads/ict-files/2014/11/Risk-Communication-Guideline-for-Health-Sector-MoH-Bhutan.pdf>] Accessed 27 February 2021

[2] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 17 August 2020.

[3] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 17 August 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

There is evidence that the government of Bhutan utilizes media platforms to inform the public about public health emergencies and ongoing public health concerns. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "communications are done via websites, social media, personal contacts, phones and other channels" regarding public health emergencies in Bhutan. [1] Furthermore, social media and other "media (e.g. print, television, radio, internet and web pages) are available at the national level for disseminating [health and] risk communication messages. [1]

For example, Bhutan's Ministry of Health, Royal Center for Disease Control(RCDC) and Department of Disaster Management (DDM) has regular updates and situational analysis of the Covid-19 pandemic status in Bhutan e.g the national situational update on COVID-19 for September 09, 2020 on the DDM website states 'A 28-year-old man; a Royal Bhutan Police personnel serving as a front-line worker was found to be positive in Phuntsholing following a visit to the flu clinic. Two others are being declared recovered'. Along with these, measures being taken for the positive case like isolation and treatment, total number of cases, active cases, recovered, total tested and total number under surveillance are also updated and displayed on a daily basis on their website.[2,3,4]. The same data has also been shared on the Ministry of Health, Facebook page[6]. Lastly, the Ministry of Health also has a twitter account and Facebook account on which it is quite active and invites and responds to reactions on public health issues from the general public. The Facebook account also posts on general health issues such as blood pressure, stomach cancer screening events, and blood donation awareness. [5,6]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 17 August 2020.

[2] Royal Government of Bhutan Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 17 August 2020.

[3] Royal Government of Bhutan. Royal Center For Disease Control [<http://www.rcdc.gov.bt/web/news-events/>] Accessed 17 August 2020

[4] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 11 September 2020

[5] Twitter. "Ministry of Health, Bhutan". [<https://twitter.com/mohbhutan?lnag=en>]. Accessed 17 August 2020

[6] Facebook. "Ministry of Health. Royal Government of Bhutan". [<https://www.facebook.com/MoHBhutan/>] Accessed 11 September 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 evidence that senior leaders have shared misinformation or disinformation on infectious diseases in the past two years. In light of the present pandemic, COVID-19, the senior leaders have been regularly addressing the public and sharing information about the situation in the country and also safety measures, protocols in order to fight the pandemic. The leaders leading the fight against the pandemic are His Majesty the King, the Prime Minister and the Health Minister of Bhutan.[1] Updates from the Health Minister are also seen on the Health Ministry Twitter and Facebook accounts.[2,3] There has been no evidence of misinformation or disinformation from these leaders in the past two years. [1,2,3]

[1] Royal Government of Bhutan. Ministry of Information and Communications. & Information and Advisories on Covid-19'. [<https://www.gov.bt/covid19/>] Accessed 18 August 2020

[2] Twitter. "Ministry of Health, Bhutan". [<https://twitter.com/mohbhutan?lnag=en>]. Accessed 18 August 2020

[3] Facebook. "Ministry of Health. Royal Government of Bhutan". [<https://www.facebook.com/MoHBhutan/>] Accessed 18 August 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: 48.11

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: 95.56

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: 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: 1.0

2018-2019

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, Bhutan 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. No evidence is found under the Ministry of Health, Royal Center for Disease Control, Department of Disaster Control or Ministry of Foreign Affairs. [1,2,3,4] No evidence of any restrictions on the import and export of medical goods is found under the International Trade Center Website in light of the present Covid-19 pandemic. [5]

[1] Royal Government of Bhutan Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 18 August 2020.

[2] Royal Government of Bhutan. Royal Center For Disease Control [<http://www.rcdc.gov.bt/web/news-events/>] Accessed 18 August 2020

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 18 August 2020

[4] Royal Government of Bhutan. Ministry of Foreign Affairs. [<https://www.mfa.gov.bt/>] Accessed 18 August 2020

[5] International Trade Center. Market Access Map. 'Covid-19 Temporary Trade Measures' [<https://www.macmap.org/covid19>] Accessed 18 August 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: 0

There is evidence that Bhutan has issued a restriction, without international/bilateral support, on the export/import of non-medical goods in the past year, in its fight against the present Covid-19 pandemic. The Bhutan government banned the import of Doma (betel nut) and Pani (betel leaf) in addition to fruit, vegetables and meat in an attempt to curb the spread of coronavirus in the country since March 2020 in light of the Covid-19 pandemic. [1] This appears to be a decision taken by the Royal Government of Bhutan and there is no mention of international/bilateral support in the matter. [1,2]

[1] International Trade Center. Market Access Map. 'Covid-19 Temporary Trade Measures'. [<https://www.macmap.org/covid19>] Accessed 18 August 2020.

[2] NE NOW NEWS. 25 March 2020. 'Bhutan bans import of betel nut and betel leaf'. NorthEast Now. [<https://nenow.in/top-news/bhutan-bans-import-of-betel-nut-and-betel-leaf.html>] Accessed 11 September 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

There is evidence to show that in the past year, Bhutan has implemented a ban, without international/bilateral support, on travelers arriving from a specific country or countries due to an infectious disease outbreak. Bhutan has closed its international borders and banned the entry and exit of travelers to curb the spread of COVID-19 since March 2020. This measure has been taken in light of the present Covid-19 pandemic by the Government of Bhutan. [1,2] There is no evidence that this measure has been implemented with international/bilateral support under the Ministry of Health, Ministry of Foreign Affairs or the World Health Organization (WHO) websites. [3,4,5]

[1] Royal Government of Bhutan. Ministry of Foreign Affairs. '‘Notifications'. [<https://www.mfa.gov.bt/wp-content/uploads/2020/03/Notification-1.pdf>] Accessed 18 August 2020

[2] WorldAware. 'Covid-19 Alert: Bhutan Continues to Suspend Entry and Exit International Flights as of July 15'. [<https://www.worldaware.com/covid-19-alert-bhutan-continues-suspend-entry-and-exit-international-flights-july-15>] Accessed 18 August 2020

[3]] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 11 September 2020.

