

Bangladesh

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

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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

There is a national Antimicrobial Resistance (AMR) plan approved by the Bangladesh Ministry of Health and Family Welfare (MoHFW) in 2017, however, there is insufficient evidence that this plan covers surveillance, detection and reporting of priority AMR pathogens [1]. In concordance with global and World Health Organization (WHO) activities, the Ministry of Health and Family Welfare (MoHFW) in Bangladesh has taken initiative to conduct programs for the containment of AMR in Bangladesh [1]. The national action plan includes activities like establishing an Antimicrobial Resistance (AMR)-surveillance system, selecting regional microbiology laboratories for Antimicrobial Resistance (AMR) - surveillance, web-based laboratory surveillance and laboratory networking for Antimicrobial Resistance (AMR), monitoring uses of Antimicrobial agents (AMs), promoting basic, experimental and operational research in the area of Antimicrobial Resistance (AMR) [1]. Also, in concordance with World Health Organization (WHO), the Ministry of Health and Family Welfare (MoHFW) in Bangladesh has taken initiative to conduct program for containment of antimicrobial resistance in Bangladesh [1]. The Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016, had recommended the development of a national action plan for detection and surveillance as a priority action [2]. Also, there is no further evidence regarding this on the websites of Ministry of Health & Family Welfare (MoHFW) and Ministry of Agriculture [3, 4].

[1] Ministry of Health & Family Welfare (MoHFW). 2017. "National Action Plan: Antimicrobial Resistance Containment in Bangladesh 2017-2022". [<https://www.flemingfund.org/wp-content/uploads/d3379eafad36f597500cb07c21771ae3.pdf>]. Accessed 04 August 2020.

[2] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[3] Ministry of Health & Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 04 August 2020.

[4] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 04 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 Bangladesh can test for at least seven pathogens among 7+1 priority AMR pathogens. According to Antimicrobial Resistance Global Report on Surveillance (2014) by World Health Organization (WHO), Bangladesh has reports

of testing *E. coli*, *K. pneumoniae*, *S. aureus*, *S. pneumoniae*, *Salmonella* spp. and *Shigella* spp. on drug-resistant forms of these pathogens [1]. National Institute of Diseases of the Chest and Hospital (NIDCH) has established a National Tuberculosis Reference Laboratory (NTRL) for diagnosing multidrug resistant tuberculosis [2, 3]. International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) administers the tests for *E. coli*, *K. pneumoniae*, *S. aureus*, *S. pneumoniae*, *Salmonella* spp. and *Shigella* spp. [4]. There is no particular laboratory system in Bangladesh, with designated sentinel sites, which tests for priority AMR pathogens but National Institute of Diseases of the Chest and Hospital and International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) performs the tests for the above mentioned AMR pathogens [2, 3, 4]. However, according to the National Action Plan on Antimicrobial Resistance (AMR) Containment in Bangladesh (2017-2022) by the Ministry of Health and Family Welfare (MoHFW), quality laboratory testing will be ensured and, in some cases, establishment of national reference laboratory and regional Microbiology laboratories are needed [5].

- [1] World Health Organization (WHO). 2014. "Antimicrobial Resistance Global Report on Surveillance". [http://apps.who.int/iris/bitstream/handle/10665/112642/9789241564748_eng.pdf;jsessionid=0218AB3E7B6BD60616CF6400E48A2742?sequence=1]. Accessed 06 August 2020.
- [2] National Tuberculosis Control Program, Directorate General of Health Services. October 2017. "Tuberculosis Control in Bangladesh Annual Report 2017". [http://www.ntp.gov.bd/ntp_dashboard/magazines_image/NTP%20Annual%20Report-%202017.pdf]. Accessed 06 August 2020.
- [3] World Health Organization (WHO). 2013. "First Bangladesh National Tuberculosis Drug Resistance Survey 2010-2011". [<https://apps.who.int/iris/handle/10665/205075>]. Accessed 06 August 2020.
- [4] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 06 August 2020.
- [5] Ministry of Health & Family Welfare. 2017. "National Action Plan: Antimicrobial Resistance Containment in Bangladesh 2017-2022". [<https://www.flemingfund.org/wp-content/uploads/d3379eafad36f597500cb07c21771ae3.pdf>]. Accessed 04 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

There is no evidence of a government's environmental agency which conducts environmental detection or surveillance activities (e.g. in soil, waterways, etc.) for antimicrobial residues or AMR organisms in Bangladesh. According to the National Action Plan: Antimicrobial Resistance Containment in Bangladesh 2017-2022 published in 2017, Bangladesh needs to take steps to conduct the detection or surveillance activities for antimicrobial residues or AMR organisms as well as ensure rational use of antimicrobial agents in environment [1]. The Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016, included that Bangladesh needs improvement in response, development, and implementation of a funded, joint contingency plan that allows for real-time data sharing between health, animal, environment, and relevant sectors [2]. There is no information about environmental monitoring of AMR residues or organisms either in the Ministry of Health and Family Welfare (MoHFW) or Ministry of Environment, Forest and Climate Change websites [3, 4].

- [1] Ministry of Health & Family Welfare. 2017. "National Action Plan: Antimicrobial Resistance Containment in Bangladesh 2017-2022". [<https://www.flemingfund.org/wp-content/uploads/d3379eafad36f597500cb07c21771ae3.pdf>]. Accessed 04 August 2020.

- [2] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of

Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 06 August 2020.

[4] Ministry of Environment, Forest and Climate Change. [<https://moef.gov.bd/>]. Accessed 06 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: 0

There is no publicly available evidence of national legislation or regulation in place requiring prescriptions for antibiotic use in humans in Bangladesh. A reporter by the name of Moudud Ahmmed Sujan published a report on The Daily Star on 13 January 2020 where he mentioned that sale of antibiotics without prescription from registered physicians is still high in the country [1]. A recent study released on 27 November, 2019 shows antibiotics consumption in Bangladesh has increased by 30.81 percent in the last two years [1]. In another report by Dhaka Tribune published on 29 April, 2018 by Niloy Alam, wrote that a group of doctors working with Antimicrobial Resistance (AMR) in Bangladesh have called on physicians to ensure rational use of antibiotics for humans and animals alike [2]. Although some medical college hospitals have antibiotic guidelines, but it is unclear to what extent these are updated and followed [3]. Some of the major issues faced by Bangladesh are lack of legislation for regulating prescription, sale of antimicrobial agents and difficulty in development and implementation of institutional and national antibiotic policy [4]. One of the activities according to the National Action Plan: Antimicrobial Resistance (AMR) Containment in Bangladesh 2017-2022 by the Ministry of Health and Family Welfare (MoHFW) published in 2017, is to develop antibiotic policy but there is no information about when it is going to happen [5]. Although Standard treatment guidelines and antibiotic policy is under development but there is no information about when it is going to be publicly available [6]. According to a Report of Regional Workshop on Antimicrobial Resistance (2012), no national antibiotic policy had been laid down [7]. There is no mention regarding this matter in the Ministry of Health and Family Welfare (MoHFW) website [8].

[1] Moudud Ahmmed Sujan. 13 January 2020. "ANTIBIOTICS USE, SALE: Who needs PRESCRIPTION?" The Daily Star. [<https://www.thedailystar.net/frontpage/antibiotics-use-and-sale-in-bangladesh-without-prescription-continues-1853359>]. Accessed 06 August 2020.

[2] Niloy Alam. 29 April 2018. "AMR Response Alliance calls for rational use of antibiotics". Dhaka Tribune. [<https://www.dhakatribune.com/feature/health-wellness/2018/04/29/amr-response-alliance-calls-rational-use-antibiotics>]. Accessed 06 August 2020.

[3] World Health Organization (WHO). 13 - 25 September 2014. "Medicines In Health Care Delivery Bangladesh". [http://origin.searo.who.int/entity/medicines/bangladesh_situational_analysis_2015.pdf]. Accessed 06 August 2020.

[4] World Health Organization (WHO). 10-13 November 2014. "Antimicrobial Resistance". [<https://apps.who.int/iris/handle/10665/177995>]. Accessed 06 August 2020.

[5] Ministry of Health & Family Welfare. 2017. "National Action Plan: Antimicrobial Resistance Containment in Bangladesh 2017-2022". [<https://www.flemingfund.org/wp-content/uploads/d3379eafad36f597500cb07c21771ae3.pdf>]. Accessed 04 August 2020.

[6] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020

[7] World Health Organization (WHO). 6-10 August 2012. "Report of Regional Workshop on Antimicrobial Resistance".

[<https://apps.who.int/iris/handle/10665/206224>]. Accessed 06 August 2020.

[8] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 06 August 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

In Bangladesh there is no publicly available evidence of national legislation or regulation in place requiring prescriptions for antibiotic use in animals. According to a report on Dhaka Tribune published on 12 July 2019 by Kamrul Hasan, wrote irrational use of antibiotics in animal feeds, especially in poultry farm has increased the spreading of Antimicrobial Resistance (AMR) [1]. International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) is one of the leading global health research institutes based in Dhaka, Bangladesh. It is committed to solving public health problems facing low- and middle-income countries through innovative scientific research including laboratory based, clinical, epidemiological and health systems research. According to a blog by International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) published on 29 April, 2018, the antibiotic providers are same for household livestock and poultry as well as humans , in rural areas of Bangladesh [2]. International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) is going to launch a new study to identify pathways to promote behavior change among practitioners, livestock owners, patients who use antibiotics and the household use of antibiotics, including the use for animals as well as people will be examined through a one-health approach but the launching time of this study is not mentioned [2]. A group of doctors working with Antimicrobial Resistance (AMR) in Bangladesh have called on physicians to ensure rational use of antibiotics for humans and animals alike [3]. There are limited institutional guidelines for antibiotic use in the country [4]. According to the Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016 and the National Action Plan: Antimicrobial Resistance (AMR) Containment in Bangladesh 2017-2022 approved by the Ministry of Health and Family Welfare (MoHFW) published in 2017, an antibiotic policy in general is under development but there is no mention of animals particularly or when this policy is going to be publicly available [5, 6]. There is no mention of this in the Ministry of Health and Family Welfare (MoHFW) and Ministry of Agriculture websites [7, 8].

[1] Kamrul Hasan. 12 July 2019. "Antibiotic resistance crisis deepens in Bangladesh". Dhaka Tribune.

[<https://www.dhakatribune.com/bangladesh/2019/07/12/antibiotic-resistance-crisis-deepens-in-bangladesh>]. Accessed 10 August 2020.

[2] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). 19 November 2016. "icddr,b's recent work on antimicrobial resistance". [<http://blog.icddr.org/2016/11/19/icddr-b-antibiotic-resistance-week-2016/>]. Accessed 10 August 2020.

[3] Niloy Alam. 29 April 2018. "AMR Response Alliance calls for rational use of antibiotics". Dhaka Tribune.

[<https://www.dhakatribune.com/feature/health-wellness/2018/04/29/amr-response-alliance-calls-rational-use-antibiotics>]. Accessed 06 August 2020.

[4] World Health Organization (WHO). 10-13 November 2014. "Antimicrobial Resistance".

[<https://apps.who.int/iris/handle/10665/177995>]. Accessed 06 August 2020.

[5] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020

[6] Ministry of Health & Family Welfare. 2017. "National Action Plan: Antimicrobial Resistance Containment in Bangladesh 2017-2022". [<https://www.flemingfund.org/wp-content/uploads/d3379eafad36f597500cb07c21771ae3.pdf>]. Accessed 04 August 2020.

[7] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 10 August 2020.

[8] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 10 August 2020.

1.2 ZONOTIC 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

Bangladesh has an Act on zoonotic disease. Bangladesh has also published a national One Health strategy which established coordinated surveillance of priority zoonotic diseases [1]. Some of their achievements are Joint Live Bird Market (LBM) surveillance for avian influenza, information sharing during major outbreaks (Anthrax) in human and animals and impact on humans from Japanese Encephalitis pig vaccination assessed [1]. According to Animal Disease Act, 2005 Bangladesh has an act in place which deals with zoonotic diseases [2]. Here the term “disease” has been used instead of zoonotic disease which refers to any infectious or contagious disease [2]. This act includes - providing information about animal diseases, separation of diseased animals, announcement of the disease infected area, restrictions on the transfer of animals and animal products in the infected areas, immunotherapy vaccines in the infected areas, animal test, removal of animal deaths due to diseases, prohibition of marketing of infected animals, compulsory separation and treatment of animals in the infected area, etc. [2]. Bangladesh Animal and Animal Product Quarantine Act, 2005 has been published to prevent outbreak of infectious animal diseases and to prevent the spread in animal and animal products which is necessary to protect public health and quarantine import and export controls [3]. The animal disease rule, 2008 mentioned classification of the animal disease and let the authority know, provide information about animal disease and infected area, separation of infected animal, providing vaccine, collection of specimens for testing the disease, removal of animal deaths due to diseases, prohibition of marketing of infected animals, etc. [4].

[1] Ministry of Health and Family Welfare. July 2018. “Strategic Framework and Action Plan for the Application of a One Health Approach in Bangladesh (2017 – 2021)”. [<https://onehealthbd.org/wp-content/uploads/2020/03/SFOHB-Final-Version-One-Health.pdf>]. Accessed 25 February 2021.

[2] Ministry of Fisheries and Livestock. 28 February 2005. “Animal Disease Act, 2005”. [<http://extwprlegs1.fao.org/docs/pdf/bgd165089E.pdf>]. Accessed 25 February 2021.

[3] Ministry of Fisheries and Livestock. 28 February 2005. “Bangladesh Animal and Animal Product Quarantine Act, 2005”. [<http://extwprlegs1.fao.org/docs/pdf/bgd165089E.pdf>]. Accessed 25 February 2021.

[4] Ministry of Fisheries and Livestock. 4 November 2008. “Animal Disease Rule, 2008”. [<http://old.dls.gov.bd/files/Animal%20Disease%20Rule-%202008.pdf>]. Accessed 25 February 2021.

1.2.1b

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

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Bangladesh has a plan which includes measures for risk identification and reduction for zoonotic disease spillover events from animals to humans. Bangladesh has a plan namely, 2nd National Avian and Pandemic

Influenza Preparedness and Response Plan, Bangladesh (January 2009) whose goal is to prevent & control avian influenza and prepare for the influenza pandemic to reduce morbidity and mortality in animals and humans [1]. This plan includes prevention and control strategy which will be achieved by the improvement of poultry husbandry system, poultry trade regulation and isolation, quarantine, pharmaceutical and non-pharmaceutical monitoring, live bird market and game bird market improvement, slaughter place improvement, etc. [1]. This plan also mentions surveillance, reducing the risk of transmission, monitoring and evaluation and risk communication [1]. The objective of One Health Strategy is to establish coordinated surveillance of priority zoonotic diseases and conditions including antimicrobial resistance (AMR) [2]. Joint Live Bird Market (LBM) surveillance for avian influenza, information sharing during major outbreaks (Anthrax) in human and animals are some of the achievements of One Health Strategy [2].

[1] Directorate General of Health Services (DGHS). January 2009. “2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh”.

[https://dghs.gov.bd/bn/licts_file/images/Plan/2009_2nd_Pandemic_Influenza_Preparedness_Plan.pdf]. Accessed 26 February 2021.

[2] Ministry of Health and Family Welfare. July 2018. “Strategic Framework and Action Plan for the Application of a One Health Approach in Bangladesh (2017 – 2021)”. [<https://onehealthbd.org/wp-content/uploads/2020/03/SFOHB-Final-Version-One-Health.pdf>]. Accessed 25 February 2021.

1.2.1c

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

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that there are plans that account for the surveillance and control of multiple zoonotic pathogens of public health concern in Bangladesh. According to the National guidelines for the prevention and management of Nipah virus (November 2016) published by the Institute of Epidemiology, Disease Control and Research (IEDCR), IEDCR in collaboration with International Centre for Diarrhoeal Disease Research (icddr,b) has established Nipah surveillance in 10 district level Government hospitals where Nipah outbreaks had been identified [1]. To prevent and control Nipah some strategies are set up like the awareness program, early case detection through different surveillance systems, case management, infection control measures [1]. Institute of Epidemiology, Disease Control and Research (IEDCR) publishes influenza lab results monthly as a part of influenza surveillance [2]. 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009) mentioned the prevention, surveillance & control of avian influenza and preparation for the influenza pandemic to reduce morbidity and mortality in animals and humans [3]. As a part of the larger PREDICT project, surveillance of animal (macaque, bat, rodents) and high-risk human populations is ongoing [4]. Behavioral risk surveillance is conducted through Community based Behavioral survey and Hospital based Syndromic Surveillance [4]. The One Health strategy has established coordinated surveillance of priority zoonotic diseases like the Anthrax, Avian Influenza, Nipah as well as Rabies [5].