[4] Royal Government of Bhutan. Ministry of Foreign Affairs. [<https://www.mfa.gov.bt/>] Accessed 11 September 2020

[5] World Health Organization. Disease Outbreak News. 'Emergencies, preparedness, response'. [<https://www.who.int/csr/don/en/>] Accessed 11 September 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: 42.42

2018

WHO; national sources

4.1.1b

Nurses and midwives per 100,000 people

Input number

Current Year Score: 185.18

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: 1

There is evidence that Bhutan has a public workforce strategy in place (which has been updated in the past five years) to identify fields where there is an insufficient workforce and strategies to address these shortcomings. According to the Joint External Evaluation for Bhutan, "Bhutan has a 12-year human resource master plan for the healthcare sector, which includes reference to some public health disciplines such as epidemiology; this plan has been followed since 2011, resulting in increases in capacity for some of these disciplines." [1] Bhutan's latest rendition of this plan is the "12 th FYP HRD Masterplan for the Economic Sectors (2018-23)" put forth by the Ministry of Labour and Human Resources. In this plan, updates to the shortages identified previously in the health sector workforce have been provided as well as glimpses into the long term solutions in order to address these shortages such as the establishment of Khesar Gyalpo University of Medical Sciences of Bhutan, which is the first medical university in Bhutan offering "specialized medical and health related programs." [2, 3] The university page mentions that "the establishment of the Khesar Gyalpo University of Medical Sciences of Bhutan is not only necessary but a significant step towards accelerating and achieving self sufficiency in health human resources to enhance the quality of future Bhutanese health care services by enabling country to plan for health human resources." [3] There is no additional evidence via the Faculty of Nursing and Public Health. [4]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 18 August 2020.

[2] Royal Government of Bhutan Ministry of Labour and Human Resources. "12th FYP HRD Masterplan for the Economic Sectors (2018-23)". 2018. [<http://www.molhr.gov.bt/molhr/wp-content/uploads/2018/05/12th-FYP-HRD-Masterplan-2018-23.pdf>]. Accessed 18 August 2020.

[3] Khesar Gyalpo University of Medical Sciences of Bhutan. "University Profile". [http://www.kgumsb.edu.bt/?page_id=21]. Accessed 18 August 2020

[4] Background | Faculty of Nursing and Public Health "Background | Faculty Of Nursing And Public Health" [<http://www.fnph.edu.bt/background/>] Accessed 18 August 2020

4.1.2 Facilities capacity

4.1.2a

Hospital beds per 100,000 people

Input number

Current Year Score: 174

2012

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 no evidence that Bhutan has the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit located within the country. According to the Joint External Evaluation for Bhutan, conducted in December 2017, “the presence of high containment units (BSL 3 in the RCDC [Royal Centre for Disease Control] and BSL2+ in the NCAH [National Centre for Animal Health]) enables Bhutan to handle detection of highly infectious specimens and materials.” However, the JEE indicates that these are used for research purposes and there is no evidence that these containment units are being used for isolation or treatment of patients.[1]No evidence is available on the websites of the Ministry of Health, Royal Centre for Disease Control and the Jigme Dorji Wangchuck National Referral Hospital. [2,3,4] However, in light of the present Covid-19 pandemic, under the Health Emergency Operations Center, isolation wards have been set up in hospitals in the country in order to isolate and treat patients and control the spread of the disease, Jigme Dorji Wangchuck National Referral Hospital, Paro Hospital, Phuntsholing Hospital, Samdrup Jongkhar Hospital and Samtse Hospital have isolation wards with facilities for isolation and treatment of Covid-19 positive cases as given in the ‘National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)’ released in March 2020 under the Ministry of Health. It is not clear if these are permanent facilities that could be used to isolate patients with highly communicable diseases in the future.[5]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 18 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt>] Accessed 27 February 2021

[3] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.moh.gov.bt/publications/guidelines-2/>]. Accessed 27 February 2021

[4] Royal Government of Bhutan. Jigme Dorji Wangchuck National Referral Hospital. [<https://www.jdwnrh.gov.bt/>]. Accessed 27 February 2021

[5] Royal Government of Bhutan. Ministry of Health. “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)” March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 18 August 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 evidence that in the past two years Bhutan has demonstrated the capacity to expand isolation facility in the country. In light of the present COVID-19 pandemic Bhutan has demonstrated the capacity to expand isolation facility in the country. Although there is no evidence that Bhutan had the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit located within the country prior to the COVID-19 pandemic, the present pandemic has seen an expansion of isolation centers for patients being set up throughout the country. [1]According to the Joint External Evaluation for Bhutan, conducted in December 2017, “the presence of high containment units (BSL 3 in the RCDC [Royal Centre for Disease Control] and BSL 2+ in the NCAH [National Centre for Animal Health]) enables Bhutan to handle detection of highly infectious specimens and materials.” However, the JEE indicates that these are used for research purposes and there is no evidence that these containment units are being used for isolation or treatment of patients.[2] At present, under the Health Emergency Operations Center, isolation wards have been set up in hospitals in the country in order to isolate and treat patients and control the spread of the disease, Jigme Dorji Wangchuck National Referral Hospital, Paro Hospital, Phuntsholing Hospital, Samdrup Jongkhar Hospital and Samtse Hospital have isolation wards with facilities for isolation and treatment of Covid-19 positive cases as given in the ‘National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)’ released in March 2020 under the Ministry of Health. It is not clear if these are permanent facilities that could be used to isolate patients with highly communicable diseases in the future.[1]

[1] Royal Government of Bhutan. Ministry of Health. “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)” March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 27 February 2021

[2] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 27 February 2021

4.2 SUPPLY CHAIN FOR HEALTH SYSTEM AND HEALTHCARE WORKERS

4.2.1 Routine health care and laboratory system supply

4.2.1a

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

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

Current Year Score: 1

There is evidence that Bhutan has a national procurement protocol in place which can be utilized by the Ministries of Health and Agriculture for the acquisition of laboratory and medical supplies for routine use. Bhutan has documents that put forth the procedure for bidding and acquiring laboratory equipment. Their “Bidding Documents for Supply of Laboratory Equipments” put forth by their Ministry of Finance sets the template of how to bid for laboratory equipment. [1] Following this example, a “Bidding Document for Procurement of Chemicals/Lab Equipments/Consumables for the FY 2018-2019” put forth by Bhutan’s National Seed Centre outlines an example of how to prepare bids for laboratory equipment in Bhutan. [2] There is also a procurement portal through the Ministry of Finance called “The Electronic Government Procurement (e-GP) System of the Royal Government of Bhutan.” [3] This portal “facilitates all Procuring Agencies to publish the Tenders, Corrigendum and Notification of Contract Award. This portal aims to “provide a single point access to the information on procurements made across various Procuring Agencies.” The Tenders section of the portal includes, among others, orders placed by the Ministry of Health and the Ministry of Agriculture and Forests. [3] There is no evidence that the procurement system was used for acquisition of medical supplies under the Ministry of Finance, Ministry of Health or the Ministry of Agriculture.[3, 4,5]

- [1] Bhutan Standards Bureau. “Bidding Documents for Supply of Laboratory Equipments”. May 2018. [<http://www.bsb.gov.bt/assets/Tender/Bidding%20Document%20of%20Lab%20Equipments1.pdf>]. Accessed 18 August 2020.
- [2] Royal Government of Bhutan National Seed Centre. “Bidding Document for Procurement of Chemicals/Lab Equipments/Consumables for the FY 2018-2019”. 2018. [<http://www.moaf.gov.bt/wp-content/uploads/6.upload.chemicals.18-19-NSC.pdf>]. Accessed 18 August 2020.
- [3] Royal Government of Bhutan. Bhutan Ministry of Finance. “About Electronic Government Procurement (e-GP) System.” [<https://www.egp.gov.bt/>]. Accessed 18 August 2020
- [4] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>] Accessed 27 February 2021
- [5] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>] Accessed 27 February 2021.

4.2.2 Stockpiling for emergencies

4.2.2a

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

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

Current Year Score: 0

There is no evidence of Bhutan maintaining a stockpile of medical supplies i.e equipment, PPE or a stockpile of medical countermeasures i.e vaccines, therapeutics or diagnostics for national use during a public health emergency. According to the Joint External Evaluation for Bhutan, conducted in December 2017, recommendations for priority actions for Bhutan include developing and implementing “a plan and SOPs for sending and receiving medical countermeasures during a public health emergency” and for Bhutan to “establish formal agreements with relevant stakeholders (including private sector manufacturers/ distributors and national and international NGOs and CSOs) for the delivery of medical services and supplies during a public health emergency.” [1] No evidence of progress on these fronts is found via either the Ministry of Health or Department of Disaster Management websites or Bhutan’s Drug Regulatory Authority websites. [2, 3,4] Although the JEE mentions that a stockpile of essential medical supplies is in place, there is no information on the country's preparedness to use these during a public health emergency. [1] In the’ National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) released in March 2020 under the Ministry of Health, use of appropriate PPE has been advised while treating Covid-19 patients and it has been mentioned that these will be supplied by the Ministry of Health (MOH), however there is no evidence that there is a stockpile of PPE with the MOH. There is also no mention of a stockpile of medical

countermeasures including essential medicines for use. [5]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 18 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 18 August 2020.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 18 August 2020.

[4] Royal Government of Bhutan. Drug Regulatory Authority. [<http://dra.gov.bt/>]. Accessed 18 August 2020.

[5] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 18 August 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 no evidence that Bhutan has a stockpile of laboratory supplies (e.g. reagents, media) for national use during a public health emergency. According to the Joint External Evaluation for Bhutan, conducted in December 2017, recommendations for priority actions for Bhutan include developing and implementing "a plan and SOPs for sending and receiving medical countermeasures during a public health emergency" and for Bhutan to "establish formal agreements with relevant stakeholders (including private sector manufacturers/ distributors and national and international NGOs and CSOs) for the delivery of medical services and supplies during a public health emergency." [1] No evidence of progress on these fronts is found via either the Ministry of Health or Department of Disaster Management websites. [2, 3] Although the JEE mentions that a stockpile of essential medical supplies is in place, there is no information on the country's preparedness to use these during a public health emergency. [1] In the 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) released in March 2020, in light of the Covid-19 pandemic, there is no evidence of a stockpile of laboratory supplies that could be used during the pandemic. [4]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 18 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 18 August 2020.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 18 August 2020.

[4] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 18 August 2020.

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 the country conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency. There is no mention of such a review under the Joint External Evaluation for Bhutan, conducted in 2017. No further evidence is found under the Ministry of Health, Department of Disaster Management or the Drug Regulatory Authority websites. [2,3,4]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. [<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>]. Accessed 01 March 2021.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 01 March 2021.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 01 March 2021

[4] Royal Government of Bhutan. Drug Regulatory Authority. [<http://dra.gov.bt/>]. Accessed 01 March 2021

4.2.3 Manufacturing and procurement for emergencies

4.2.3a

Does the country meet one of the following criteria?

- Is there evidence of a plan/agreement to leverage domestic manufacturing capacity to produce medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency?

- Is there evidence of a plan/mechanism to procure medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency?

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

Current Year Score: 0

There is no evidence of a plan/agreement to leverage domestic manufacturing capacity to produce medical supplies (e.g. equipment, PPE) and medical counter measures (MCMs)(i.e vaccines, therapeutics, diagnostics) for national use during a public health emergency nor is there any evidence of a plan/mechanism to procure medical supplies and medical counter measures for national use during a public health emergency. According to the Joint External Evaluation for Bhutan, conducted in December 2017, recommendations for priority actions for Bhutan include developing and implementing “a plan and SOPs for sending and receiving medical countermeasures during a public health emergency” and for Bhutan to “establish formal agreements with relevant stakeholders (including private sector manufacturers/ distributors and national and international NGOs and CSOs) for the delivery of medical services and supplies during a public health emergency.” [1] No evidence of progress on these fronts is found via either the Ministry of Health, Department of Disaster Management or Bhutan’s Drug Regulatory Authority websites.[2,3,4] During the present Covid-19 pandemic although the use of PPE and its supply by the Ministry of Health has been highlighted, there is no mention of a plan to produce or procure PPE in the “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) released in March 2020, in light of the covid-19 pandemic. There is also no mention of a plan to produce or procure MCMs. [5] There is, however, evidence that the country has received PPEs and diagnostic kits from International Aid Organisations like the UNICEF in light of the current Covid-19 pandemic. [6] There is also evidence that Bhutan received COVID-19 vaccines from neighbouring India. [7] There is no evidence that Bhutan has a national procurement protocol in place which can be utilized by the Ministry of Health or related agencies of Health for the acquisition of medical supplies and medical counter measures under the Bhutan Standards of Bureau website.[8]There is a procurement portal through the Ministry of Finance called "The Electronic Government Procurement (e-GP) System of the Royal Government of Bhutan."This portal "facilitates all Procuring Agencies to publish the Tenders, Corrigendum and Notification of Contract Award. This portal aims to "provide a single point access to the information on procurements made across various Procuring Agencies." The Tenders section of the portal includes, among

others, orders placed by the Ministry of Health, however there is no evidence of orders placed for PPE or medical countermeasures during a health emergency, including the ongoing pandemic Covid-19. [9]The portal has ‘Simplified Government Rules and Regulations For Works Under Covid-19 Situation’ but there is no mention of medical supplies or medical counter measures. [10]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 2020

[4] Royal Government of Bhutan. Drug Regulatory Authority. [<http://dra.gov.bt/>]. Accessed 21 August 2020

[5] Royal Government of Bhutan. Ministry of Health. “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) ” March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 21 August 2020.