[1] Institute of Epidemiology, Disease Control and Research (IEDCR). November 2016. “National guidelines for the prevention and management of Nipah virus”. [<https://iedcr.gov.bd/publication/guidelines/10adb7d5-b36b-4e87-a37c-7fc981f4f888>]. Accessed 27 February 2021.

[2] Institute of Epidemiology, Disease Control and Research (IEDCR). [<https://iedcr.gov.bd/surveillances/890e910b-665f-4f9a-a0d9-1db2e8d73a60>]. Accessed 27 February 2021.

[3] Directorate General of Health Services (DGHS). January 2009. “2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh”.

[https://dghs.gov.bd/bn/licts_file/images/Plan/2009_2nd_Pandemic_Influenza_Preparedness_Plan.pdf]. Accessed 26 February 2021.

[4] Institute of Epidemiology, Disease Control and Research (IEDCR). “USAID PREDICT PROJECT”.

[<https://iedcr.gov.bd/surveillances/da9026a6-659b-48de-bc2c-b0011e793087>]. Accessed 26 February 2021.

[5] Ministry of Health and Family Welfare. July, 2018. “Strategic Framework and Action Plan for the Application of a One Health Approach in Bangladesh (2017 – 2021)”. [<https://onehealthbd.org/wp-content/uploads/2020/03/SFOHB-Final-Version-One-Health.pdf>]. Accessed 25 February 2021.

1.2.1d

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

Yes = 1 , No = 0

Current Year Score: 1

There is a department dedicated to zoonotic disease that functions across ministries; the Interministerial steering committee on One Health.

According to its website, the One Health Bangladesh has set up investigations, surveillance, prevention, and control programmes for avian influenza, Nipah, rabies, and anthrax [1]. It also mentions that, “As part of institutionalization, an Interministerial steering committee on One Health has been formed and One Health Secretariat located at the Institute of Epidemiology and Disease Control and Research (IEDCR) has started to function with the funding support from the government and international partners” [1].

According to the One Health Hub Bangladesh, which is part of One Health Network South Asia, key organisations, such as the IEDCR, within the Directorate General of Health Services (DGHS) in the Ministry of Health and Family Welfare, and the Epidemiology Unit in the Department of Livestock Services within the Ministry of Livestock and Fisheries are involved in the surveillance and control for zoonotic diseases [2].

[1] One Health Bangladesh. [<https://onehealthbd.org/about-us/>]. Accessed 28 February 2021.

[2] One Health Network South Asia. [<http://www.onehealthnetwork.asia/node/95>]. Accessed 28 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

Bangladesh has a national mechanism for owners of livestock to conduct and report on disease surveillance to a central government agency.

According to the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009), “Farmers and any person informed about sickness or death of birds including poultry are advised to report to Upazila Livestock Office (ULO). Veterinary Surgeon of Upazila Livestock Office after primary investigation reports it to ULO livestock officer. For emergency diseases like Avian Influenza the ULO reports it to District Livestock Officer (DLO) and Chief Veterinary Officer

(CVO) by telephone or fax. The diseases other than emergency ones are reported to epidemiology unit in monthly animal diseases reporting form. The data received from the field are collected, collated and analyzed by the epidemiology unit. Immediate, follow up and six-monthly reports which are appropriate are submitted to OIE” [1].

[1] Directorate General of Health Services (DGHS). January 2009. “2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh”.

[https://dghs.gov.bd/bn/licts_file/images/Plan/2009_2nd_Pandemic_Influenza_Preparedness_Plan.pdf]. Accessed 26 February 2021.

1.2.2b

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence of such legislation and/or regulations that safeguard the confidentiality of information generated through surveillance activities for animals (for owners).

There is no evidence of any laws or regulations regarding this matter in the Joint External Evaluation (JEE) of IHR Core Capacities of the People’s Republic of Bangladesh, conducted in May 2016, and PVS Gap Analysis Mission Report published in July 2015 [1, 2]. There is also no information of any portal or hotline to report disease surveillance for owners of livestock as well as any legislation and/or regulations that safeguard the confidentiality of information generated through surveillance activities for animals (for owners) either in the Annual Report 2012 published by Communicable Disease Control Bangladesh (2013) or Strategic framework for One Health approach to infectious diseases in Bangladesh (2012) published by the Institute of Epidemiology Disease Control and Research (IEDCR) within the Bangladesh Ministry of Health and Family Welfare (MoHFW) [3, 4].

There is no mention of this on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture and Ministry of Fisheries and Livestock [5, 6, 7]. Furthermore, there is no information regarding any legislation to safeguard the confidentiality of information generated through surveillance activities for animals (for owners) in the Animal Disease Act, 2005, Bangladesh Animal and Animal Product Quarantine Act, 2005, Animal Disease Rule, 2008 and Strategic Framework and Action Plan for the Application of a One Health Approach in Bangladesh (2017 – 2021) [8, 9, 10, 11].

[1] World Health Organization (WHO). May 2016. “Joint External Evaluation of IHR Core Capacities of the People’s Republic of Bangladesh”. [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] OIE-World Organisation for Animal Health. July 2015. “PVS Gap Analysis Mission Report”. [<https://www.oie.int/solidarity/pvs-gap-analysis/pvs-gap-analysis-reports/>]. Accessed 12 August 2020.

[3] Communicable Disease Control Bangladesh. 2013. “Annual Report 2012”. [http://dghs.gov.bd/bn/licts_file/images/Other_publication/CDC_Annual_Report.pdf]. Accessed 11 August 2020.

[4] Institute of Epidemiology Disease Control and Research (IEDCR). 2012. “Strategic framework for One Health approach to infectious diseases in Bangladesh”. [http://www.iedcr.org/pdf/files/One%20Health/Strategic_framework_for_One_Health_Bangladesh-26%20Jan.pdf]. Accessed 12 August 2020.

[5] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 12 August 2020.

[6] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 12 August 2020.

- [7] Ministry of Fisheries and Livestock. [<https://mofl.gov.bd/>]. Accessed 12 August 2020.
- [8] Ministry of Fisheries and Livestock. 28 February 2005. "Animal Disease Act, 2005". [<http://extwprlegs1.fao.org/docs/pdf/bgd165089E.pdf>]. Accessed 25 February 2021.
- [9] Ministry of Fisheries and Livestock. 28 February 2005. "Bangladesh Animal and Animal Product Quarantine Act, 2005". [<http://extwprlegs1.fao.org/docs/pdf/bgd165089E.pdf>]. Accessed 25 February 2021.
- [10] Ministry of Fisheries and Livestock. 4 November 2008. "Animal Disease Rule, 2008". [<http://old.dls.gov.bd/files/Animal%20Disease%20Rule-%202008.pdf>]. Accessed 25 February 2021.
- [11] Ministry of Health and Family Welfare. July 2018. "Strategic Framework and Action Plan for the Application of a One Health Approach in Bangladesh (2017 – 2021)". [<https://onehealthbd.org/wp-content/uploads/2020/03/SFOHB-Final-Version-One-Health.pdf>]. Accessed 25 February 2021.

1.2.2c

Does the country conduct surveillance of zoonotic disease in wildlife (e.g., wild animals, insects, other disease vectors)?

Yes = 1 , No = 0

Current Year Score: 1

Bangladesh does conduct surveillance of zoonotic disease in wildlife (e.g., wild animals, insects, other disease vectors). According to the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh (2009), one of the activities mentioned, "Department of Livestock Services (DLS) will design a plan of AI surveillance in animals. Surveillance will be carried out in backyard and commercial chickens and ducks, live bird and wet market, pet, wild and migratory birds and animals. The approach of the plan will be rumor investigation, event based and targeted surveillance. The surveillance plan will outline the sampling frame and procedures for each category of surveillance" [1]. It also included activities like planning and carrying out the survey and surveillance of wild and migratory birds and assisting the rapid response team of DLS in outbreak investigation among migratory/ wild birds [1]. An article notes that the guidelines in this plan were key in helping the country manage more than 500 outbreaks of avian influenza in poultry, as well as three outbreaks in humans. [2]

[1] Directorate General of Health Services (DGHS). January 2009. "2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh".

[https://dghs.gov.bd/bn/licts_file/images/Plan/2009_2nd_Pandemic_Influenza_Preparedness_Plan.pdf]. Accessed 26 February 2021.

[2] One Health Poultry Hub. 2019. "From pushing alarm bells to informing policy: how the role of researchers is changing". [<https://www.onehealthpoultry.org/blog-posts/influenza-preparedness-and-one-health-research-in-bangladesh/>] Accessed 15 June 2021.

1.2.3 International reporting of animal disease outbreaks

1.2.3a

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

Yes = 1 , No = 0

Current Year Score: 0

2019

OIE WAHIS database

1.2.4 Animal health workforce

1.2.4a

Number of veterinarians per 100,000 people

Input number

Current Year Score: 5.07

2018

OIE WAHIS database

1.2.4b

Number of veterinary para-professionals per 100,000 people

Input number

Current Year Score: 16.69

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 the national plan on zoonotic disease includes mechanisms for working with the private sector to control or respond to zoonoses.

According to a handbook “A Tripartite Guide to Addressing Zoonotic Diseases in Countries published by World Health Organization” (WHO) in 2019, Bangladesh took a leading role in establishing organizations like Epidemiology and Diseases Control Research, and the International Centre for Diarrheal Disease Research (icddr,b) which now includes a variety of both governmental and non-governmental stakeholders (e.g. academia and the private sector) across human health, animal health and environment sectors but there is no mention of any mechanisms to include private sector involvement in disease control or response to zoonoses [1].

Moreover, in the Joint External Evaluation (JEE) of IHR Core Capacities of the People’s Republic of Bangladesh, conducted in May 2016, it is mentioned that, “the Government of Bangladesh has multidisciplinary research capacity in collaboration with national and international agencies to curb emerging infectious diseases of zoonotic origin. Aimed at sharing data, information, expertise, and collaboration in analysis, a Laboratory Network has been established, comprising members from both public and private sectors”; but, no specific name of this network is mentioned and also there is no mention of when it was established [2].

Also, no information regarding this matter is available on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture and Ministry of Fisheries and Livestock [3, 4, 5]. Furthermore, there is no information regarding any mechanisms for working with the private sector in controlling or responding to zoonoses in the Animal Disease Act, 2005, Bangladesh Animal and Animal Product Quarantine Act, 2005 and Animal Disease Rule, 2008 [6, 7, 8]. Strategic Framework and Action Plan for the Application of a One Health Approach in Bangladesh (2017 – 2021) slightly mentioned, “The framework was designed to establish and foster ownership of the strategy at high levels of the government and in all participating sectors, and to ensure cross-cultural communication across the human and animal domains, research and program divide, and government and non-governmental divide”, however there is no mention of any mechanisms for working with the private sector in controlling or responding to zoonoses [9].

- [1] World Health Organization (WHO). 2019. “A Tripartite Guide to Addressing Zoonotic Diseases in Countries”. [<https://www.who.int/publications/i/item/taking-a-multisectoral-one-health-approach-a-tripartite-guide-to-addressing-zoonotic-diseases-in-countries>]. Accessed 12 August 2020.
- [2] World Health Organization (WHO). May 2016. “Joint External Evaluation of IHR Core Capacities of the People’s Republic of Bangladesh”. [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
- [3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 12 August 2020.
- [4] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 12 August 2020.
- [5] Ministry of Fisheries and Livestock. [<https://mofl.gov.bd/>]. Accessed 12 August 2020.
- [6] Ministry of Fisheries and Livestock. 28 February 2005. “Animal Disease Act, 2005”. [<http://extwprlegs1.fao.org/docs/pdf/bgd165089E.pdf>]. Accessed 25 February 2021.
- [7] Ministry of Fisheries and Livestock. 28 February 2005. “Bangladesh Animal and Animal Product Quarantine Act, 2005”. [<http://extwprlegs1.fao.org/docs/pdf/bgd165089E.pdf>]. Accessed 25 February 2021.
- [8] Ministry of Fisheries and Livestock. 4 November 2008. “Animal Disease Rule, 2008”. [<http://old.dls.gov.bd/files/Animal%20Disease%20Rule-%202008.pdf>]. Accessed 25 February 2021.
- [9] Ministry of Health and Family Welfare. July 2018. “Strategic Framework and Action Plan for the Application of a One Health Approach in Bangladesh (2017 – 2021)”. [<https://onehealthbd.org/wp-content/uploads/2020/03/SFOHB-Final-Version-One-Health.pdf>]. Accessed 25 February 2021.

1.3 BIOSECURITY

1.3.1 Whole-of- government biosecurity systems

1.3.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Bangladesh has in place an updated record, of the facilities in which particularly dangerous pathogens and toxins are stored or processed, including details on inventories and inventory management systems of such facilities within the past five years. However, in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, it is mentioned that "The current biosecurity capacity should be mapped out, including recording and updating an inventory of facilities that store or process dangerous pathogens and toxins, recording and updating an inventory of dangerous pathogens and toxins within these facilities" [1]. Furthermore, there is no

information regarding this matter on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence, Ministry of Science and Technology and the Verification Research, Training and Information Centre Database. [3, 4, 5, 6]. In addition, although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and it is unknown if these reports contain information on this matter [7].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 13 August 2020.

[3] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 13 August 2020.

[4] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 13 August 2020.

[5] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 13 August 2020.

[6] Verification Research, Training and Information Centre (VERTIC) BWC Legislation Database.

[<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 13 August 2020.

[7] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 13 August 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 Bangladesh has any legislation or regulations in place related to biosecurity which address requirements such as physical containment, operation practices, failure reporting systems and cybersecurity of facilities in which especially dangerous pathogens and toxins are stored or processed. In the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, it is explicitly mentioned that there is no national legislation for biosecurity [1]. However, Bangladesh Biosafety and Biosecurity Society was established in August 2011 to foster best and sustainable biosafety and biosecurity practices in Bangladesh [2]. The main objective of Bangladesh Biosafety and Biosecurity Society is to lay the foundation to promote codes, support local learning initiatives, and, as a professional society, play a role in promulgating national biosafety and biosecurity legislation [2]. However, currently, any information regarding biosecurity legislation in Bangladesh is unavailable [2]. Also, no information of any legislation or regulation is mentioned in the Biosafety Guidelines of Bangladesh (2007) published by Ministry of Environment and Forest [3]. Moreover, there is no mention of biosecurity legislation or regulation on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence, Ministry of Science and Technology and the Verification Research, Training and Information Centre Database [4, 5, 6, 7, 8]. Although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and it is unknown if they contain information on this matter [9].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Bangladesh Biosafety and Biosecurity Society. [<https://bdbiosafetysecurity.org/about-Us>]. Accessed 13 August 2020.

[3] Ministry of Environment and Forest. 2007. "BIOSAFETY GUIDELINES OF BANGLADESH".

- [<https://bangladeshbiosafety.org/2017/09/01/biosafety-guidelines-of-bangladesh/>]. Accessed 13 August 2020.
- [4] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 13 August 2020.
- [5] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 13 August 2020.
- [6] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 13 August 2020.
- [7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 13 August 2020.
- [8] Verification Research, Training and Information Centre (VERTIC) BWC Legislation Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 13 August 2020.
- [9] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 13 August 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 in Bangladesh. Bangladesh does not have a biosecurity legislation [1]. However, the Bangladesh Biosafety and Biosecurity Society was established in August 2011 to foster best and sustainable biosafety and biosecurity practices in Bangladesh [1]. The main objective of Bangladesh Biosafety and Biosecurity Society is to lay the foundation to promote codes, support local learning initiatives, and, as a professional society, play a role in promulgating national biosafety and biosecurity legislation, but, there is no mention of any biosecurity legislation as well as established agency in Bangladesh Biosafety and Biosecurity Society [1]. Biosafety and biosecurity training are provided by the Institute of Epidemiology Disease Control and Research (IEDCR) [2]. Also, the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), has a training programme on biosafety and biosecurity that is offered to laboratories in all sectors, including veterinary and agricultural laboratories, and keeps contact with trained persons as well as offers refresher courses; however, there is no mention of any agency in this context [2]. Moreover, biosecurity is not mentioned separately; rather, biosafety and biosecurity is mentioned together in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 [2]. There is also no mention of this on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence and The Verification Research, Training and Information Centre (VERTIC) Database [3, 4, 5, 6]. In addition, although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and it is unknown if they contain any information on this matter [7].

- [1] Bangladesh Biosafety and Biosecurity Society. [<https://bdbiosafetysecurity.org/about-Us>]. Accessed 13 August 2020.
- [2] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
- [3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 13 August 2020.
- [4] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 13 August 2020.
- [5] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 13 August 2020.
- [6] The Verification Research, Training and Information Centre (VERTIC) Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 13 August 2020.
- [7] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 13 August 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 Bangladesh 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 (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, "the current biosecurity capacity should be mapped out, including recording and updating an inventory of facilities that store or process dangerous pathogens and toxins, recording and updating an inventory of dangerous pathogens and toxins within these facilities, and maintaining an active roster of professionals who have been trained in biosafety and biosecurity" [1]. But there is no mention of any actions taken to consolidate its inventories of particularly dangerous pathogens and toxins into a minimum number of facilities [1]. Furthermore, there is no information regarding this matter on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence, Ministry of Science and Technology and the Verification Research, Training and Information Centre Database [2, 3, 4, 5, 6]. In addition, although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and it is unknown if they contain information on this matter [7].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 13 August 2020.

[3] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 13 August 2020.

[4] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 13 August 2020.

[5] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 13 August 2020.

[6] Verification Research, Training and Information Centre (VERTIC) BWC Legislation Database.

[<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 13 August 2020.

[7] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 13 August 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: 0

There is no public evidence of an in-country capacity to conduct Polymerase Chain Reaction (PCR)-based diagnostic testing for anthrax and/or Ebola, which would preclude culturing a live pathogen. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Bangladesh has the ability to conduct PCR-based testing for the influenza virus and in general well-established diagnostic capabilities is present for Ebola, but there is no mention of PCR based diagnostic testing for anthrax or Ebola [1]. In addition, the country is also implementing a preparedness plan for disease caused by the Ebola virus [1, 2]. A training was conducted in May 2017 at the Institute of Epidemiology Disease Control and Research (IEDCR) in Bangladesh on molecular diagnostics for the identification of anthrax in people and animals; however, there is no mention of PCR-based diagnostic testing [3]. This training included laboratorians

from human and animal laboratories in Bangladesh and also included sample processing and RT-PCR techniques for the appropriate identification of anthrax, however, there is no evidence of conducting PCR-based diagnostic testing for anthrax and/or Ebola [3]. There is a lack of capacity for detecting AI/H5N1, A/H1N1 (2009), Nipah, polio or anthrax at the district level in Bangladesh [4]. Moreover, there is no evidence of conducting PCR-based diagnostic testing for anthrax and/or Ebola on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence and Institute of Epidemiology, Disease Control and Research (IEDCR) [5, 6, 7, 8].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Sirenda Vong. 22 September 2016. " ". Bulletin of the World Health Organization 2016; 94:913-924. [<https://www.who.int/bulletin/volumes/94/12/16-174441/en/>]. Accessed 14 August 2020.

[3] World Organisation for Animal Health (OIE). January 2018. " ". [https://www.oie.int/fileadmin/Home/fr/Our_scientific_expertise/colcenterreports/2017/report_92_2017_Emerging_and_Re-Emerging_Zoonotic_Diseas_UNITED_STATES_OF_AMERICA.pdf]. Accessed 14 August 2020.

[4] Communicable Disease Control Bangladesh. 2013. "Annual Report 2012". [http://dghs.gov.bd/bn/licts_file/images/Other_publication/CDC_Annual_Report.pdf]. Accessed 11 August 2020.

[5] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 14 August 2020.

[6] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 14 August 2020.

[7] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 14 August 2020.

[8] Institute of Epidemiology, Disease Control and Research (IEDCR). "IEDCR Research". [<https://old.iedcr.gov.bd/website/index.php/research/iedcr-research>]. Accessed 14 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 that Bangladesh has a standardized biosecurity training programme for personnel working with especially dangerous pathogens, toxins, or biological materials with pandemic potential. According to the Bangladesh Biosafety and Biosecurity Guidelines for Handling and Disposal of Biohazardous Materials (2019), all personnel involved with handling biohazardous materials, infectious or potentially infectious materials and biomedical waste should receive training on the laboratory's biosafety and biosecurity programme, however there is no mention of any requirement for biosecurity training for any facility working with especially dangerous pathogens [1]. The Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 states that "training should be conducted at all levels to ensure that proper protocols are implemented across all facilities housing or working with dangerous pathogens and toxins", but there is no mention of requirement of biosecurity training as well as any biosecurity legislation [2]. Apart from this, the Bangladesh Biosafety & Biosecurity Society is working to promote biosafety and biosecurity knowledge in human health, agriculture and livestock for infectious disease prevention and controlling spread of biological hazard by conducting training, but there are no specifications regarding biosecurity training programme [3]. Further, there is no mention of biosecurity training on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, and Ministry of Defence, Ministry of Science and Technology and The Verification Research, Training and Information Centre

(VERTIC) Database [4, 5, 6, 7, 8]. Although Bangladesh is party to the Biological Weapons Convention and has submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [9].

[1] Dr Asadulghani, Dr Md. Giasuddin, Dr. Latiful Bari, eds. September 2019. "Bangladesh Biosafety and Biosecurity Guidelines for Handling and Disposal of Biohazardous Materials".

[https://bdbiosafetysecurity.org/uploads/documents/Bangladesh_Biosafety_and_Biosecurity_Guidelines.pdf]. Accessed 14 August 2020.

[2] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[3] International Federation of Biosafety Associations (IFBA). "Bangladesh Biosafety and Biosecurity Society".

[https://internationalbiosafety.org/ifba_members/bangladesh-biosafety-and-biosecurity-society/]. Accessed 14 August 2020.

[4] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 14 August 2020.

[5] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 14 August 2020.

[6] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 14 August 2020.

[7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 14 August 2020.

[8] The Verification Research, Training and Information Centre (VERTIC) Database.

[<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 14 August 2020.

[9] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 14 August 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 of any regulations or licensing conditions that specify whether security and other personnel with access to particularly dangerous pathogens, toxins, or biological materials with pandemic potential are subjected to any checks.

According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, there is no existence of biosecurity legislation [1]. Although Bangladesh has three biosafety level 3 (BSL-3) facilities, none of these are currently operational; therefore, there is no mention of personnel checks [1]. Moreover, there is no mention of any kind of checking such as drug testing, background checks, and psychological or mental fitness checks of security or personnel handling dangerous pathogens, toxins, or biological materials with pandemic potential [1]. Also, there is no mention of these checks on the websites of the governmental and non-governmental health research institutes namely Institute of Epidemiology Disease Control and Research (IEDCR), International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) respectively [2, 3]. As well as no information regarding these checks are found on the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence, Ministry of Science and Technology websites and the Verification Research, Training and Information Centre Database [4, 5, 6, 7, 8]. Further, although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted

and, thus, it is unknown if they contain information on this matter [9].

- [1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
- [2] Institute of Epidemiology Disease Control and Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 14 August 2020.
- [3] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 14 August 2020.
- [4] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 14 August 2020.
- [5] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 14 August 2020.
- [6] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 14 August 2020.
- [7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 14 August 2020.
- [8] Verification Research, Training and Information Centre (VERTIC) BWC Legislation Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 14 August 2020.
- [9] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 14 August 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 of publicly available information on national regulations on the safe and secure transport of infectious substances (specifically including Categories A and B) in Bangladesh. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, "Biosafety and biosecurity guidelines should be updated to include microorganisms other than GMOs, and include the proper collection, transportation, handling, management and disposal of dangerous pathogens and toxins", but there is no mention of any regulations on the safe and secure transport of infectious substances specifically Categories A and B [1]. Also, no information is found in The International Air Transport Association (IATA) website [2]. Apart from this, there is no mention of any regulations regarding safe and secure transportation of infectious substances (Categories A and B) on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence, Ministry of Road Transport and Bridges, Ministry of Science and Technology and The Verification Research, Training and Information Centre (VERTIC) Database [3, 4, 5, 6, 7, 8]. Moreover, although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [9].

- [1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
- [2] The International Air Transport Association (IATA). [<https://www.iata.org/en/programs/cargo/dgr/download/>]. Accessed 14 August 2020.
- [3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 14 August 2020.
- [4] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 14 August 2020.

- [5] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 14 August 2020.
- [6] Ministry of Road Transport and Bridges. [<http://www.rthd.gov.bd/>]. Accessed 14 August 2020.
- [7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 14 August 2020.
- [8] The Verification Research, Training and Information Centre (VERTIC) Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 14 August 2020.
- [9] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 14 August 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 of any national legislation, regulation, or other guidance to oversee the cross-border transfer and end-user screening of dangerous pathogens with pandemic potential. However, the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Bangladesh needs to designate points of entry to ensure International Health Regulation (IHR) obligations are routinely practiced and cross-border issues are addressed and also needs to enhance awareness and strengthen communications with border communities to enhance cross-border security but nothing about the cross-border transfer and end-user screening of especially dangerous pathogens, toxins, and pathogens with pandemic potential is mentioned [1]. In addition, transporting specimens safely and quickly from 95% or more of intermediate levels/districts to national laboratory facilities for advanced diagnostics is possible, however, there is no mention of any dangerous pathogens, toxins, and pathogens with pandemic potential [1]. A few courier contracts are supported by partners World Health Organization's (WHO) Center for Disease Control, but most transport is public transport taken by hospital staff [1]. Apart from this, there is no mention of this issue on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence, Ministry of Science and Technology and The Verification Research, Training and Information Centre (VERTIC) Database [2, 3, 4, 5, 6]. In addition, although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [7].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 14 August 2020.

[3] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 14 August 2020.

[4] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 14 August 2020.

[5] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 14 August 2020.

[6] The Verification Research, Training and Information Centre (VERTIC) Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 14 August 2020.

[7] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 14 August 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

Bangladesh does not have national biosafety legislation or regulations in place. However, Bangladesh has a National biosafety guideline which provides regulations on the approval process for biotech products developed domestically or by a third country and it is solely focused on the genetically engineered product or genetically modified organism (GMO) [1]. As per the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Biosafety in Bangladesh is focused on genetically modified organisms (GMOs) only [2]. Bangladesh has multi-sectoral committees on biosafety including the National Committee on Biosafety (NCB) and Biosafety Core Committee (BCC) and both of these committees are focused on Genetically Modified Organism (GMO) related biosafety [2]. According to the National Biosafety Framework (NBF) 2007, it is a combination of policy, legal, administrative and technical instruments that are developed to ensure an adequate level of protection in the field of the safe transfer, handling and use of Genetically Modified Organisms (GMO) resulting from modern biotechnology [3]. There is no mention of biosafety legislations in the Verification Research, Training and Information Centre Database or on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture and Ministry of Science and Technology [4, 5, 6, 7]. Further, although Bangladesh is party to the Biological Weapons Convention and has submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [8].

[1] The United States Department of Agriculture (USDA). 2014. "Biosafety Guidelines of Bangladesh". [<http://www.bd.undp.org/content/dam/bangladesh/docs/Projects/ncd-for-rio-convention/UNCBD/NationalPolicies/Biosafety%20Guidelines%20of%20Bangladesh%2C%202007.pdf>]. Accessed 15 August 2020.

[2] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[3] Department of environment: Ministry of Environment and Forest, Government of the People's Republic of Bangladesh. June 2007. "National Biosafety Framework of the Government of the People's Republic of Bangladesh". [http://old.doe.gov.bd/publication_images/9_nationalbiosafetyframeworkbd.pdf]. Accessed 15 August 2020.

[4] Verification Research, Training and Information Centre (VERTIC) Database.

[<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 15 August 2020.

[5] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 15 August 2020.

[6] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 15 August 2020.

[7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 15 August 2020.

[8] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 15 August 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 Bangladesh. Bangladesh does not have a biosafety legislation or regulation in place [1]. Apart from this, biosafety and biosecurity training are provided by Institute of Epidemiology, Disease Control, and Research (IEDCR), but there is no information about an established agency involved with biosafety legislation [1]. Further, the Ministry of Environment and Forest will be the focal ministry to enforce biosafety regulatory systems and for oversight of biosafety activities related to genetically modified organisms (GMOs); however, when this will happen has not been specified and there is no mention of any agency that would be responsible for this [2, 3]. The Biosafety Guidelines (BG) of Bangladesh, 2007, contain information on the biotechnology approval process for genetically engineered products developed domestically or by another country, but there is no legislation on biosafety or mention of any agency involved with it [3]. Bangladesh Biosafety and Biosecurity Society was established in August 2011 to foster best and sustainable biosafety and biosecurity practices in Bangladesh, however, there is no mention of any legislation on biosafety or agency responsible for enforcing biosafety legislation [4]. Moreover, there is no mention of an established agency on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Science and Technology and The Verification Research, Training and Information Centre (VERTIC) Database [5, 6, 7, 8]. Although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [9].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Department of environment: Ministry of Environment and Forest, Government of the People's Republic of Bangladesh. June 2007. "National Biosafety Framework of the Government of the People's Republic of Bangladesh". [http://old.doe.gov.bd/publication_images/9_nationalbiosafetyframeworkbd.pdf]. Accessed 15 August 2020.

[3] The United States Department of Agriculture (USDA). 2014. "Biosafety Guidelines of Bangladesh". [<http://www.bd.undp.org/content/dam/bangladesh/docs/Projects/ncd-for-rio-convention/UNCBD/NationalPolicies/Biosafety%20Guidelines%20of%20Bangladesh%2C%202007.pdf>]. Accessed 15 August 2020.

[4] Bangladesh Biosafety and Biosecurity Society. [<https://bdbiosafetysecurity.org/>]. Accessed 16 August 2020.

[5] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 16 August 2020.

[6] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 16 August 2020.

[7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 16 August 2020.

[8] The Verification Research, Training and Information Centre (VERTIC) Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 16 August 2020.

[9] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 16 August 2020.

1.4.2 Biosafety training and practices

1.4.2a

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

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that Bangladesh has any standardized biosafety training programme for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential. However, Bangladesh Biosafety and Biosecurity Society provide different training courses which cover principles and practice of biosafety, risk group of microbes, containment equipment and facilities, biosafety levels and practices, risk group and biosafety levels, and biosecurity, but there is no mention of standard approach such as train the trainer programme or any detailed information about this training [1]. The biosafety and biosecurity training are provided by the Institute of Epidemiology Disease Control and Research (IEDCR) [2]. In addition, the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) has a training programme on biosafety and biosecurity that is offered to laboratories in all sectors, including veterinary and agricultural laboratories, but there is no information regarding a standardized biosafety training programme [2]. However, it is also mentioned that to ensure proper protocols are implemented across all facilities housing or working with dangerous pathogens and toxins training should be conducted at all levels and both the public and animal sectors should incorporate biosafety and biosecurity in academic training [2]. Bangladesh has a biosafety guideline but no biosafety legislation and the guideline mentions training of personnel that work with genetically modified organisms (GMOs) [3]. There is no mention of any training related to biosafety on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Science and Technology and The Verification Research, Training and Information Centre (VERTIC) Database [4, 5, 6, 7]. Although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [8].

[1] Bangladesh Biosafety and Biosecurity Society. [<https://bdbiosafetysecurity.org/Training-Program>]. Accessed 16 August 2020.

[2] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[3] The United States Department of Agriculture (USDA). 2014. "Biosafety Guidelines of Bangladesh". [<http://www.bd.undp.org/content/dam/bangladesh/docs/Projects/ncd-for-rio-convention/UNCBD/NationalPolicies/Biosafety%20Guidelines%20of%20Bangladesh%2C%202007.pdf>]. Accessed 15 August 2020.

[4] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 16 August 2020.

[5] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 16 August 2020.

[6] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 16 August 2020.

[7] The Verification Research, Training and Information Centre (VERTIC) Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 16 August 2020.

[8] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 16 August 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 public evidence to indicate that Bangladesh has conducted an assessment to determine whether there is ongoing research on particularly dangerous pathogens, toxins, pathogens with pandemic potential, and other dual-use research. Moreover, there is no mention of dual-use research in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 or in the Annual Report 2012 published by Communicable Disease Control Bangladesh in 2013 [1, 2]. There is no information related to dual research is available on the website of Institute of Epidemiology Disease Control And Research (IEDCR) and International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) [3, 4]. Further, there is no mention of this matter on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence and Ministry of Science and Technology or the Verification Research, Training and Information Centre Database [5, 6, 7, 8, 9]. Although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [10].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Communicable Disease Control Bangladesh. 2013. "Annual Report 2012".

[http://dghs.gov.bd/bn/licts_file/images/Other_publication/CDC_Annual_Report.pdf]. Accessed 11 August 2020.

[3] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 17 August 2020.

[4] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 17 August 2020.

[5] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 17 August 2020.