[6] Royal Government of Bhutan. Ministry of Health. Announcements. ‘UNICEF Bhutan Handed Over PCR Machines and Test-Kits’. [<http://www.moh.gov.bt/unicef-bhutan-handed-over-pcr-machines-and-test-kits/>] Accessed 21 August 2020

[7] India Today. January 20, 2021. ‘ Bhutan, Maldives first among 6 recipients of Covid vaccine from India’. [<https://www.indiatoday.in/coronavirus-outbreak/story/bhutan-maldives-first-among-6-recipients-of-covid-vaccine-from-india-1760843-2021-01-20>] Accessed 01 March 2021

[8] Bhutan Standards Bureau. Downloads. [<http://www.bsb.gov.bt/home/pageMenu/33>] Accessed 21 August 2020

[9] Bhutan Ministry of Finance. "About Electronic Government Procurement (e-GP) System." [<https://www.egp.gov.bt/>]. Accessed 21 August 2020

[10] Bhutan Ministry of Finance. "About Electronic Government Procurement (e-GP) System." Simplified Government Rules and Regulations For Works Under Covid-19 Situation’ [<https://www.egp.gov.bt/ViewNews.jsp?newsType=I&nId=58>]. Accessed 21 August 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 laboratory supplies (e.g. reagents, media) for national use during a public health emergency nor is there evidence of a plan/mechanism to procure laboratory supplies (e.g. reagents, media) for national use during a public health emergency. According to the Joint External Evaluation for Bhutan, conducted in December 2017, recommendations for priority actions for Bhutan include developing and implementing "a plan and SOPs for sending and receiving medical countermeasures during a public health emergency" and for Bhutan to "establish formal agreements with relevant stakeholders (including private sector manufacturers/ distributors and national and international NGOs and CSOs) for the delivery of medical services and supplies during a public health emergency." [1] No evidence of progress on these fronts is found via either the Ministry of Health or Department of Disaster Management. [2,3] During the present Covid-19 pandemic there is no mention of manufacture and supply of laboratory supplies in the ‘National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) released in March 2020, in light of the covid-19 pandemic. [4] There is evidence that Bhutan has a national procurement

protocol in place under the Bhutan Standards Bureau, which can be utilized by the Ministries of Health and Agriculture for the acquisition of laboratory needs however there is no evidence that the protocol can also be used for acquisition of medical supplies during a public health emergency. Bhutan has documents that put forth the procedure for bidding and acquiring laboratory equipment. Their "Bidding Documents for Supply of Laboratory Equipments" put forth by their Bhutan Standards Bureau under the Ministry of Finance sets the template of how to bid for laboratory equipment. [5] Following this example, a "Bidding Document for Procurement of Chemicals/Lab Equipments/Consumables for the FY 2018-2019" put forth by Bhutan's National Seed Centre outlines an example of how to prepare bids for laboratory equipment in Bhutan. [6] There is also a procurement portal through the Ministry of Finance called "The Electronic Government Procurement (e-GP) System of the Royal Government of Bhutan." [7] This portal "facilitates all Procuring Agencies to publish the Tenders, Corrigendum and Notification of Contract Award. This portal aims to "provide a single point access to the information on procurements made across various Procuring Agencies." The Tenders section of the portal includes, among others, orders placed by the Ministry of Health but there is no mention of orders placed for laboratory supplies including the ongoing pandemic Covid-19. [7]The portal has 'Simplified Government Rules and Regulations For Works Under Covid-19 Situation' but there is no mention of laboratory supplies. [8]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 2020

[4] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 21 August 2020.

[5] Bhutan Standards Bureau. "Bidding Documents for Supply of Laboratory Equipments". May 2018.

[<http://www.bsb.gov.bt/assets/Tender/Bidding%20Document%20of%20Lab%20Equipments1.pdf>]. Accessed 18 August 2020.

[6] Royal Government of Bhutan National Seed Centre. "Bidding Document for Procurement of Chemicals/Lab Equipments/Consumables for the FY 2018-2019". 2018. [<http://www.moaf.gov.bt/wp-content/uploads/6.upload.chemicals.18-19-NSC.pdf>]. Accessed 18 August 2020.

[7] Bhutan Ministry of Finance. "About Electronic Government Procurement (e-GP) System." [<https://www.egp.gov.bt/>]. Accessed by 18 August 2020

[8] Bhutan Ministry of Finance. "About Electronic Government Procurement (e-GP) System." Simplified Government Rules and Regulations For Works Under Covid-19 Situation' [<https://www.egp.gov.bt/ViewNews.jsp?newsType=I&Id=58>]. Accessed 21 August 2020

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 evidence of Bhutan having a plan, program, or guidelines in place for dispensing medical countermeasures for national use during a public health emergency. According to the Joint External Evaluation for Bhutan, conducted in December 2017, recommendations for priority actions for Bhutan include developing and implementing "a plan and SOPs for sending and receiving medical countermeasures during a public health emergency" and for Bhutan to "establish formal agreements with relevant stakeholders (including private sector manufacturers/ distributors and national and international NGOs and CSOs) for the delivery of medical services and supplies during a public health emergency." [1] Furthermore, there is no evidence of Bhutan having any such plans or programs on their Ministry of Health or Department of Disaster Management website. [2,3] Their "Health Emergency and Disaster Contingency Plan" from 2016 does not put such guidelines in place either. [4] Further, there is no evidence of such guidelines in the "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" released in March 2020, in light of the Covid-19 pandemic [5]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 2020.

[4] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 21 August 2020.

[5] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 21 August 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 that Bhutan has a public plan in place to receive health personnel from other countries to respond to a public health emergency. According to the Joint External Evaluation for Bhutan, conducted in December 2017, a recommendation for priority action includes finalizing "the establishment of the Bhutan (inter)national Emergency Medical Team, in line with WHO EMT guidance, and ensure that plans are in place for sending and receiving international health personnel." [1] Furthermore, "though there was no plan in place, Bhutan did send a team of health personnel to Nepal during the 2015 earthquake." [1] According to Bhutan's "Health Emergency and Disaster Contingency Plan" if back up support is needed in a public health emergency in the form of human resources then the National RRT will be activated. [2] Lastly, there is no evidence of any such plans or agreements with other countries on Bhutan's Ministry of Health or Department of Disaster Management websites. [3,4] No further evidence is found in the 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)' released in March 2020, in light of the Covid-19 pandemic [5]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020

[2] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[4] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 2020.

[5] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 21 August 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: 2

2020

World Policy Analysis Center

4.4.1b

Access to skilled birth attendants (% of population)

Input number

Current Year Score: 89

2016

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

4.4.1c

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

Input number

Current Year Score: 38.65

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 that Bhutan has issued legislation, a policy or a public statement committing to provide prioritized health care services to healthcare workers who become sick as a result of responding to a public health emergency. The Joint External Evaluation for Bhutan, conducted in December 2017, recommends that "national policy, guidelines and SOPs are required to ensure provision of rabies post-exposure prophylaxis treatment to laboratory workers in all facilities." [1] Evidence of prioritized healthcare workers who become sick as a result of responding to a public health emergency is not found via Bhutan's disaster management legislations such as the National Disaster Risk Management Framework (undated), Disaster Management Rules and Regulations 2014, Disaster Risk Management Strategy, Disaster Management Act of Bhutan (2013), the country's public health emergency response plan, 'Health Emergency and Disaster Contingency Plan, 2016', as well as the Ministry of Health and Department of Disaster Management websites. [2,3,4,5,6,7,8]. No guidelines on the matter have been mentioned in the 'National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)' released in March 2020, in light of the covid-19 pandemic[9]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] Royal Government of Bhutan Department of Local Governance. (Undated) "National Disaster Risk Management Framework". [http://www.ddm.gov.bt/download/DRMF_Final.pdf]. Accessed 21 August 2020.

[3] Royal Government of Bhutan Department of Disaster Management. "Disaster Management Rules and Regulations 2014". 2014. [http://www.ddm.gov.bt/download/dm_rules_2014.pdf]. Accessed 21 August 2020.

[4] Royal Government of Bhutan Department of Disaster Management. "Disaster Risk Management Strategy". [[http://www.ddm.gov.bt/download/Final_NDRMS\(NDMA\).pdf](http://www.ddm.gov.bt/download/Final_NDRMS(NDMA).pdf)]. Accessed 21 August 2020.

[5] Royal Government of Bhutan Department of Disaster Management. "Disaster Management Act of Bhutan 2013". 2013. [http://www.ddm.gov.bt/download/dm_act_2013.pdf]. Accessed 21 August 2020

[6] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 21 August 2020.

[7] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[8] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed August 21 2020

[9] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 21 August 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 not enough evidence that Bhutan has a system in place for public health officials and healthcare workers to communicate during a public health emergency. According to the Joint External Evaluation for Bhutan, conducted in December 2017, “there is no communications plan in place to identify communications infrastructure and redundancies for use in emergencies.” [1] Hence, one of the recommendations is to “develop and implement an emergency communications plan.” [1] There is no evidence of such a communications plan in any of Bhutan’s disaster management legislations and neither their Ministry of Health nor their Department of Disaster Management website. [2,3,4,5,6,7,8]. In light of the present pandemic, ‘National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)’ was released in March 2020. This plan has provided a coordination and command system wherein the Health Emergency Management Committee activates (HEMC), coordinates and provides technical assistance to the Rapid Response Team and the Emergency Medical Team in the affected areas. At the national level various committees have been set up which coordinate with the teams at the district level. The district level teams comprise of the healthworkers and public health officials who coordinate with their team/committee leaders and update the national committees which inturn update the HEMC. However a specific system/guideline on how the communication takes place seems to be lacking.[9]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] Royal Government of Bhutan Department of Local Governance. “National Disaster Risk Management Framework”. [http://www.ddm.gov.bt/download/DRMF_Final.pdf]. Accessed 21 August 2020.

[3] Royal Government of Bhutan Department of Disaster Management. “Disaster Management Rules and Regulations 2014”. 2014. [http://www.ddm.gov.bt/download/dm_rules_2014.pdf]. Accessed 21 August 2020

[4] Royal Government of Bhutan Department of Disaster Management. “Disaster Risk Management Strategy”. [[http://www.ddm.gov.bt/download/Final_NDRMS\(NDMA\).pdf](http://www.ddm.gov.bt/download/Final_NDRMS(NDMA).pdf)]. Accessed 21 August 2020.

[5] Royal Government of Bhutan Department of Disaster Management. “Disaster Management Act of Bhutan 2013”. 2013. [http://www.ddm.gov.bt/download/dm_act_2013.pdf]. Accessed 21 August 2020.

[6] Royal Government of Bhutan Emergency Medical Services Division. “Health Emergency and Disaster Contingency Plan”. 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 21 August 2020.

[7] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020

[8] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 2020

[9] Royal Government of Bhutan. Ministry of Health. “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)” March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 21 August 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 not enough evidence that Bhutan has 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. According to the Joint External Evaluation for Bhutan, conducted in December 2017, “there is no communications plan in place to identify communications infrastructure and redundancies for use in emergencies.” [1] Hence, one of the recommendations is to “develop and implement an emergency communications plan.” [1] There is no evidence of such a communications plan in any of Bhutan’s disaster management legislations and neither their Ministry of Health nor their Department of Disaster Management website. [2,3,4,5,6,7,8] In light of the present pandemic, ‘National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)’ was released in March 2020. This plan has provided a coordination and command system wherein the Health Emergency Management Committee activates (HEMC), coordinates and provides technical assistance to the Rapid Response Team and the Emergency Medical Team in the affected areas. At the national level various committees have been set up which coordinate with the teams at the district level. The district level teams comprise of the healthworkers and public health officials who coordinate with their team/committee leaders and update the national committees which inturn update the HEMC. However a specific system/guideline on how the communication takes place seems to be lacking.[9]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] Royal Government of Bhutan Department of Local Governance. “National Disaster Risk Management Framework”. [http://www.ddm.gov.bt/download/DRMF_Final.pdf]. Accessed 21 August 2020.

[3] Royal Government of Bhutan Department of Disaster Management. “Disaster Management Rules and Regulations 2014”. 2014. [http://www.ddm.gov.bt/download/dm_rules_2014.pdf]. Accessed 21 August 2020.

[4] Royal Government of Bhutan Department of Disaster Management. “Disaster Risk Management Strategy”. [[http://www.ddm.gov.bt/download/Final_NDRMS\(NDMA\).pdf](http://www.ddm.gov.bt/download/Final_NDRMS(NDMA).pdf)]. Accessed 21 August 2020.

[5] Royal Government of Bhutan Department of Disaster Management. “Disaster Management Act of Bhutan 2013”. 2013. [http://www.ddm.gov.bt/download/dm_act_2013.pdf]. Accessed 21 August 2020.

[6] Royal Government of Bhutan Emergency Medical Services Division. “Health Emergency and Disaster Contingency Plan”. 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 21 August 2020.

[7] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[8] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 2020.