[6] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 17 August 2020.

[7] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 17 August 2020.

[8] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 17 August 2020.

[9] Verification Research, Training and Information Centre (VERTIC) BWC Legislation Database.

[<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 17 August 2020.

[10] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 17 August 2020.

1.5.1b

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence of any legislation or regulation requiring oversight of dual-use research, such as research with particularly dangerous pathogens, toxins, and/or pathogens with pandemic potential in Bangladesh. Moreover, there is no mention of dual-use research with particularly dangerous pathogens, toxins, and/or pathogens with pandemic potential or any legislation or regulation for dual use research in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 [1]. There is also no mention of any regulation or legislation for dual-use research on the websites of the Institute of Epidemiology Disease Control and Research (IEDCR) and International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) [2, 3]. Moreover, no information regarding legislation for dual use

research is available on Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence, Ministry of Science and Technology and The Verification Research, Training and Information Centre (VERTIC) Database [4, 5, 6, 7, 8]. Further, although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [9].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 17 August 2020.

[3] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 17 August 2020.

[4] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 17 August 2020.

[5] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 17 August 2020.

[6] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 17 August 2020.

[7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 17 August 2020.

[8] The Verification Research, Training and Information Centre (VERTIC) Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 17 August 2020.

[9] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 17 August 2020.

1.5.1c

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence of an agency responsible for the oversight of research with particularly dangerous pathogens, pathogens with pandemic potential, or other dual-use research in Bangladesh. In addition, there is no mention of dual-use research or any agency responsible for the oversight of dual-use research with particularly dangerous pathogens, toxins, or pathogens with pandemic potential in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 [1]. There is also no mention of any agency responsible for dual-use research on the websites of the Institute of Epidemiology Disease Control and Research (IEDCR) and International Centre for Diarrhoeal Disease Research Bangladesh (icddr,b) [2, 3]. Moreover, no information regarding any agency responsible for dual use research is mentioned on the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Defence, Ministry of Science and Technology and the Verification Research, Training and Information Centre Database websites [4, 5, 6, 7, 8]. Further, although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [9].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 17 August 2020.

[3] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 17 August 2020.

- [4] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 17 August 2020.
- [5] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 17 August 2020.
- [6] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 17 August 2020.
- [7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 17 August 2020.
- [8] Verification Research, Training and Information Centre (VERTIC) BWC Legislation Database. [<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 17 August 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 any legislation or regulation requiring the screening of synthesized DNA (deoxyribonucleic acid) against lists of known pathogens and toxins before it is sold in Bangladesh. There is no mention of synthesized DNA in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016 [1]. In addition, the Biosafety Guidelines (BG) of Bangladesh, 2007 published by the United States Department of Agriculture (USDA) in 2014, includes physical containment for large-scale uses of organisms containing recombinant DNA molecules, however, there is no further information on any legislation or regulation requiring the screening of synthesized DNA before it is sold [2]. This part of the guidelines only specifies physical containment facilities for large-scale (for commercial purposes) research or production that involves viable organisms containing rDNA molecules [2]. In addition, there is no mention of any legislation or regulation that requires the screening of synthesized DNA before it is sold on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Road Transport and Bridges, Ministry of Agriculture, Ministry of Defense and Ministry of Science and Technology or the Verification Research, Training and Information Centre Database [3, 4, 5, 6, 7, 8]. Although Bangladesh is party to the Biological Weapons Convention and submitted Confidence Building Measures, public access to the reports is restricted and, thus, it is unknown if they contain information on this matter [9].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] The United States Department of Agriculture (USDA). 2014. "Biosafety Guidelines of Bangladesh". [<http://www.bd.undp.org/content/dam/bangladesh/docs/Projects/ncd-for-rio-convention/UNCBD/NationalPolicies/Biosafety%20Guidelines%20of%20Bangladesh%2C%202007.pdf>]. Accessed 15 August 2020.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 17 August 2020.

[4] Ministry of Road Transport and Bridges. [<http://www.rthd.gov.bd/>]. Accessed 17 August 2020.

[5] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 17 August 2020.

[6] Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 17 August 2020.

[7] Ministry of Science and Technology. [<https://most.gov.bd/>]. Accessed 17 August 2020.

[8] Verification Research, Training and Information Centre (VERTIC) BWC Legislation Database.

[<https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/>]. Accessed 17 August 2020.

[9] Confidence Building Measures (CBM). [<https://bwc-ecbm.unog.ch/state/bangladesh>]. Accessed 17 August 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: 2

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

Bangladesh's national laboratory system is capable of conducting six of the ten core tests. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 20, Bangladesh has well

established national laboratories like the Institute of Epidemiology Disease Control and Research (IEDCR), the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), National Polio Laboratory, National Tuberculosis Reference Laboratory (NTRL) and Regional Tuberculosis Reference Laboratory (RTRL) and has the ability to conduct high- level diagnostics [1]. The specific tests conducted include polymerase chain reaction (PCR) testing for influenza virus administered by the Institute of Epidemiology Disease Control And Research (IEDCR) and the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b); virus culture for poliovirus administered by the National Polio Laboratory/Institute Of Public Health (IPH); serology for HIV administered by the Institute of Epidemiology Disease Control And Research (IEDCR), Bangabandhu Sheikh Mujib Medical University (BSMMU) and the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b); microscopy for mycobacterium tuberculosis administered by the National Tuberculosis Reference Laboratory (NTRL) and Regional Tuberculosis Reference Laboratory (RTRL); rapid diagnostic testing for Plasmodium spp. administered by district hospitals and the malaria laboratory; and bacterial culture for Salmonella enteritidis serotype Typhi administered by all medical colleges, the Institute of Epidemiology Disease Control And Research (IEDCR), the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), and the Bangabandhu Sheikh Mujib Medical University (BSMMU) [1]. Bangladesh's national laboratories have well-established diagnostic capabilities for Nipah, Japanese encephalitis, Middle East respiratory syndrome, novel coronavirus (MERS-CoV), Ebola, and Zika [1]. Nothing is mentioned about the four country-specific tests in the JEE of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 [1]. The World Health Organization (WHO) published "First Bangladesh National Tuberculosis Drug Resistance Survey 2010-2011" (2013), in which it was mentioned that the National Tuberculosis Control Programme (NTP) established by the National Tuberculosis Reference Laboratory (NTRL) in 2007 at the National Institute of Diseases of the Chest and Hospital (NIDCH), where the test for mycobacterium tuberculosis (tuberculosis/TB) is administered [2]. Moreover, there is no information regarding the four country-specific tests on the websites of the Ministry of Health and Family Welfare, Institute of Epidemiology Disease Control and Research (IEDCR), and the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) [3, 4, 5].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] World Health Organization (WHO). 2013. "First Bangladesh National Tuberculosis Drug Resistance Survey 2010-2011". [<https://apps.who.int/iris/handle/10665/205075>]. Accessed 06 August 2020.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 17 August 2020.

[4] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 17 August 2020.

[5] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 17 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 evidence of national plans to conduct testing during a public health emergency, but there is insufficient evidence that it includes considerations for testing for novel pathogens, scaling capacity, and defining goals for testing.

Bangladesh has a National Preparedness and Response Plan for COVID-19 (2020) as well as 2nd National Avian and Pandemic Influenza Preparedness and Response Plan (2009) [1, 2]. The objective of the National Preparedness and Response Plan for COVID-19 (2020) is to prevent entry of the disease in the country and in case of importation to prevent or limit local transmission [1]. To facilitate planning and identify response levels, 6 country levels have been identified according to COVID19 infection status and under each level, the risk assessment should be conducted to determine/maintain/change the response level [1]. This plan also follows the overall World Health Organization's (WHO) strategic objectives for the COVID-19 response, which includes prevention of entry of COVID-19 case in Bangladesh from affected countries, limiting human-to-human transmission including reducing secondary infections among close contacts and health care workers, identifying, isolating and caring for patients early, etc. [1]. The laboratory plays a key role to detect cases and support the surveillance. Initially samples will be collected from all suspected cases, but in country level 2 & 3 samples will be collected from selected cases depending upon the situation [1]. Lab diagnosis will be based on real time RT-PCR at Institute of Epidemiology Disease Control and Research (IEDCR) with concurrent checking in WHO reference laboratory [1]. It also mentioned about developing plans expanding laboratory testing and transportation of clinical specimens to manage the increased demand for testing [1].

Directorate General of Health Services (DGHS) under the Ministry of Health and Family Welfare has published 2nd National Avian and Pandemic Influenza Preparedness and Response Plan (2009) whose goal is to prevent and control avian influenza and to prepare for the influenza pandemic to reduce morbidity and mortality in animals and humans and to minimize the socioeconomic and environmental impact [2]. It also included, "In the pandemic alert period, the objectives are to improve programme management with a focus on policy, planning, co-ordination and regulations, strengthen disease surveillance, and ensure prevention and control, case management. If Bangladesh and rest of the world enter into pandemic period, the specific objectives are to co-ordinate and mobilize multisectoral resources to contain the pandemic, ensure essential services and to strengthen bilateral, regional and international collaboration" [2]. The document also stated that, "The principal objectives of Case/Outbreak Investigation are to detect cases and cluster of emerging and re-emerging diseases including avian influenza in human, to determine key epidemiological, clinical, and virological characteristics of cases, to find out risk factors for transmission and to suggest measures for containment and control of the diseases. The roles and responsibilities of the Rapid Response Team (RRT) in Avian and Pandemic Influenza preparedness activities like to analyze and act on surveillance, media and other information, concerning Avian and Pandemic Influenza, to plan control and response strategies for managing Avian and Pandemic Influenza, to identify additional resources needed for rapid response, to investigate and manage the Avian and Pandemic Influenza including communication with the general public and the media, to collaborate and coordinate with other relevant agencies in managing the Avian and Pandemic Influenza, to evaluate the effectiveness of the response and intervention measures adopted for Avian and Pandemic Influenza, to produce a detailed report to higher authorities (Director IEDCR and Director Disease Control, DGHS)" [2].

[1] Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 05 March 2021.

[2] Directorate General of Health Services (DGHS). January 2009. "2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh". [<https://extranet.who.int/sph/influenza-plan-bangladesh>]. Accessed 26 February 2021.

2.1.2 Laboratory quality systems

2.1.2a

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

Yes = 1, No = 0

Current Year Score: 1

Bangladesh has a national laboratory that serves as a reference facility which is accredited for ISO 15189. The Clinical Laboratory Services of International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) has been accredited for ISO 15189 since 2011 by the Bureau of Laboratory Quality Standards (BLQS) under the Ministry of Public Health, Thailand. International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) laboratory services is the ever first accredited laboratory in Bangladesh and continuing its consecutive fifth accreditation status [1]. The ISO 15189, published in 2003, covers "Medical laboratories: particular requirements for quality and competence". The International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) is an international health research institute established in Bangladesh and works as a reference laboratory for bacterial culture for Salmonella enteritidis serotype Typhi, polymerase chain reaction (PCR) testing for influenza virus, and serology for HIV. They operate an internationally recognized clinical diagnostic laboratory service which is accredited under ISO 15189/15190 and meets global standards [2]. Bangladesh has at least five reference laboratories, but there is only evidence that only the icddr,b meets the ISO 15189 standard. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, some laboratories of Bangladesh are accredited for disease-specific testing by the World Health Organization (WHO), such as polio and measles tested by the Institute of Public Health (IPH) and Influenza tested by the Institute of Epidemiology Disease Control And Research (IEDCR), but there is no mention of ISO 15189 standard [3]. Also, there is no mention of the ISO 15189 standard on the websites of the Institute of Epidemiology Disease Control And Research (IEDCR) [4].

[1] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<http://labservices.icddr.org/accreditation>]. Accessed 18 August 2020.

[2] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). 2017. "Annual Report 2017". [https://www.icddr.org/dmdocuments/icddrb_annual_report_2017.pdf]. Accessed 18 August 2020.

[3] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[4] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 18 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 a few reference facilities in Bangladesh are subjected to external quality assurance reviews. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Institute of Epidemiology Disease Control And Research (IEDCR)/National Tuberculosis Reference Laboratory (NTRL)/International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) are the national laboratories who participate in international External Quality Assessment Programme (EQAP) for laboratories (World Health Organization, United States Centers for Disease Control, Australian Laboratory) [1]. But there is no further information regarding external quality assurance review on the website of the World Health Organization (WHO) [2]. Moreover, there is no information on external quality assurance review on the website of the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture, Institute of Epidemiology Disease Control And Research (IEDCR) and International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) [3, 4, 5, 6].

- [1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
- [2] World Health Organization (WHO). [<https://www.who.int/>]. Accessed 18 August 2020.
- [3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 18 August 2020.
- [4] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 18 August 2020.
- [5] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 18 August 2020.
- [6] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 18 August 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: 1

There is evidence of a nationwide specimen transport system in Bangladesh. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Bangladesh has the ability for safer and quicker transportation of specimens from 95% or more intermediate levels/districts to national laboratory facilities for advanced diagnostics [1]. Regional laboratories have a mechanism for transport, while staff use their own or public transport for outbreaks; however, the whole mechanism that they follow for specimen transport is not mentioned here [1]. Further, a few courier contracts are supported by partners (World Health Organization (WHO)/United States Centre for Disease Control (USCDC), but most hospital staff use public transportation and there is no mention of any type of specific transport [1]. The defence laboratory network can provide sample transport, which has been used during outbreaks [1]. There is close collaboration with the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), USCDC, and WHO [1].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 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. However, the National Preparedness and Response Plan for COVID-19 mentioned that the hospitals (Kurmitola General Hospital, Infectious Disease Hospital (IDH) and Kuwait Bangladesh friendship government hospital) are allocated to treat COVID-19 and National Reference Laboratory in

Bangladesh for COVID-19 is a BSL-2 laboratory at the Institute of Epidemiology, Disease Control and Research (IEDCR), but there is no mention of any plan for national public health laboratory system to scale-up testing during an outbreak [1]. In addition, a news report published in the Dhaka Tribune on 3 April, 2020 mentioned that tests for the detection of Covid-19 infection are now being conducted in 14 laboratories (including private and public) in Bangladesh out of which nine is in Dhaka and rest five are in different districts but there is no mention of any plans to supplement the capacity of national public health laboratory system to scale-up testing during an outbreak [2]. Also, there is no plan mentioned in the Ministry of Health and Family Welfare (MoHFW), Directorate General of Health Services (DGHS) and Institute of Epidemiology Disease Control And Research (IEDCR) websites [3, 4, 5].

[1] Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.

[2] Tribune Report. 3 April 2020. "Coronavirus: Tests possible in 14 labs in Bangladesh". Dhaka Tribune. [<https://www.dhakatribune.com/health/coronavirus/2020/04/03/coronavirus-testing-possible-in-14-labs-in-bangladesh>]. Accessed 20 August 2020.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 20 August 2020.

[4] Directorate General of Health Services (DGHS). [www.dghs.gov.bd]. Accessed 20 August 2020.

[5] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 20 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 that the country is conducting ongoing event-based surveillance and analysis for infectious diseases. According to an article named, Disease Surveillance System of Bangladesh: Combating Public Health Emergencies by Mohammed Husain published on 30 May, 2019, Institute of Epidemiology Disease Control And Research (IEDCR) has a good surveillance system including event-based surveillance system, which proved effective to manage public health emergencies [1]. Data for event-based surveillance are collected from usual surveillance system as well as from dedicated hotlines (24/7) of IEDCR, media monitoring, and any informal reporting. Case detection is done by syndromic surveillance, laboratory diagnosed surveillance, media surveillance, hotline, cell phone-based surveillance [1]. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Bangladesh has established an event-based surveillance system with a hotline that works on a 24/7 basis to capture events that would not have been picked up by its indicator-based surveillance system. The event-based surveillance system in Bangladesh periodically monitors media rumours on public health events and a method is in place for appropriate verification on a timely basis" [1]. The Institute of Epidemiology Disease Control And Research (IEDCR) is mandated to respond on any human disease outbreak to the national International Health Regulations (IHR) focal point similarly, the Department of Livestock Services (DLS) is mandated to participate in outbreak responses that involve the human/animal interface and report within the department on zoonotic diseases [2]. However, there is no evidence that the data is being analysed on a daily basis [2]. The

country has the capacity of sentinel-based, event-based, community-based, web based and cell phone-based surveillance and most of the surveillance is run by IEDCR [2].

[1] Husain, Mohammed. 30 May 2019. "Disease Surveillance System of Bangladesh: Combating Public Health Emergencies". Online Journal of Public Health Informatics 2019; 11[1] : e334. [<https://doi.org/10.5210/ojphi.v11i1.9815>]. Accessed 18 August 2020.

[2] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 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 public evidence that Bangladesh has reported a potential public health emergency of international concern (PHEIC) to the World Health Organization's (WHO) within the last two years.

The last outbreak report of Bangladesh to WHO was an outbreak of diphtheria reported by the non-profit Medecins Sans Frontieres (MSF) in Cox's Bazar which was published on the WHO's Disease Outbreak News website in 2017 [1]. A WHO report published in 30 September 2016, called "WHO calls for stronger measures against Zika as Thailand confirms disease-related microcephaly" mentioned that the presence of Zika virus in the WHO South-East Asia Region has been documented in recent years in Thailand, Indonesia, Maldives and Bangladesh, however, there is no evidence that the country has reported these outbreaks to the WHO [2]. However, there is evidence that Bangladesh has been submitting report of COVID- 19 to WHO on weekly basis which includes number of tests, new cases, recovered, death [3]. In addition, there is no evidence of reporting of any public health emergency of international concern (PHEIC) to WHO on the Ministry of Health and Family Welfare, Institute of Epidemiology Disease Control And Research (IEDCR) and International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) and Directorate General of Health Services (DGHS) websites [4, 5, 6, 7].

[1] World Health Organization. 13 December 2017. "Diphtheria - Cox's Bazar in Bangladesh."

[<https://www.who.int/csr/don/13-december-2017-diphtheria-bangladesh/en/>]. Accessed 18 August 2020.

[2] World Health Organization (WHO). 30 September 2016. "WHO calls for stronger measures against Zika as Thailand confirms disease-related microcephaly". [<https://www.who.int/southeastasia/news/detail/30-09-2016-who-calls-for-stronger-measures-against-zika-as-thailand-confirms-disease-related-microcephaly>]. Accessed 18 August 2020.

[3] World Health Organization (WHO). "Bangladesh Situation Reports".

[[https://www.who.int/bangladesh/emergencies/coronavirus-disease-\(covid-19\)-update/coronavirus-disease-\(covid-19\)-bangladesh-situation-reports](https://www.who.int/bangladesh/emergencies/coronavirus-disease-(covid-19)-update/coronavirus-disease-(covid-19)-bangladesh-situation-reports)]. Accessed 02 September 2020.

[4] Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 18 August 2020.

[5] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 18 August 2020.

[6] International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 18 August 2020.

[7] Directorate General of Health Services (DGHS). [www.dghs.gov.bd]. Accessed 18 August 2020.

2.3.2 Interoperable, interconnected, electronic real-time reporting systems

2.3.2a

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that Bangladesh government operates an electronic reporting surveillance system at both the national and sub-national levels. According to an article named, Disease Surveillance System of Bangladesh: Combating Public Health Emergencies by Mohammed Husain published on 30 May, 2019, Institute of Epidemiology Disease Control And Research (IEDCR) is responsible for surveillance of data of priority communicable disease which are collected by web based integrated disease surveillance [1]. It is based on weekly data received from upazilla (sub-district) health complex on communicable disease marked as priority [1]. In addition, Bangladesh has the capacity of sentinel-based, event-based, community-based, web based and cell phone-based surveillance and most of the surveillance is run by IEDCR [2]. Outbreak responses from the national level is run by national rapid response team (NRRT) and public health emergencies at the district level and upazila level are responded by district rapid response team (DRRT) and upazila rapid response team (URRT) respectively [2]. In the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, it is mentioned that Bangladesh has a human health web-based disease surveillance system which covers all of its 64 districts and 490 upazilas (sub-districts), and the system operates by capturing diseases that are reported in health care facilities in the public sector [3]. In addition, Bangladesh has established an event-based surveillance system with a hotline that works on a 24/7 basis to capture events that would not have been picked up by its indicator-based surveillance system [3]. Moreover, in Bangladesh different health facilities at all levels send the data using DHIS-2 software and it is also used for data entry, analysis and reporting of surveillance data [1, 2, 3].

[1] Husain, Mohammed. 30 May 2019. "Disease Surveillance System of Bangladesh: Combating Public Health Emergencies". Online Journal of Public Health Informatics 2019; 11[1] : e334. [<https://doi.org/10.5210/ojphi.v11i1.9815>]. Accessed 18 August 2020.

[2] Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.

[3] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 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: 1

There is evidence that electronic reporting surveillance system does collect ongoing/real-time laboratory data in Bangladesh. According to an article named, Disease Surveillance System of Bangladesh: Combating Public Health Emergencies by Mohammed Husain published on 30 May, 2019, surveillance data of priority communicable disease are collected by web based integrated disease surveillance and it is based on weekly data received from upazilla (sub-district) health complex on communicable disease marked as priority [1]. During outbreak, daily, even hourly reporting is sought from the concerned unit [1]. Data for event-based surveillance are collected from usual surveillance system as well as from dedicated hotlines (24/7) of Institute of Epidemiology Disease Control And Research (IEDCR), media monitoring, and any informal reporting [1].

Moreover, Bangladesh has a Management Information System (MIS) which is a department of the Directorate General of Health Services (DGHS) under the Ministry of Health and Family Welfare whose main objective is to establish and run the Health Information System (HIS) and e-health in Bangladesh [2]. Also, a well-established DHIS-2 software is on place and it is used for gathering data from different health facilities and Point of Entry [2]. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Bangladesh has initiated a human health web-based disease surveillance system, which covers all its 64 districts and 490 upazilas (sub-districts), and it is operable by capturing diseases that are reported in health care facilities in the public sector [3]. It also mentioned that "Bangladesh has attained reasonable capacities for detection of events of significance for both human and animal health as well as for other health security threats of concern through establishing and enhancing an indicator-based national disease surveillance system with automated and real-time data entry and data analysis capability" [3].

[1] Husain, Mohammed. 30 May 2019. "Disease Surveillance System of Bangladesh: Combating Public Health Emergencies". Online Journal of Public Health Informatics 2019; 11[1] : e334. [<https://doi.org/10.5210/ojphi.v11i1.9815>]. Accessed 18 August 2020.

[2] Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.

[3] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 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(EHR) are commonly used in Bangladesh. According to the Online Population Health Registry on Directorate General of Health Services website, a permanent online registry of electronic health records of all citizens of Bangladesh is now on progress but when this will be completed or how commonly these records will be used is not mentioned [1]. Some private hospitals and clinics are using this electronic health records (EHR) method but there are some difficulties in using EHR systems in public hospitals of Bangladesh however, how commonly the EHR is being used is not mentioned [2]. The Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, mentioned that mobile phone-based health services and e-Health reporting services do exist in Bangladesh, but there is no specific mention with regard to how they are commonly used [3]. An article entitled "Hopes and Fears in Implementation of Electronic Health Records in Bangladesh" published by Sana Z. Khan in 2012, states that limited information is available on the prevalence of electronic health records, and available data suggest that they are not yet in common use [4]. Another electronic journal entitled "e-Health in Bangladesh: Current Status, Challenges, and Future Direction" published by Md Rakibul Hoque in January 2014 states that the creation of permanent online Electronic Health Records (EHR) of all citizens of Bangladesh is currently in progress [5]. The goal of maintaining an integrated health record for a patient is to enable care providers to improve service quality. The journal concluded that service providers must provide quality Information and Communications Technology (ICT)-based health service that is easily and widely available

throughout the country; however, there is nothing mentioned regarding this record in common use [5]. In addition, there is no information regarding electronic health records commonly used on the website of the Ministry of Health and Family Welfare (MoHFW) [6].

- [1] Directorate General of Health Services. "Online Population Health Registry". [https://dghs.gov.bd/index.php/en/publications/health-bulletin/dghs-health-bulletin/102-online-population-resistry]. Accessed 18 August 2020.
- [2] Afrin, Suborna. February 2020. e-Health in Developing Countries: Bangladeshi Perspective. International Journal of Engineering and Advanced Technology (IJEAT). ISSN: 2249 - 8958, Volume-9 Issue-3. [https://www.ijeat.org/wp-content/uploads/papers/v9i3/A1837109119.pdf]. Accessed 18 August 2020.
- [3] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1]. Accessed 04 August 2020.
- [4] Khan, Sana Z. December 2017. "Hopes and Fears in Implementation of Electronic Health Records in Bangladesh". The Electronic Journal of Information Systems in Developing Countries 54 [8] :1-18. [https://onlinelibrary.wiley.com/doi/abs/10.1002/j.1681-4835.2012.tb00387.x]. Accessed 18 August 2020.
- [5] Hoque, Rakibul Md. June 2014. "e-Health in Bangladesh: Current Status, Challenges, and Future Direction". The International Technology Management Review 4 [2] :87-96. [https://www.atlantis-press.com/journals/itmr/13590]. Accessed 18 August 2020.
- [6] Ministry of Health and Family Welfare (MoHFW). [http://www.mohfw.gov.bd/]. Accessed 18 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 no evidence that the national public health system has access to electronic health records of individuals in Bangladesh. The Ministry of Health and Family Welfare (MoHFW) is responsible for planning and management of curative, preventive as well as promotive health services to the population of the country. Institute of Epidemiology, Disease Control and Research (IEDCR), Institute of Public Health (IPH) and Institute of Public Health Nutrition (IPHN), National Institute of Preventive and Social Medicine (NIPSOM) are the major public health institutes of public sectors. Among these institutes, IEDCR is the focal institute for conducting public health surveillance and outbreak response & IHR focal institute. According to Bangladesh's digital health journey: reflections on a decade of quiet revolution (2019), Management Information System (MIS) which is a department of the Directorate General of Health Services (DGHS) under the Ministry of Health and Family Welfare is working on an ambitious shared health record (SHR) project, with the aim of creating a national electronic archive of citizens' lifetime electronic health records that can be accessed during any patient encounter anywhere in the country [1]. In addition, patients will not need to carry a personal health file, and doctors and health facilities will be able to retrieve and update an individual's medical record on demand but current accessibility to electronic health records of individual is not mentioned [1]. According to the Online Population Health Registry on Directorate General of Health Services website, a permanent online registry of electronic health records of all citizens of Bangladesh is now on progress but no mention of access to electronic health records of individuals [2]. In addition, there is no mention of accessibility of electronic health/medical records or an e-health policy in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 or on the website of the Ministry of Health and Family Welfare (MoHFW) [3, 4].

[1] Muhammad Abdul Hannan Khan. September 2019. "Bangladesh's digital health journey: reflections on a decade of quiet revolution". WHO South-East Asia Journal of Public Health. 8 (&Irm;2)&Irm;;: 71 - 76.

[<https://apps.who.int/iris/handle/10665/329331>]. Accessed 18 August 2020.

[2] Directorate General of Health Services. "Online Population Health Registry".

[<https://dghs.gov.bd/index.php/en/publications/health-bulletin/dghs-health-bulletin/102-online-population-resistry>].

Accessed 18 August 2020.

[3] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[4] Ministry of Health and Family Welfare (MoHFW). [www.mohfw.gov.bd]. Accessed 18 August 2020.

[4] Ministry of Health and Family Welfare (MoHFW). [www.mohfw.gov.bd]. Accessed 18 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 of data standards to ensure data is comparable in Bangladesh. However, the Management Information System (MIS) of the Directorate General of Health Services (DGHS) has taken an initiative to develop e-health standards and an inter-operability framework for use in database systems, however, there is no information regarding the finalization date of e-health standards and the inter-operability framework [1]. Health Informatics Standards and Data Structure for Bangladesh is a draft published by Ministry of Health and Family Welfare (MoHFW) in October 2012, mentioned that this document describes the standards and inter-operability procedures of the Bangladesh Health Information Systems Architecture (BHISA) across a multi-stakeholders environment inclusive of Ministry of Health & Family Welfare (MoHFW) with its subsidiary agencies and programs; health-related programs and health data producers of other ministries; NGOs; development partners; and private and personal care providers [2]. However, there is no mention of data standards to ensure data is comparable [2]. Moreover, there is no information regarding data standards to ensure that data is comparable in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 or on the websites of the Ministry of Health and Family Welfare (MoHFW), Institute of Epidemiology Disease Control And Research (IEDCR) [3, 4, 5].

[1] Directorate General of Health Services (DGHS). "Bangladesh eHealth Standards & Interoperability Framework".

[<http://www.dghs.gov.bd/index.php/en/e-health/our-ehealth-eservices/84-english-root/ehealth-eservice/493-bangladesh-ehealth-standards-interoperability-framework>]. Accessed 19 August 2020.

[2] Ministry of Health and Family Welfare. October 2012. "Health Informatics Standards and Data Structure for Bangladesh".

[https://dghs.gov.bd/images/docs/eHealth/Standards_and_interoperability_document_final_5.01.14.pdf]. Accessed 19 August 2020.

[3] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[4] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 19 August 2020.

[5] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 19 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 no evidence of established mechanisms at relevant ministries in Bangladesh responsible for animal, human, and wildlife surveillance to share data. According to the Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016, Bangladesh has surveillance systems for zoonotic diseases, which are in place both for humans and animals, but there is no information with regard to sharing data with each other [1]. The JEE also states that the Government of Bangladesh is committed to prevent and control emerging and endemic zoonotic agents to working in coordination with animal health and human (public) health sectors. Bangladesh also needs to strengthen coordination and collaboration (including priority setting, policy setting, regulatory guideline development, information sharing, supporting joint training and educational programmes and joint risk assessment) between the animal health and human health sectors at all levels [1]. Strategic Framework for One Health Approach to Infectious Diseases in Bangladesh (2012), mentioned that the Ministry of Health & Family Welfare, the Ministry of Fisheries & Livestock, and the Ministry of Environment, Forest and Climate Change have agencies responsible for implementing One Health activities and that Bangladesh needs to develop a platform (website) for passive and active data sharing [2]. There is no information regarding this issue in the Ministry of Health & Family Welfare (MoHFW), Ministry of Agriculture, Ministry of Fisheries & Livestock and Ministry of Environment, Forest and Climate Change [3, 4, 5, 6].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] Institute of Epidemiology, Disease Control and Research (IEDCR). 2012. "Strategic Framework for One Health Approach to Infectious Diseases in Bangladesh".

[http://www.iedcr.org/pdf/files/One%20Health/Strategic_framework_for_One_Health_Bangladesh-26%20Jan.pdf]. Accessed 19 August 2020.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 19 August 2020.

[4] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 19 August 2020.

[5] Ministry of Fisheries and Livestock. [<https://mofl.gov.bd/>]. Accessed 19 August 2020.

[6] Ministry of Environment, Forest and Climate Change. [<https://moef.gov.bd/>]. Accessed 19 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

Bangladesh does not make de-identified health surveillance data on infectious diseases publicly available via reports on government websites. Directorate General of Health Services is a Bangladesh government Directorate under the Ministry of

Health and Family Welfare responsible for health services in Bangladesh where daily updates of Dengue status report are available on the website but these records are from 2019 [1]. Also, The Institute of Epidemiology, Disease Control and Research (IEDCR) functions under the Ministry of Health and Family Welfare (MoHFW), published de-identified health surveillance data on disease outbreaks and updated reports on surveillance are available for influenza but on a monthly basis [2]. Furthermore, there is no information of making de-identified health surveillance data on infectious diseases publicly available via reports on government websites in the Ministry of Health and Family Welfare (MoHFW) website [3].

[1] Directorate General of Health Services (DGHS). [<https://dghs.gov.bd/index.php/en/data>]. Accessed 03 March 2021.

[2] Institute of Epidemiology, Disease Control and Research (IEDCR). "Ongoing Surveillance at IEDCR". [<https://old.iedcr.gov.bd/website/index.php/surveillance>]. Accessed 03 March 2021.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 03 March 2021.

2.4.3b

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

Yes = 1 , No = 0

Current Year Score: 1

Bangladesh makes de-identified COVID-19 surveillance data available via daily reports on government websites. Corona Info is a website controlled by the Ministry of Health and Family Welfare where daily updates on COVID-19 is available [1]. It shows the daily deaths, cases, recovered and number of tests every 24 hours. The Institute of Epidemiology, Disease Control and Research (IEDCR) functions under the Ministry of Health and Family Welfare (MoHFW), also publishes COVID-19 surveillance data (total tests, death, recovered, cases) every day on their website [2].

[1] Corona Info. [<https://corona.gov.bd/>]. Accessed 19 August 2020.