[9] Royal Government of Bhutan. Ministry of Health. “National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)” March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 21 August 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: 1

There is evidence that Bhutan's national public health system monitors for and tracks the number of health care associated infections that take place in healthcare facilities. According to the Joint External Evaluation for Bhutan, conducted in December 2017, "annual surveillance of healthcare associated infections (HCAI) has been initiated in nine health facilities." [1] In October 2018, "The Jigme Dorji Wangchuck National Referral Hospital (JDWNRH) said it has taken several measures to control the recent outbreak of Healthcare Associated Infection (HCAI) at the Neonatal Intensive Care Unit" following a string of infant deaths in the care of hospitals. [2] Therefore, the JEE also recommends that "existing HCAI programmes should be implemented at sub-national level" and that "HCAI programmes should be expanded in all health facilities, and supported by monitoring and evaluation." [1] No mention of how many such facilities are available in the country is made either on the website of the Ministry of Health or in their "National Action Plan on Antimicrobial Resistance [2018-2022]." [3,4]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] KUENSEL. "JDWNRH takes infection control measures". October 2018. [<http://www.kuenselonline.com/jdwnrh-takes-infection-control-measures/>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020

[4] Royal Government of Bhutan Ministry of Health. May 2017. "National Action Plan on Antimicrobial Resistance [2018-2022]".

[http://apps.who.int/datacol/answer_upload.asp?survey_id=666&view_id=722&question_id=13163&answer_id=19958&respondent_id=250157]. Accessed 21 August 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

Bhutan does have a national requirement for ethical review before beginning a clinical trial. The Research Ethics Board of Health (REBH) "has been formed in Ministry of Health to protect human subjects in any research or studies." [1] Thereby any health related research or study conducted in Bhutan "involving human subjects must obtain Ethical Approval from REBH." [1] The board also states that any health related study done without their approval "will be nullified or will not be possible to publish or present anywhere or REBH may take action in the interest of the human subjects." [1]

[1] Royal Government of Bhutan Ministry of Health. "Research Ethics Board of Health (REBH)". [http://www.moh.gov.bt/health/357-2/]. Accessed 21 August 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 not enough evidence that Bhutan an expedited process for approving clinical trials for unregistered medical countermeasures to treat ongoing pandemics. According to the Research Ethics Board of Health (REBH) "the median duration for approval of protocols for a research/study from the date of receiving application was 48 days. The expedited review process takes two weeks." [1] It is also not clear whether this expedited process can also be used for unregistered medical countermeasures to treat ongoing pandemics. No evidence of this exists on the REBH webpage or the broader Ministry of Health website. [1,2]

[1] Royal Government of Bhutan. Ministry of Health. "Research Ethics Board of Health (REBH)". [http://www.moh.gov.bt/health/357-2/]. Accessed 21 August 2020

[2] Royal Government of Bhutan. Ministry of Health. [http://www.moh.gov.bt/]. Accessed 21 August 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: 1

There is evidence that Bhutan has a government agency responsible for approving new medical countermeasures for humans. The Drug Regulatory Authority exists in Bhutan and is responsible for "authorizing for manufacture, import, export, sale, distribution and storage of the medicinal products including blood and blood products." [1] While an explicit mandate to approve medical countermeasures is not stated on the website, a list of products registered with the agency includes medicines, vaccines, devices and blood products. [1]

[1] Royal Government of Bhutan Drug Regulatory Authority. "Core Mandates". [http://dra.gov.bt/?page_id=815]. Accessed 21 August 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 that Bhutan has an expedited process for approving medical countermeasures for human use during public health emergencies. According to a regulatory notification made by their Drug Regulatory Authority in May of 2017: "In the efforts towards encouraging registration of medicines to promote availability of medicines in the country, the Authority is pleased to announce the following expedited route and conditions for registration of medicinal products effective from 15 May 2017." [1] However, it is not clear if this process is for approving medical countermeasures for human use during public health emergencies. There is no evidence of this on the broader DRA website or the Ministry of Health website. [2,3] The Drug Regulatory Authority has a section on conditions and requirements for product registration through multinational companies and expedited registration process; however, it seems focused on product availability from reputable multinational companies with a record of successful products, rather than based on any patient or public health need. For example, some of the requirements include, minimum of 5 products with valid registration status registered with DRA for minimum of 2 years at the time of application, no past record of product recall or withdrawal from Bhutan (Voluntarily recalls by Manufacturers do not apply), Not more than 2 post registration change applied for a single product in one year; and for parenteral products, at least ONE parenteral product to be registered amongst the 5 valid products". [1]

[1] Royal Government of Bhutan Drug Regulatory Authority. "Conditions and requirement for product registration through multinational companies and Expedited Registration Process". [<http://dra.gov.bt/?p=835>]. Accessed 21 August 2020.

[2] Royal Government of Bhutan. Drug Regulatory Authority. [<http://dra.gov.bt/>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 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: 0

There is no evidence that Bhutan has integrated pandemics into their national risk reduction strategy or has a standalone national disaster risk reduction strategy for pandemics. None of the country's disaster related legislation such as "NEWARS National Notifiable Disease Surveillance System and Epidemiology Unit", "Health Emergency and Disaster Contingency Plan", "National Disaster Risk Management Framework", "Disaster Management Rules and Regulations 2014", "Disaster Risk Management Strategy" or "Disaster Management Act of Bhutan 2013" mention risk reduction for pandemics. [1,2,3,4,5,6] The "National Influenza Pandemic Preparedness Plan" from August 2011 does not address risk reduction for pandemics. [7] The "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19)" released in March 2020 also does not address risk reduction for the ongoing Covid-19 pandemic.[8] Finally, no evidence is found via the websites of the Ministry of Health or Department of Disaster Management. [9,10]

[1] Royal Government of Bhutan Public Health Laboratory. "NEWARS National Notifiable Disease Surveillance System and Epidemiology Unit". 2014. [<http://www.rcdc.gov.bt/web/wp-content/uploads/2015/07/NEWARS-Guideline.pdf>]. Accessed 21 August 2020.

[2] Royal Government of Bhutan Emergency Medical Services Division. "Health Emergency and Disaster Contingency Plan". 2016. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/Health-Emergency-Disaster-Contingency-Plan-1st-Edition-Final.pdf>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan Department of Local Governance. "National Disaster Risk Management Framework". [http://www.ddm.gov.bt/download/DRMF_Final.pdf]. Accessed 21 August 2020.

[4] Royal Government of Bhutan Department of Disaster Management. "Disaster Management Rules and Regulations 2014". 2014. [http://www.ddm.gov.bt/download/dm_rules_2014.pdf]. Accessed 21 August 2020.

[5] Royal Government of Bhutan Department of Disaster Management. "Disaster Risk Management Strategy". [[http://www.ddm.gov.bt/download/Final_NDRMS\(NDMA\).pdf](http://www.ddm.gov.bt/download/Final_NDRMS(NDMA).pdf)]. Accessed 21 August 2020.

[6] Royal Government of Bhutan Department of Disaster Management. "Disaster Management Act of Bhutan 2013". 2013. [http://www.ddm.gov.bt/download/dm_act_2013.pdf]. Accessed 21 August 2020.