[2] Institute of Epidemiology, Disease Control and Research (IEDCR). [<http://old.iedcr.gov.bd/>]. Accessed 19 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

There is no evidence of legislation or regulations that safeguard the confidentiality of identifiable health information for individuals in Bangladesh. According to Bangladesh's digital health journey: re#64258;ctions on a decade of quiet revolution (2019), although Bangladesh has some achievements in digital health but the country needs to strengthen governance and regulation of technologies, including data privacy and security and accreditation of health apps for consumers [1]. In addition, nothing is mentioned in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, regarding regulations or legislation that safeguard the confidentiality of identifiable health information for individuals [2]. Moreover, no legislation or regulation about safeguarding the confidentiality of identifiable health information for individuals is provided in United Nations conference on Trade and Development website as well as on the Ministry of Health and Family Welfare (MoHFW), Directorate General of Health

Services (DGHS) and Institute of Epidemiology Disease Control And Research (IEDCR) websites [3, 4, 5, 6].

[1] Muhammad Abdul Hannan Khan. September 2019. "Bangladesh's digital health journey: reflections on a decade of quiet revolution". WHO South-East Asia Journal of Public Health, 8 (2): 71 - 76.

[<https://apps.who.int/iris/handle/10665/329331>]. Accessed 18 August 2020.

[2] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[3] United Nations conference on Trade and Development. "Data Protection and Privacy Legislation Worldwide".

[https://unctad.org/en/Pages/DTL/STI_and_ICTs/ICT4D-Legislation/eCom-Data-Protection-Laws.aspx]. Accessed 19 August 2020.

[4] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 19 August 2020.

[5] Directorate General of Health Services (DGHS). [www.dghs.gov.bd]. Accessed 19 August 2020.

[6] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 19 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 no evidence of specific legislation or regulations safeguarding the confidentiality of identifiable health information for individuals from cyber attacks. There is no mention of regulations for safeguarding the confidentiality of health information from cyber attacks in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 [1]. Moreover, no legislation or regulation about safeguarding the confidentiality of identifiable health information for individuals from cyber attacks is provided in United Nations conference on Trade and Development website as well as on the Ministry of Health and Family Welfare (MoHFW), Directorate General of Health Services (DGHS) and Institute of Epidemiology Disease Control And Research (IEDCR) websites [2, 3, 4, 5].

[1] World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.

[2] United Nations conference on Trade and Development. "Data Protection and Privacy Legislation Worldwide".

[https://unctad.org/en/Pages/DTL/STI_and_ICTs/ICT4D-Legislation/eCom-Data-Protection-Laws.aspx]. Accessed 20 August 2020.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 20 August 2020.

[4] Directorate General of Health Services (DGHS). [www.dghs.gov.bd]. Accessed 20 August 2020.

[5] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 20 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 evidence that the government made a commitment via public statements, legislation or a cooperative agreement to share surveillance data of one or more than one diseases during a public health emergency with other countries in the region.

Bangladesh is a member of The International Association of National Public Health Institutes (IANPHI) but there is no mention of any commitment made to share surveillance data of one or more than one diseases during a public health emergency with other countries in the region [1]. Also, no information regarding this matter is available on the websites of World Health Organization (WHO), Ministry of Health and Family Welfare (MoHFW), Directorate General of Health Services and Institute of Epidemiology Disease Control And Research (IEDCR) [2, 3, 4, 5].

[1] The International Association of National Public Health Institutes (IANPHI). [<https://ianphi.org/news/index.html>]. Accessed 04 March 2021.

[2] World Health Organization (WHO). [<https://www.who.int/countries/bgd/en/>]. Accessed 04 March 2021.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 04 March 2021.

[4] Directorate General of Health Services (DGHS). [www.dghs.gov.bd]. Accessed 04 March 2021.

[5] Institute of Epidemiology Disease Control And Research (IEDCR). [<https://old.iedcr.gov.bd/website/>]. Accessed 04 March 2021.

2.5 CASE-BASED INVESTIGATION

2.5.1 Case investigation and contact tracing

2.5.1a

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

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

Current Year Score: 1

There is evidence that Bangladesh has a system in place to provide support at the sub-national level to conduct contact tracing but only in response to active public health emergencies.

According to the National Preparedness and Response Plan for COVID-19, Bangladesh, six areas have been identified as the priority areas for planning and action and case finding, contact tracing and quarantine is a one of them [1]. It is also mentioned that, "Provide trainings to Rapid Response Teams (RRT) at national and subnational levels on sample collection of respiratory pathogens, Develop protocols and Standard Operating Procedures (SOP) for contact tracing, and Conduct contact

tracing as per SOP" [1].

[1] Ministry of Health and Family Welfare. March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 06 March 2021.

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 Bangladesh provides wraparound services to enable infected people and their contacts to self-isolate or quarantine as recommended, particularly economic support (paycheck, job security) and medical attention. Bangladesh Labour Law (2006) does not include self-isolation or quarantine and also does not mention any details about providing medical services to infected people who are asked to self isolate. [1]. There is no information regarding this in the Ministry of Health and Family Welfare (MoHFW) and Directorate General of Health Services (DGHS) websites [2, 3].

[1] Laws of Bangladesh. 11 October 2006. "Bangladesh Labour Law, 2006". [<http://bdlaws.minlaw.gov.bd/act-952.html>]. Accessed 6 March 2021.

[2] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 6 March 2021.

[3] Directorate General of Health Services (DGHS). [<https://dghs.gov.bd/index.php/en/>]. Accessed 6 March 2021.

2.5.1c

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

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that 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 on government websites. Bangladesh government has started a web portal to publish daily updates on COVID-19 [1]. Here the total number of newly infected, deaths, cured, and tests are mentioned on daily basis [1]. Also, the Institute of Epidemiology, Disease Control and Research (IEDCR) is publishing daily update on their website where it includes total case, cured, death, recovered and tests as per 24 hours [2]. However, there is no mention of cases tracing back to a known source [1, 2]. There is no information on the website of Ministry of Health and Family Welfare [3].

[1] Corona info. [<https://corona.gov.bd/>]. Accessed 09 August 2020.

[2] Institute of Epidemiology, Disease Control and Research (IEDCR). Bangladesh Covid-19 Update. [<http://old.iedcr.gov.bd/>]. Accessed 09 August 2020.

[3] Ministry of Health and Family welfare. [<http://www.mohfw.gov.bd/>]. Accessed 05 September 2020.

2.5.2 Point of entry management

2.5.2a

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

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

Current Year Score: 0

There is no evidence that Bangladesh has a plan to identify suspected and potential cases in international travelers and trace and quarantine their contacts in the event to prepare for future public health emergency or only in response to active public health emergencies. However, there is a National Preparedness and Response Plan for COVID-19, Bangladesh where it is mentioned that, "As per Article 31 of the International Health Regulations (IHR) and national law, deeming the extent necessary to control such a risk, compel the traveler to undergo additional health measures that prevent or control the spread of disease, including isolation, quarantine or placing the traveler under public health observation", but there is no more details regarding this in the document [1]. In addition, as a border control authority, Civil Aviation Authority of Bangladesh published Advice for Arrival & Departure Travelers in their website for COVID-19, but there is no mention of any plans or agreement which are in place to prepare for future public health emergencies [2].

[1] Ministry of Health and Family Welfare (MoHFW). 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 6 March 2021.

[2] Civil Aviation Authority of Bangladesh. [<https://caab.portal.gov.bd/site/page/12b1514d-5ffe-4ce0-888a-8cfa0008bb12>]. Accessed 6 March 2021.

2.6 EPIDEMIOLOGY WORKFORCE

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

2.6.1a

Does the country meet one of the following criteria?

- Applied epidemiology training program (such as FETP) is available in country
- Resources are provided by the government to send citizens to another country to participate in applied epidemiology training programs (such as FETP)

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

Current Year Score: 1

There is an evidence that applied epidemiology training program (such as FETP) is available in Bangladesh but no evidence that resources are provided by the government to send citizens to another country to participate in applied epidemiology training programs (such as FETP). There is a notice for admission on Field Epidemiology Training Program Bangladesh (FETP, B), Advanced / MSc in Applied Epidemiology (2019-20) on the Directorate General of Health Services (DGHS) under Ministry of Health and Family Welfare (MoHFW) website [1]. This is a unique two years training program for government physicians

and veterinarians with the Institute of Epidemiology, Disease Control and Research (IEDCR) of the Ministry of Health and Family Welfare (MoHFW) and the United States Centers for Disease Control and Prevention (US CDC) [1]. Moreover, according to Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET), FETP Bangladesh (FETP, B) is a two-year training program for in field epidemiology and a collaborative initiative between the Institute of Epidemiology, Disease Control and Research (IEDCR) in Dhaka and the Centers for Disease Control and Prevention (CDC). The program began in 2013 and is supervised by a steering committee headed by the Secretary of Health of the Ministry of Health and Family Welfare [2]. There is no evidence on resources provided by the government to send citizens to another country to participate in applied epidemiology training programs in the website of MoHFW [3].

[1] Directorate General of Health Services (DGHS). [<https://dghs.gov.bd/index.php/en/home/5078-admission-in-field-epidemiology-training-program-bangladesh-fetp-b-advanced-msc-in-applied-epidemiology-2019-20>]. Accessed 08 August 2020.

[2] Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET). "Bangladesh Field Epidemiology Training Program". [<https://www.tephinet.org/training-programs/bangladesh-field-epidemiology-training-program>] Accessed 08 August 2020.

[3] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 09 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: 1

There is an evidence that Bangladesh have field epidemiology training programs explicitly inclusive of animal health professionals. There is a notice for admission on Field Epidemiology Training Program Bangladesh (FETP, B), Advanced / MSc in Applied Epidemiology (2019-20) on the Directorate General of Health Services (DGHS) under Ministry of Health and Family Welfare (MoHFW) website [1]. This is a unique two years training program for government physicians and veterinarians with the Institute of Epidemiology, Disease Control and Research (IEDCR) of the Ministry of Health and Family Welfare (MoHFW) and the United States Centers for Disease Control and Prevention (US CDC) [1]. Moreover, according to Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET), FETP Bangladesh (FETP, B) is a two-year training program for government physicians and veterinarians in field epidemiology and a collaborative initiative between the Institute of Epidemiology, Disease Control and Research (IEDCR) in Dhaka and the Centers for Disease Control and Prevention (CDC) [2].

[1] Directorate General of Health Services (DGHS). [<https://dghs.gov.bd/index.php/en/home/5078-admission-in-field-epidemiology-training-program-bangladesh-fetp-b-advanced-msc-in-applied-epidemiology-2019-20>]. Accessed 08 August 2020.

[2] Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET). "Bangladesh Field Epidemiology Training Program". [<https://www.tephinet.org/training-programs/bangladesh-field-epidemiology-training-program>]. Accessed 08 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: 0

2020

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

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

3.1 EMERGENCY PREPAREDNESS AND RESPONSE PLANNING

3.1.1 National public health emergency preparedness and response plan

3.1.1a

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

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

Current Year Score: 0

There is insufficient evidence of an overarching national public health emergency response plan in Bangladesh. There is an emergency response plan titled "Bangladesh Emergency Response Preparedness Plan 2014" which mentions that "to meet the emergency situation and reduce its impact, pandemic contingency plans have been developed". The plans include mechanism for developing surge capacity to manage the patients, to sustain essential services and reduce the social impact. But it cannot be verified whether the plans deal with multiple communicable diseases. The document further mentions that Bangladesh has a strong surveillance system up to the grass-root level, which has the capacity to combat any upcoming endemic, epidemic and pandemic diseases. It is also mentioned that control of communicable diseases continues to remain a public-health priority in Bangladesh. Communicable diseases of public health importance include: avian influenza (H5N1, H7N9, H9N2); MERS-CoV, malaria, kalaazar; infestation with filarial and other worms; tuberculosis; HIV/AIDS and Sexually Transmitted Diseases (STDs); emerging zoonotic diseases (like Nipah); anthrax, food and waterborne diseases (like hepatitis) due to viruses; diarrheal disorders; enteric fever and leptospirosis; arthropod borne diseases (like dengue and chikungunya). Bangladesh has a number of target-oriented programmes on malaria, kala-azar, filarial and intestinal worms, avian and pandemic influenza and has achieved significant progress in these domains [1]. No further evidence is available via the Ministry of Health. [2]

[1] Humanitarian Response. 2014. "Bangladesh Emergency Response Preparedness Plan 2014".

[<https://www.humanitarianresponse.info/en/operations/asia/document/bangladesh-emergency-response-plan-2014>]. Accessed 9 August 2020.

[2] Ministry of Health and Family Welfare, Bangladesh. [<http://www.mohfw.gov.bd/>] Accessed 14 June 2021.

3.1.1b

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

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

Current Year Score: 0

There is insufficient evidence of an overarching national public health emergency response plan in Bangladesh. There is an emergency response plan titled "Bangladesh Emergency Response Preparedness Plan 2014" which mentions that "to meet the emergency situation and reduce its impact, pandemic contingency plans have been developed". The plans include mechanism for developing surge capacity to manage the patients, to sustain essential services and reduce the social impact. But it cannot be verified whether the plans deal with multiple communicable diseases. The document further mentions that Bangladesh has a strong surveillance system up to the grass-root level, which has the capacity to combat any upcoming endemic, epidemic and pandemic diseases. It is also mentioned that control of communicable diseases continues to remain a public-health priority in Bangladesh. Communicable diseases of public health importance include: avian influenza (H5N1, H7N9, H9N2); MERS-CoV, malaria, kalaazar; infestation with filarial and other worms; tuberculosis; HIV/AIDS and Sexually Transmitted Diseases (STDs); emerging zoonotic diseases (like Nipah); anthrax, food and waterborne diseases (like hepatitis) due to viruses; diarrheal disorders; enteric fever and leptospirosis; arthropod borne diseases (like dengue and chikungunya). Bangladesh has a number of target-oriented programmes on malaria, kala-azar, filarial and intestinal worms, avian and pandemic influenza and has achieved significant progress in these domains [1]. No further evidence is available via the Ministry of Health. [2]

1. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
2. World Organization for Animal Health (OIE). 2015. "PVS Gap Analysis Report Bangladesh". [http://www.oie.int/fileadmin/Home/eng/Support_to_OIE_Members/docs/pdf/20160606_FinalReport_PVSGapAnalysis_Bangladesh.pdf]. Accessed 09 August 2020.
3. Ministry of Health and Family Welfare (MoHFW). "Law and Acts". [http://www.mohfw.gov.bd/index.php?option=com_content&view=article&id=106&Itemid=79&lang=en]. Accessed 09 August 2020.
4. Humanitarian Response. 2014. "Bangladesh Emergency Response Preparedness Plan 2014". [https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/bgd_bkgd_emerg-resp-plan_2014_0.pdf]. Accessed 09 August 2020.
5. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 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: 0

There is evidence of an overarching national public health emergency response plan in Bangladesh but no explicit mention of how pediatric and vulnerable populations are treated within the plan. There is a health emergency response plan entitled "Bangladesh Emergency Response Preparedness Plan 2014" which addresses planning for multiple communicable diseases with epidemic or pandemic potential but it does not include considerations for pediatric and/or other vulnerable populations [1]. However, there is a National Preparedness and Response Plan specifically for COVID-19, but it also does not include considerations for pediatric and/or other vulnerable populations [2].

1. Humanitarian Response. 2014. "Bangladesh Emergency Response Preparedness Plan 2014". [https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/bgd_bkgd_emerg-resp-plan_2014_0.pdf]. Accessed 02 September 2020.
2. Ministry of Health and Family Welfare. March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 02 September 2020.

3.1.1d

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

Yes = 1 , No = 0

Current Year Score: 0

2020

WHO Strategic Partnership for IHR and Health Security (SPH)

3.1.2 Private sector involvement in response planning

3.1.2a

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

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Bangladesh has a specific mechanism for engaging with the private sector to assist with outbreak emergency preparedness and response. In August 2010, the Government of Bangladesh issued the Policy and Strategy for Public Private Partnership (PPP) to facilitate the development of core sector public infrastructure and services vital including health sector for the people of Bangladesh, however, this document was not publicly available before 2020 it does not specify emergencies [1]. In "National Preparedness and Response Plan for COVID-19, Bangladesh", it is clearly mentioned that Public Private Partnership (PPP) plays an important role in providing preventive services in the urban areas with the help of non-government organizations (NGOs) but there is no evidence of an actual mechanism [2]. There is no further evidence in the Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh. [3]

1. Bangladesh Gazette. 2 August 2010. "Policy and Strategy for Public-Private Partnership (PPP), 2010". [http://www.pppo.gov.bd/government_policy.php]. Accessed 11 August 2020.
2. Ministry of Health and Family Welfare (MoHFW). 16 Mar 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
3. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 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: 1

There is evidence that Bangladesh has a plan in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic only for one disease. There is a disease specific plan for COVID-19 namely National Preparedness and Response Plan for COVID-19, Bangladesh (2020) where implementation of non-pharmaceutical interventions (NPIs) during the pandemic is mentioned [1]. It also included, "Focus on prevention messages, including handwashing, coughing etiquette and social distancing" [1]. There is no information about non-pharmaceutical interventions (NPIs) during an epidemic or pandemic in the websites of Ministry of Health and Family Welfare (MoHFW) and Department of Disaster Management (DDM) [2, 3].