[7] Royal Government of Bhutan. "National Influenza Pandemic Preparedness Plan". August 2011. [https://info.undp.org/docs/pdc/Documents/BTN/00060314_FINAL%20NIPPP.pdf]. Accessed 21 August 2020.

[8] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>] Accessed 21 August 2020.

[9] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[10] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 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: 0

There is not enough evidence that Bhutan has cross-border agreements, protocols or MOUs with neighbouring countries, or as part of a regional group, with regards to public health emergencies. According to the Joint External Evaluation for Bhutan, conducted in December 2017, priority recommendations for Bhutan include setting up "mechanisms to strengthen cross-border collaboration with neighbouring countries regarding public health hazards, for example, through memoranda of understanding (MOUs) on information sharing, and through developing official linkages such as formal intercountry policies" and that "cross-border collaboration for control of diseases of public health significance should be strengthened." [1] Furthermore, "Bhutan lacks a legal framework for early warning, reporting, response, and surveillance during public health emergencies, including for chemical and radiological events. There is also a need to strengthen systematic information sharing between relevant agencies and with the WHO IHR Focal Point, and to strengthen cross border collaboration for control of communicable diseases." [1] Lastly, "there is a lack of timely exchange of information across borders, with no regular meetings with national counterparts and no IHR (2005) contact points in neighbouring countries." [1] And there is no evidence of any such agreements on their Ministry of Health or Department of Disaster Management website. [2,3]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 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 not enough evidence that Bhutan has cross-border agreements, protocols or MOUs with neighbouring countries, or as part of a regional group, with regards to animal health emergencies. According to the Joint External Evaluation for Bhutan, conducted in December 2017, priority recommendations for Bhutan include setting up "mechanisms to strengthen cross-border collaboration with neighbouring countries regarding public health hazards—for example, through memoranda of understanding (MOUs) on information sharing, and through developing official linkages such as formal intercountry policies" and that "cross-border collaboration for control of diseases of public health significance should be strengthened." [1] Furthermore, it notes that "there is also a need to strengthen systematic information sharing between relevant agencies and with the WHO IHR Focal Point, and to strengthen cross border collaboration for control of communicable diseases." [1]

There is no evidence of agreements for coordination during health emergencies is found via the websites of the Ministry of Health, Department of Disaster Management or the World Organisation for Animal Health's Bhutan website. [2,3,4]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 21 August 2020.

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 2020.

[4] OIE World Organisation for Animal Health. "Bhutan." [<http://www.rr-asia.oie.int/about-us/members/list-view/full-details/oie-member/bhutan/>]. Accessed 21 August 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: 1

2021

Biological Weapons Convention

5.3.1d

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

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

Current Year Score: 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: 0

2021

OIE PVS assessments

5.4.2b

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

Yes = 1, No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.5 FINANCING

5.5.1 National financing for epidemic preparedness

5.5.1a

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

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that Bhutan has allocated national funds to improve capacity to address epidemic threats within the past three years. No press releases or policy documents outlining this can be found on their Ministry of Health, Ministry of

Agriculture or Ministry of Foreign Affairs websites as well as the World Health Organization resources.[1,2,3,4,5].

[1] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020

[2] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 11 September 2020

[3] Royal Government of Bhutan. Ministry of Foreign Affairs. [<http://www.mfa.gov.bt/>]. Accessed 21 August 2020

[4] World Health Organization. "Bhutan." [<https://www.who.int/countries/btn/en/>]. Accessed 21 August 2020.

[5] World Health Organization Regional Office for South-East Asia. [<http://www.searo.who.int/en/>]. Accessed 21 August 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 evidence that there exists a publicly identified special emergency public financing mechanism and funds which Bhutan can access in the face of a public health emergency. Bhutan is eligible for borrowing on small economy terms from the World Bank pandemic financing facility under the International Development Association (IDA) funding. [1, 2] There is no other evidence of any other emergency funding mechanisms on their Ministry of Health or Department of Disaster Management websites. [3,4]

[1] World Bank Group International Development Association. "Borrowing Countries". 2020.

(<http://ida.worldbank.org/about/borrowing-countries>). Accessed 21 August 2020.

[2] World Bank. 'Pandemic Emergency Financing Facility (PEF)'. December 2017.

[<http://pubdocs.worldbank.org/en/119961516647620597/PEF-Operational-Brief-Dec-2017.pdf>] Accessed 21 August 2020

[3] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[4] Royal Government of Bhutan. Department of Disaster Management. [<http://www.ddm.gov.bt/>]. Accessed 21 August 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 no evidence that senior leaders in Bhutan have made a public commitment either to support other countries to improve capacity to address epidemic threats by providing financing or support in the past three years or to improve its own domestic capacity to address epidemic threats by expanding financing or requesting support to improve capacity in the past three years. No press releases or policy documents outlining this can be found on their Ministry of Health or Ministry of Foreign Affairs websites. [1,2] Although Bhutan has received and requested funding in the past 3 years according to the Global Health Security Funding Tracking Dashboard, none of this funding has been specifically for improving capacity to address epidemic threats nor been mentioned by senior leaders. [3]

[1] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 21 August 2020.

[2] Royal Government of Bhutan. Ministry of Foreign Affairs. [<http://www.mfa.gov.bt/>]. Accessed 21 August 2020.

[3] Global Health Security Funding Tracking Dashboard. "Bhutan." 2014-2020.

[<https://tracking.ghscosting.org/#analysis/BT/r>]. Accessed 21 August 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 no evidence that Bhutan has in the past three years provided other countries with financing or technical support to improve capacity to address epidemic threats but there is evidence that Bhutan has requested and received financial support from donors in the past three years to improve the country's domestic capacity to address epidemic threats. Bhutan has received funding in the past 3 years according to the Global Health Security Funding Tracking Dashboard, for capacity building, this has been used for various purposes like funds received from International Development Bank (IDA) for Regional disease surveillance systems enhancement between 2014 and 2020, Immunization e.g Polio eradication project, funded by Japan and funds received for the cause between 2014 and 2020, Zoonotic diseases e.g Preventing transmission of malaria and other vector borne diseases, funds received for the same from Bill and Melinda Gates Foundation between 2014 and 2020, for Emergency response operations and Preparedness from IDA between 2014 and 2020 among others. [1] There is no evidence that Bhutan has provided other countries with financing or technical support to improve capacity to address epidemic threats in the past three years. No press releases or policy documents this can be found on Bhutan's Ministry of Health or Ministry of Foreign Affairs websites as well as World Health Organization resources. [2, 3, 4, 5]

[1] Global Health Security Funding Tracking Dashboard. "Bhutan." [https://tracking.ghscosting.org/details/894/recipient]. Accessed 02 March 2021

[2] Royal Government of Bhutan. Ministry of Health. [http://www.moh.gov.bt/]. Accessed 21 August 2020.

[3] Royal Government of Bhutan. Ministry of Foreign Affairs. [http://www.mfa.gov.bt/]. Accessed 21 August 2020.

[4] World Health Organization. "Bhutan." [https://www.who.int/countries/btn/en/]. Accessed 21 August 2020

[5] World Health Organization Regional Office for South-East Asia. [http://www.searo.who.int/en/]. Accessed 21 August 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 no evidence that Bhutan has a publicly available plan or policy for sharing genetic data, epidemiological data, clinical specimens, or isolated specimens (biological materials) with international organizations or other countries that goes beyond influenza. According to the Joint External Evaluation for Bhutan, conducted in December 2017, while "MOUs are in place for international referrals of pathogen detection not performed within Bhutan." [1] However, no such specific memoranda can be found on their Ministry of Health, Ministry of Agriculture and Forests, Royal Centre for Disease Control websites or via media reports. [2,3,4]

[1] World Health Organization. Joint External Evaluation of IHR Core Capacities of the Republic of the Kingdom of Bhutan Mission report 11-15 December 2017. (<http://apps.who.int/iris/bitstream/handle/10665/260525/WHO-WHE-CPI-REP-2018.7-eng.pdf?sequence=1>). Accessed 23 August 2020

[2] Royal Government of Bhutan. Ministry of Health. [<http://www.moh.gov.bt/>]. Accessed 23 August 2020

[3] Royal Government of Bhutan. Royal Centre for Disease Control. [<http://www.rcdc.gov.bt/WEB/>]. Accessed 23 August 2020.

[4] Royal Government of Bhutan. Ministry of Agriculture and Forests. [<http://www.moaf.gov.bt/>]. Accessed 23 August 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 Bhutan has not shared samples in accordance with the PIP framework in the past two years. Neither the 'Pandemic influenza preparedness in the World Health Organization (WHO) South-East Asia Region: a model for planning regional preparedness for other priority high-threat' a report journal released by the WHO in 2020 nor 'Pandemic Influenza Preparedness framework: annual progress report: 1 January - 31 December 2018' released by the WHO in 2019 contain any evidence of non compliance on Bhutan's part. [1,2] No evidence of any non-adherence is present within the media or other WHO sources at large. [3]

[1] World Health Organization. WHO South-East Asia Journal of Public Health | 'Pandemic influenza preparedness in the WHO South-East Asia Region: a model for planning regional preparedness for other priority high-threat pathogens'. April 2020. (http://www.who-seajph.org/temp/WHOSouth-EastAsiaJPublicHealth9143-6324291_014524.pdf). Accessed 23 August 2020.

[2] World Health Organization. "Pandemic Influenza Preparedness Framework Annual Progress Report. 1 January -31 December,2018. 2019. (<https://apps.who.int/iris/bitstream/handle/10665/311901/WHO-WHE-IHM-PIP-2019.1-eng.pdf?sequence=1&isAllowed=y>). Accessed 23 August 2020.

[3] World Health Organization. Official website. [<https://www.who.int/Bhutan>] Accessed 23 August 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 Bhutan has not shared pandemic pathogen samples during an outbreak in the past two years. No evidence is found via World Health Organization (WHO) resources as well as media reports. [1,2,3] There is no evidence that in light of the ongoing Covid-19 pandemic, Bhutan has not shared pathogen samples [3, 4].

[1] World Health Organization. WHO South-East Asia Journal of Public Health | 'Pandemic influenza preparedness in the WHO South-East Asia Region: a model for planning regional preparedness for other priority high-threat pathogens'. April 2020. (http://www.who-seajph.org/temp/WHOSouth-EastAsiaJPublicHealth9143-6324291_014524.pdf). Accessed 23 August 2020.

[2] World Health Organization. "Pandemic Influenza Preparedness Framework Annual Progress Report. 1 January -31 December,2018. 2019. [<https://apps.who.int/iris/bitstream/handle/10665/311901/WHO-WHE-IHM-PIP-2019.1-eng.pdf?sequence=1&isAllowed=y>]. Accessed 23 August 2020.

[3] World Health Organization. Official website. [<https://www.who.int/Bhutan>] Accessed 23 August 2020.

[4] Royal Government of Bhutan. Ministry of Health. "National Preparedness and Response Plan for Outbreak of Novel Coronavirus (COVID-19) " March 2020. [<http://www.moh.gov.bt/wp-content/uploads/moh-files/2014/11/National-Preparedness-and-Response-Plan-4th-ed.pdf>]. Accessed 23 August 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: 2

2020

Economist Intelligence

6.1.1c

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

Input number

Current Year Score: 2

2020

Economist Intelligence

6.1.1d

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

Input number

Current Year Score: 2

2020

Economist Intelligence

6.1.1e

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

Input number

Current Year Score: 68

2020

Transparency International

6.1.1f

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

Input number

Current Year Score: 2

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: 3

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: 3

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: 4

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: 0

2020

UN Office of Drugs and Crime (UNODC)

6.1.4c

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

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

Current Year Score: 3

2021

Economist Intelligence

6.1.5 Armed conflict

6.1.5a

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

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

Current Year Score: 4

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: 1

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: 2

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: 66.56

2017

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

6.2.2 Gender equality

6.2.2a

United Nations Development Programme (UNDP) Gender Inequality Index score

Input number

Current Year Score: 0.56

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: 0.2

2017

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

According to the World Bank, the share of employment in the informal sector stands at 80% in a report published on Bhutan's labor Market in 2016. 'In Bhutan informal labor is closely linked to lack of education and poverty', overall figures show that the share of employment in the informal sector by wealth and by education is 80%. [1]

[1] World Bank Group. 'Bhutan's Labor Market toward Gainful Quality Employment for All'. 2016. [<http://documents1.worldbank.org/curated/en/557661481527721306/pdf/110896-WP-BhutanLaborMarket-PUBLIC.pdf>] Accessed 23 August 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: 2

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: 0.37

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: 1

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: 4

2021

Economist Intelligence

6.4 ENVIRONMENTAL RISKS

6.4.1 Urbanization

6.4.1a

Urban population (% of total population)

Input number

Current Year Score: 41.61

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: 0.89

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: 71.46

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: 545.6

2019

WHO

6.5.1c

Population ages 65 and above (% of total population)

Input number

Current Year Score: 6.09

2019

World Bank

6.5.1d

Prevalence of current tobacco use (% of adults)

Input number

Current Year Score: 28.18

2018

World Bank

6.5.1e

Prevalence of obesity among adults

Input number

Current Year Score: 6.4

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: 97.23

2017

UNICEF; Economist Impact

6.5.2b

Percentage of homes with access to at least basic sanitation facilities

Input number

Current Year Score: 69.25

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: 256.23

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