1. Ministry of Health and Family Welfare (MoHFW). 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 7 March 2021. 2. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 09 September 2020. 3. Department of Disaster Management (DDM). [<http://www.ddm.gov.bd/>]. Accessed 09 September 2020.

3.2 EXERCISING RESPONSE PLANS

3.2.1 Activating response plans

3.2.1a

Does the country meet one of the following criteria?

- Is there evidence that the country has activated their national emergency response plan for an infectious disease outbreak in the past year?

- Is there evidence that the country has completed a national-level biological threat-focused exercise (either with WHO or separately) in the past year?

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

Current Year Score: 1

There is an evidence that Bangladesh has activated their national emergency response plan for an infectious disease outbreak in the past year, however there is no evidence that Bangladesh has completed a national-level biological threat-focused exercise (either with World Health Organization (WHO) or separately) in the past year.

Bangladesh has a National Preparedness and Response Plan for COVID-19 (2020) which have been activated in 2020 [1]. The plan includes contact tracing, closing down of educational institute if warranted social distancing along with limiting or inhibiting social gathering and sharing COVID-19 update data with World Health Organization (WHO) and all of these are fulfilled [1, 2, 3, 4]. There is no information that Bangladesh completed a national-level biological threat-focused exercise (either with WHO or separately) in the past year in WHO extranet, WHO country profile, Ministry of Health and Family

Welfare (MoHFW) and Ministry of Agriculture [5, 6, 7, 8].

1. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
2. Star Business Report. June 05, 2020 "Bangladesh finally gets its own contact tracing app". The Daily Star. [<https://www.thedailystar.net/business/telecom/news/bangladesh-finally-gets-its-own-contact-tracing-app-1909309>]. Accessed 20 August 2020.
3. Ali Asif Shawon. 16 March 2020. "Bangladesh closes all educational institutions till March 31". Dhaka Tribune'. [<https://www.dhakatribune.com/bangladesh/dhaka/2020/03/16/govt-directs-shutting-all-educational-institutions-mach-17-to-31>]. Accessed 20 August 2020.
4. World Health Organization (WHO). "Bangladesh situation reports". [[https://www.who.int/bangladesh/emergencies/coronavirus-disease-\(covid-19\)-update/coronavirus-disease-\(covid-2019\)-bangladesh-situation-reports](https://www.who.int/bangladesh/emergencies/coronavirus-disease-(covid-19)-update/coronavirus-disease-(covid-2019)-bangladesh-situation-reports)]. Accessed 20 August, 2020.
5. World Health Organization (WHO). [<https://extranet.who.int/sph/simulation-exercise>]. Accessed 20 August, 2020.
6. World Health Organization (WHO). [<https://www.who.int/bangladesh>]. Accessed 20 August, 2020.
7. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 20 August, 2020.
8. Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 20 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 Bangladesh 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 in the past year. Bangladesh has developed a National Preparedness and Response Plan for COVID-19 which is activated in 2020 and there is no mention of gaps or a plan to improve response capabilities. Moreover, there is no mention of any action review report or list of gaps and plans to improve them on the World Health Organization (WHO) extranet, WHO country profile, Ministry of Health and Family Welfare (MoHFW) and Ministry of Agriculture websites [2, 3, 4, 5].

1. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020. Accessed 20 August 2020.
2. World Health Organization (WHO). [<https://www.who.int/countries/bgd/en/>]. Accessed 20 August 2020.
3. World Health Organization (WHO). [<https://extranet.who.int/sph/after-action-review>]. Accessed 20 August 2020.
4. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 20 August 2020.
5. Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 20 August 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 Bangladesh has undergone a national-level biological threat-focused exercise that has included private sector representatives in the past year. There is no mention of any national-level biological threat-focused exercise on the World Health Organization (WHO) extranet and WHO country profile [1, 2]. Moreover, no information is available regarding biological threat or biological threat focused exercise in the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture and International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) websites [3, 4, 5].

1. World Health Organization (WHO). [<https://www.who.int/countries/bgd/en/>]. Accessed 20 August 2020.
2. World Health Organization (WHO). [<https://extranet.who.int/sph/simulation-exercise>]. Accessed 20 August, 2020.
3. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 20 August 2020.
4. Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 20 August 2020.
5. International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). [<https://www.icddr.org/>]. Accessed 20 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

Bangladesh has an Emergency Operations Center (EOC). There is a Health Emergency Operations Center (HEOC) web portal. This web portal has been created and maintained by Management Information System (MIS) of Directorate General of Health Services (DGHS). The DGHS is one of the agencies of the Ministry of Health & Family Welfare of Bangladesh [1]. According to the National Preparedness and Response Plan for COVID-19, Public Health Emergency Operation center (PHEOC) of DGHS has been established at Institute of Epidemiology, Disease Control and Research (IEDCR) which works in coordination and collaboration with other departments of DGHS. PHEOC of IEDCR coordinates public health responses during large disease outbreaks such as in chikungunya (2017) and dengue outbreak (2018-2019). During natural disaster, flood, accidents, fire/chemical incidents etc., the health emergencies are responded by health emergency operation center (HEOC) and control room of Directorate General of Health Services (DGHS) [2].

1. Directorate General of Health Services (DGHS). [http://dashboard.dghs.gov.bd/webportal/pages/controlroom_data_entry.php]. Accessed 12 August 2020.
2. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 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: 0

There is no publicly available evidence that that Emergency Operations Center (EOC) is required to conduct a drill for a public health emergency scenario at least once per year in Bangladesh, and there is no evidence that it conducts a drill at least once a year.

According to the National Preparedness and Response Plan for COVID-19, Public Health Emergency Operation center (PHEOC) of Directorate General of Health Services (DGHS) has been established at Institute of Epidemiology Disease Control And Research (IEDCR) which works in coordination and collaboration with other departments of DGHS. PHEOC of IEDCR coordinates public health responses during large disease outbreaks such as in chikungunya (2017) and dengue outbreak (2018-2019), but there is no mention about drill for a public health emergency [1].

According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Bangladesh needs to strengthen documentation of procedures and establish a programme to conduct exercises to test operations scenarios at the EOC [2]. There is no further information provided in this regard on the websites of the Ministry of Disaster Management and Relief (MDMR) and Ministry of Health and Family Welfare (MoHFW) [3, 4].

1. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
2. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
3. Ministry of Disaster Management and Relief (MDMR). [<https://modmr.gov.bd/site/page/30addfaf-20f9-4865-93dc-1eea08b9790e/Disaster-Management-Policies-and-Strategies>]. Accessed 12 August 2020.
4. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 12 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 evidence that the Emergency Operations Centre (EOC) has conducted a coordinated emergency response or emergency response exercise that can be brought to action within 120 minutes of the identification of a public health emergency within the last year. According to the National Preparedness and Response Plan for COVID-19, Public Health Emergency Operation Center (PHEOC) of Directorate General of Health Services (DGHS) has been established at Institute of Epidemiology Disease Control And Research (IEDCR) which works in coordination and collaboration with other departments of DGHS. PHEOC of IEDCR coordinates public health responses during large disease outbreaks such as chikungunya (2017) and dengue outbreak (2018-2019), however, there is no mention of when the EOC becomes active in a health emergency or how long it takes to become active [1]. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Bangladesh must strengthen documentation of procedures and establish a programme to conduct exercises to test operations scenarios [2]. There is no further information provided on the websites of the Ministry of Disaster Management and Relief (MDMR) and Ministry of Health and Family Welfare (MoHFW) [3, 4].

1. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
2. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities

of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020. 3. Ministry of Disaster Management and Relief (MDMR), Government of the People's Republic of Bangladesh. [<https://modmr.gov.bd/site/page/30addfaf-20f9-4865-93dc-1eea08b9790e/Disaster-Management-Policies-and-Strategies>]. Accessed 12 August 2020. 4. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 12 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 no public evidence that public health and national security authorities have implemented an exercise to respond to a potential deliberate biological event (i.e. a bioterrorism attack) or publicly available standard operating procedures, guidelines, memorandum of understanding (MOUs), or other agreements between the public health and security authorities to respond to a potential deliberate biological event (i.e. a bioterrorism attack) in Bangladesh. According to the Country Reports on Terrorism 2019, there is no evidence of a bioterrorism attack in Bangladesh [1]. There is no mention of bioterrorism in the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016 [2]. Moreover, there is nothing on this issue on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Home Affairs, and Ministry of Law, Justice and Parliamentary Affairs [3, 4, 5].

1. United States Department of State Publication. July 2017. "Country Reports on Terrorism 2019: Bangladesh". [<https://www.state.gov/reports/country-reports-on-terrorism-2019/bangladesh/>]. Accessed 20 August 2020. 2. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020. 3. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 02 September 2020. 4. Ministry of Home Affairs. [<https://mha.gov.bd/>]. Accessed 02 September 2020. 5. Ministry of Law, Justice and Parliamentary Affairs. [<http://www.lawjusticediv.gov.bd/>]. Accessed 02 September 2020.

3.5 RISK COMMUNICATIONS

3.5.1 Public communication

3.5.1b

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

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Bangladesh has risk communication plan outline how messages will reach populations and sectors with different communications needs.

According to the National Preparedness and Response Plan for COVID-19, "A strong community mobilization component will be put in place which will help create a social movement through enhanced participation and creative involvement of communities in addressing problems by using messages/materials/instructions" [1]. It also mentioned that a comprehensive, multi-sectoral and pro-active communication strategy will be followed. "Communication will be undertaken at three levels: a (Official communication during outbreak, response and control activities; b (scientific communications among scientists and officials; c (mass communications using IEC materials, mass media, inter-personal communication, announcement, advertisements etc." [1].

1. Ministry of Health and Family Welfare (MoHFW). 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 6 March 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

There is evidence that Bangladesh has a national public health emergency response plan with a section detailing a risk communication plan that is specifically intended for use during a public health emergency.

According to the 2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh 2009-2011 (January 2009), there is a section which describes a three-tiered risk communication strategy. Here it is mentioned, "A comprehensive, multi-sectoral and proactive communications strategy will be followed. Communication will be undertaken at three levels: a) Official communication during outbreak, response and control activities, b) Scientific communication among scientists and officials; c) Mass communication using IEC materials, mass media, IPC, announcement, advertisements etc. Risk communication for AI needs a strong balance between public health and socioeconomic issues" [1].

The National Preparedness and Response Plan for COVID-19, Bangladesh also has a section detailing a risk communication

plan [2]. Here mentioned that “A comprehensive, multi-sectoral and pro-active communication strategy will be followed. Communication will be undertaken at three levels: a) Official communication during outbreak, response and control activities; b) scientific communications among scientists and officials; c) mass communications using IEC materials, mass media, inter-personal communication, announcement, advertisements etc.” [2].

1. Directorate General of Health services. January 2009. “2nd National Avian and Pandemic Influenza Preparedness and Response Plan, Bangladesh, 2009-2011”.

[https://www.apaci.asia/images/Resources/Pandemic_planning/bangladesh_2nd_national_avian_pandemic_influenza_preparedness_response_plan_2009_draft.pdf]. Accessed 6 March, 2021. 2. Ministry of Health and Family Welfare (MoHFW). 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh".

[<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 6 March 2020.

3.5.1c

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Bangladesh has a national public health emergency response plan including risk communication plan that designate a specific position within the government to serve as the primary spokesperson to the public during a public health emergency. However, there is a National Preparedness and Response Plan for COVID-19, Bangladesh but no mention of a specific position within the government to serve as the primary spokesperson [1]. There is no information about a specific position within the government in Ministry of Health and Family Welfare and Ministry of Disaster Management and Relief websites [2, 3].

1. Ministry of Health and Family Welfare (MoHFW). 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020. 2. Ministry of Health and Family Welfare (MoHFW). [<https://mohfw.gov.bd/>]. Accessed 02 September 2020. 3. Ministry of Disaster Management and Relief (MODMR). [<https://modmr.gov.bd/>], Accessed 02 September 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 an evidence that the public health system of Bangladesh has actively shared messages via online media platforms (e.g. social media, website) to inform the public about ongoing public health concerns. There is a website named 'Corona Info' which actively provide daily updated information of Covid-19 and this includes confirmed cases, death, cured, recovered and tests, it also shows Covid-19 related news, emergency information, Covid-19 Tracker, Corona contact tracing apps etc. [1]. The Ministry of Health and Family Welfare, Bangladesh has a Facebook page with over 900,000 followers where it publishes information on public health [2]. This Facebook page also publishes news of current social activities with photos, notices, and also upload emergency activities related to different diseases. For example, on 26 October 2014, the Ministry of Health and Family Welfare (MoHFW), Bangladesh uploaded prevention and control activities for the Ebola virus on Facebook. [2]. According to the Joint External Evaluation (JEE) of IHR Core Capacities of the People's Republic of Bangladesh, conducted in May 2016, Bangladesh has "regular media orientation on events of public health importance, all available sources (print, television, radio, internet and webpage) used at the national level for the dissemination of messages" related to public health emergency, "announcement of events of public health emergency which is carried out as per the directive of Ministry of Health and Family Welfare (MoHFW)" [3].

1. Corona info. [<https://corona.gov.bd/>]. Accessed 12 August 2020.
2. Ministry of Health and Family Welfare (MoHFW). "Facebook Account". [<https://www.facebook.com/mohfwbd/>]. Accessed 02 September 2020.
3. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 02 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 (president or ministers) of Bangladesh have shared misinformation or disinformation on infectious diseases in the past two years. There is no such information available on the local or foreign news websites [1, 2, 3].

1. bdnews24. [<http://bdnews24.com/>]. Accessed 12 August, 2020.
2. BBC news. [<https://www.bbc.com/news>]. Accessed 12 August 2020.
3. Al Jazeera. [<https://www.aljazeera.com/news/>]. Accessed 12 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: 12.9

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: 101.55

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: 18.0

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: 20

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: 0

There is evidence that Bangladesh 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 in the past year. The World Trade Organisation's "COVID-19: Measures affecting trade in goods" list confirms that Bangladesh issued "Temporary export prohibition on surgical masks, face masks, and disinfectants (hand sanitizers) (effective 12 March 2020) (HS 6307.90.40; 6307.90.90; 3808.94.91), due to the COVID-19 pandemic" which has been effective 2 March 2020 to 2 April 2020, as well as "Extension of the usance period for imports of: (i) life saving products", which has been effective March 2020 to June 2021. [1] There is no document available regarding this in the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture and Ministry of Foreign Affairs websites [2, 3, 4].

[1] World Trade Organisation. June 4, 2021. "COVID-19: Measures affecting trade in goods".

[https://www.wto.org/english/tratop_e/covid19_e/trade_related_goods_measure_e.htm] Accessed June 24, 2021.

[2] Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 13 August 2020.

[3] Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 13 August 2020.

[4] Ministry of Foreign Affairs. [<https://mofa.gov.bd/>]. Accessed 13 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: 1

There is no evidence that Bangladesh has issued a restriction, without international/bilateral support, on the export/import of non-medical goods (e.g. food, textiles, etc) due to an infectious disease outbreak. There is no document available regarding this in the Ministry of Health and Family Welfare (MoHFW), Ministry of Agriculture and Ministry of Foreign Affairs websites [1, 2, 3].

1. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 13 August 2020.
2. Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 13 August 2020.
3. Ministry of Foreign Affairs. [<https://mofa.gov.bd/>]. Accessed 13 August 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 an evidence that Bangladesh has implemented a ban, without international/bilateral support, on travelers arriving from a specific country or countries due to COVID-19. In the U.S. Embassy in Bangladesh website it is mentioned that to avoid the further spread of the COVID-19 pandemic, the Civil Aviation Authority of Bangladesh announced until further notice all international commercial passenger flights from Bahrain, Bhutan, Hong Kong, India, Kuwait, Nepal, Oman, Saudi Arabia, Singapore, and Thailand shall not be allowed to land at any airport in Bangladesh [1]. There is another website called

'TRAVEL BANS' mentioned details about restriction of countries [2]. According to the news published in 'DhakaTribune', the government of Bangladesh is considering a temporary ban on travel to and from China as a precautionary measure in the wake of the Coronavirus outbreak [3]. There is no information of implementation of a ban on travelers arriving from a specific country or countries on Ministry of Health and Family Welfare (MoHFW) and Ministry of Foreign Affairs websites [4, 5].

1. U.S. Embassy in Bangladesh. [<https://bd.usembassy.gov/covid-19-information/#:~:text=To%20avoid%20the%20further%20spread,land%20at%20any%20airport%20in>]. Accessed 13 August 2020.
2. TRAVEL BANS. [<https://travelbans.org/asia/bangladesh/>]. Accessed 13 August 2020.
3. Tribune desk. 26 January 2020. "Coronavirus: Bangladesh government mulling China travel ban". DhakaTribune. [<https://www.dhakatribune.com/bangladesh/2020/01/26/coronavirus-bangladesh-govt-mulling-china-travel-ban>]. Accessed 13 August 2020.
4. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 13 August 2020.
5. Ministry of Foreign Affairs. [<https://mofa.gov.bd/>]. Accessed 13 August 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: 58.09

2018

WHO; national sources

4.1.1b

Nurses and midwives per 100,000 people

Input number

Current Year Score: 41.24

2018

WHO; national sources

4.1.1c

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Bangladesh has 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. However, Bangladesh has published BANGLADESH NATIONAL STRATEGY FOR COMMUNITY HEALTH WORKERS 2019 - 2030 (A complimentary document of Bangladesh Health Workforce Strategy 2015) in September 2019 and this strategy will be conducted from 2019 to 2030 but there is no mention about identifying fields where there is an insufficient workforce and strategies to address these shortcomings [1]. There is no information in the website of Ministry of Health and Family Welfare [2].

1. Ministry of Health and Family Welfare (MoHFW). "BANGLADESH NATIONAL STRATEGY FOR COMMUNITY HEALTH WORKERS (2019-2030)". September 2019. [https://www.healthynewbornnetwork.org/hnn-content/uploads/Bangladesh__Community-Health-Workers.pdf]. Accessed 05 September 2020.
2. Ministry of Health and Family Welfare (MoHFW). []. Accessed 05 September 2020.

4.1.2 Facilities capacity

4.1.2a

Hospital beds per 100,000 people

Input number

Current Year Score: 79

2016

WHO/World Bank; national sources

4.1.2b

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

Yes = 1 , No = 0

Current Year Score: 1

There is an evidence that Bangladesh have the capacity to isolate patients with highly communicable diseases in a patient isolation room/unit. The National Preparedness and Response Plan for COVID-19, Bangladesh specifically mentioned three hospitals of Dhaka city (Kurmitola General Hospital, Infectious Disease Hospital (IDH) and Kuwait Bangladesh friendship government hospital) have been selected for managing the patients in isolation for COVID-19 patients [1]. According to the World Health Organization (WHO), the government directive, public hospitals, such as Shaheed Suhrawardy Medical College (SSMC) Hospital, Dhaka Medical College (DMC) Hospital, Chittagong 250-Bed General Hospital, Chittagong Medical College Hospital and most Sadar District hospitals of the country, has set up separate isolation wards as a preparedness measure for treatment of suspected COVID-19 patients [2]. There is also evidence that some hospitals have advanced isolation units. For example, A newsletter from United Hospital states that the "United Hospital General ICU (GICU) facilities include a 16 bed unit with 4 negative air pressure facility cubicles to keep highly contagious diseased patients segregated for the prevention of

infection. 24 hours trained nursing staff are available for individual patient. Each bed has a high tech vital sign monitor. Invasive arterial line and CVP monitor are also available." [3]

1. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
2. World Health Organization (WHO). 24 March 2020. "COVID-19 Situation Report No. # 4". [[https://www.who.int/bangladesh/emergencies/coronavirus-disease-\(covid-19\)-update/coronavirus-disease-\(covid-2019\)-bangladesh-situation-reports](https://www.who.int/bangladesh/emergencies/coronavirus-disease-(covid-19)-update/coronavirus-disease-(covid-2019)-bangladesh-situation-reports)]. Accessed 08 August 2020.
3. United Hospital Limited. 2016. "Reflection: Quarterly Newsletter." [http://www.uhibd.com/backend/web/page_files/1461414579_2_Newsletter_Issue-13,Quarter-1%20%202016.pdf]. Accessed 14 June 2021.

4.1.2c

Does the country meet one of the following criteria?

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

Yes = 1, No = 0

Current Year Score: 1

There is evidence that Bangladesh has demonstrated capacity to expand isolation capacity in response to an infectious disease outbreak in the past two years.

According to the Bangladesh Preparedness and Response Plan for COVID-19 (July 2020), the government of Bangladesh has established several quarantine and isolation facilities across the country to support suspected and probable cases to maintain quarantine and isolation, respectively and reduce community transmission [1]. It also states that, "As of 15 May 2020, 243 of the total targets of 284 government isolation and treatment centers for COVID-19 have been established within the existing as well as makeshift health facility across the eight upazilas. In addition, with the support from various United Nations (UN) Agencies (International Organization for Migration, United Nations High Commissioner for Refugees and United Nations Children's Fund) and International Non-governmental Organization's (FH, Hope Hospital, ICDDR,B, IFRC/BDRCS, MSF, MTI and RI), as of 04 June 2020, there are 108 and 194 active isolation and SARI beds established across 22 locations in the camps" [1]. In addition it also mentioned that, "Passengers with significant/severe symptoms are being sent to institutional isolation centers. At present, if screening at the PoEs identifies individuals with mild or inconclusive symptoms, the health officials are sending them to government designated institutional quarantine centers. At the institutional quarantine center, government designated authorities are in charge of food, logistics and overall management while Ministry of Health and Family Welfare (MoHFW) through Directorate General of Health services is monitoring health issues and Infection Prevention and Control (IPC) measures" [1]. According to the National Preparedness and Response Plan for COVID-19, Bangladesh (16 March 2020), three hospitals of Dhaka city namely Kurmitola, Kuwait Moitree and Infectious Diseases Hospital (IDH) have been selected for managing the patients in isolation, but around 500 hospitals will be prepared for initial care of the COVID-19 patients with mild illness [2]. Also, preparation of isolation units in all governmental hospitals, ensuring all private hospitals and clinics are instructed to prepare isolation units at their respective premises are also mentioned here [2].

1. Ministry of Health and Family Welfare (MoHFW). July 2020. "Bangladesh Preparedness and Response Plan for COVID-19". [http://www.mohfw.gov.bd/index.php?option=com_docman&task=doc_download&gid=23359&lang=en]. Accessed 07 March 2021.
2. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>].

Accessed 05 March 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: 2

There is evidence that Bangladesh has a national procurement protocol which is utilized by the Ministries of Health and the Ministry of Agriculture for the acquisition of laboratory supplies and medical supplies. There is a policy document titled, "The Public Procurement Act 2006", which was published in the Bangladesh Gazette, extraordinary issue of 6 July 2006 on the Bangladesh Government Public Procurement Act, Rules, Regulations [1]. This act applies to the procurement of goods, works, or services by any procuring entity that uses public funds; procurement of goods, works or services by any government, semi-government or any statutory body established under any law; preparation of tender or proposal, committee, etc. [1] and Under this Act of 2006, "The Public Procurement Rules 2008" is framed and issued [2]. The Central Procurement Technical Unit (CPTU) has been established by the Implementation Monitoring and Evaluation Division of the Ministry of Planning, for carrying out the purposes of the Act and these Rules [3]. Also for carrying out the purposes of the Act any or all government procurement can use electronic processing systems following the principles governing e-GP as prescribed by the Government [4]. There is evidence that CPTU is used to procure laboratory supplies (e.g., equipment, reagents and media) and medical supplies (e.g., equipment, PPE) for all ministries in Bangladesh [5]. CPTU is accessible by the Ministry of Health and Family Welfare and Ministry of Agriculture [6, 7].

1. Central Procurement Technical Unit. Public Procurement Related Act. [<https://cptu.gov.bd/procurement-policy-and-procedure-documents/procurement-act.html>]. Accessed 18 August 2020. 2. Central Procurement Technical Unit. Public Procurement Related Rules [<https://cptu.gov.bd/procurement-policy-and-procedure-documents/procurement-rules.html>]. Accessed 18 August 2020. 3. Central Procurement Technical Unit (CPTU). [<https://cptu.gov.bd/about-cptu.html>]. Accessed 18 August 2020. 4. National e-Government Procurement (e-GP) Portal of the Government of the People's Republic of Bangladesh (E-GP). [<https://www.eprocure.gov.bd/>]. Accessed 18 August 2020. 5. Bangladesh Government Public Procurement Act, Rules, Regulations. [<https://scmpbd.org/index.php/documents/scip/public-procurement-rules-and-regulations>]. Accessed 14 August 2020. 6. Central Procurement Technical Unit (CPTU). [[https://cptu.gov.bd/advertisement-goods/Supply-of-Equipment-&Instrument-\(Medical-Equipment\)-for-Mymensingh-Medical-College-Hospital--73550.html](https://cptu.gov.bd/advertisement-goods/Supply-of-Equipment-&Instrument-(Medical-Equipment)-for-Mymensingh-Medical-College-Hospital--73550.html)]. Accessed 7 March 2021. 7. Central Procurement Technical Unit (CPTU). [<https://cptu.gov.bd/contract-award-details/Integrated-Digital-Service-Delivery-Platform--for-Ministry-of-Agriculture-11664.html>]. Accessed 7 March 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: 1

There is some evidence that Bangladesh has a stockpile of medical supplies (e.g. MCMs, medicines, vaccines, medical equipment, PPE) for national use during a public health emergency but there is limited evidence about what the stockpile contains. According to the Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016, "Bangladesh maintains adequate quantities of a buffer stock of emergency medicines both at national and sub-national levels" [1]. The JEE also states that, "Although the Ministry of Health and Family Welfare (MoHFW) should maintain an actively revolving national stockpile of emergency drugs and medical supplies through a formal agreement with local manufacturers and suppliers", although no clear details mentioned about what is included in the stockpile of medical supplies. [1]. There is no further evidence as per the Ministry of Health and Family Welfare (MoHFW), Ministry of Defence and Department of Disaster Management (DDM) websites [2, 3, 4].

1. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 7 March 2021. 2. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 09 September 2020. 3. Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 09 September 2020. 4. Department of Disaster Management (DDM). [<http://www.ddm.gov.bd/>]. Accessed 09 September 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 Bangladesh has a stockpile of laboratory supplies (e.g. reagents, media) for national use during a public health emergency. As per the "National Preparedness and Response Plan for COVID-19, Bangladesh", government of Bangladesh are focuses on ensure availability of necessary equipment, kits, reagents and consumables including PPE, but no mentioned about stockpile [1]. As per the Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016, development and maintenance of national, intermediate (district) and local/primary level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. This covers mapping of potential hazards, identification and maintenance of available resources, including national stockpiles and the capacity to support operations at the intermediate and local/primary levels during a public health emergency but specially not mentioned about Laboratory supplies. [2]. There is no information that Bangladesh have a stockpile of laboratory supplies the website of websites of Ministry of Health and Family Welfare (MoHFW), Ministry of Defence, Public Security Division, Ministry of Disaster Management and Relief [3, 4, 5, 6].

1. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020. 2. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020. 3. Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 15 August 2020. 4. Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 15 August 2020. 5. Public Security Division. [<https://mhpsd.gov.bd/>]. Accessed 15

August 2020. 6. Ministry of Disaster Management and Relief. [<https://modmr.gov.bd/>]. Accessed 15 August 15, 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 Bangladesh conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency. The Bangladesh Emergency Response Preparedness Plan 2014" mentions "conduct (preparedness) gap analysis, review disease surveillance mechanism and outbreak investigation mechanism, monitor diseases trends, review stockpile levels are one of the minimum preparedness actions in the health sector" [1]. However, there is no mention of an annual review of stockpile. There is no information about conducting or requiring an annual review of the national stockpile in the "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh" report and the websites of Ministry of Health and Family Welfare, Public Security Division, Ministry of Defence, Planning Commission, Directorate General of Health Services [2, 3, 4, 5, 6, 7].

1. Humanitarian Response. 2014. "Bangladesh Emergency Response Preparedness Plan 2014". [<https://www.humanitarianresponse.info/en/operations/asia/document/bangladesh-emergency-response-plan-2014>]. Accessed 9 March 2021. 2. Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 9 March 2021. 3. Public Security Division. Ministry of Home Affairs. [<https://mhapsd.gov.bd/>]. Accessed 9 March 2021. 4. Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 9 March 2021. 5. Planning Commission. [<http://www.plancomm.gov.bd/>]. Accessed 9 March 2021. 6. Directorate General of Health Services (DGHS). [<https://dghs.gov.bd/index.php/en/>]. Accessed 9 March 2021. 7. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 9 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 that Bangladesh has a plan/agreement to leverage domestic manufacturing capacity to produce medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) and also no evidence of a plan/mechanism to procure medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency. There is no information about any plan/agreement to leverage domestic manufacturing capacity to produce medical supplies or a plan/mechanism to procure medical supplies in the websites of Ministry of Health and Family Welfare (MoHFW), Ministry of Defence, Public Security Division, Ministry of Disaster Management and Relief, Directorate General of Drug Administration

(DGDA) [1, 2, 3, 4, 5].

1. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 7 March 2021. 2. Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 7 March 2021. 3. Public Security Division. [<https://mhapsd.gov.bd/>]. Accessed 7 March 2021. 4. Ministry of Disaster Management and Relief. [<https://modmr.gov.bd/>]. Accessed 7 March 2021. 5. Directorate General of Drug Administration (DGDA). [<https://www.dgda.gov.bd/>]. Accessed 7 March 2021.

4.2.3b

Does the country meet one of the following criteria?

- Is there evidence of a plan/agreement to leverage domestic manufacturing capacity to produce laboratory supplies (e.g. reagents, media) for national use during a public health emergency?

- Is there evidence of a plan/mechanism to procure laboratory supplies (e.g. reagents, media) for national use during a public health emergency?

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

Current Year Score: 0

There is no evidence of a plan/agreement to leverage domestic manufacturing capacity to produce laboratory supplies and no evidence plan/mechanism to procure laboratory supplies for national use during a public health emergency. Bangladesh has a tender base general procurement Act but no specific mention of procuring laboratory supplies (e.g. reagents, media) for national use during a public health emergency [1]. All government procurement tender has been process under this Act and The e-GP system is a single web portal from where and through which Procurement Appropriations (PA) and Procuring Entities (PE) will be able to perform their procurement related activities using a dedicated secured web based dashboard [2]. This online platform also helps all government organizations ensuring equal access to the Bidders/Tenderers and also ensuring efficiency, transparency and accountability in the public procurement process in Bangladesh. [2]. But nothing is mentioned specifically about procuring medical supplies (e.g. reagents, media) for national use during a public health emergency. There is no information regarding laboratory supplies in the Joint External Evaluation (JEE) of IHR Core Capacities of the People 's Republic of Bangladesh, conducted in May 2016 and websites of Ministry of Health and Family Welfare, Ministry of Defence, Public Security Division, Ministry of Disaster Management and Relief [3, 4, 5, 6, 7].

1. Central Procurement Technical Unit. [<https://cptu.gov.bd/procurement-policy-and-procedure-documents/procurement-act.html>]. Accessed 15 August 2020. 2. National e-Government Procurement. [<https://www.eprocure.gov.bd/resources/common/StdTenderSearch.jsp?h=t>]. Accessed 15 August 2020. 3. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 15 August 2020. 4. Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 15 august 2020. 5. Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 15 August 2020. 6. Public Security Division. [<https://mhapsd.gov.bd/>]. Accessed 15 August 2020. 7. Ministry of Disaster Management and Relief. [<https://modmr.gov.bd/>]. Accessed 15 August 15, 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 that Bangladesh has a plan, program, or guidelines in place for dispensing medical countermeasures (MCM) for national use during a public health emergency. There is a national drug policy 2016 for ensuring rational and safe use of drugs and proper dispensing but no specific mention of dispensing medical countermeasures (MCM) for national use during a public health emergency [1]. There is no information regarding plan, program, or guidelines in place for dispensing medical countermeasures (MCM) for national use during a public health emergency in the Joint External Evaluation (JEE) of IHR Core Capacities of the People 's Republic of Bangladesh, conducted in May 2016 and websites of Ministry of Health and Family Welfare, Ministry of Defence, Public Security Division, Ministry of Disaster Management and Relief [2, 3, 4, 5, 6].

1. Directorate General of drug Administration (DGDA). 2016. "National Drug Policy 2016". [<http://www.dgda.gov.bd/index.php/laws-and-policies/261-national-drug-policy-2016-english-version>]. Accessed 15 August 2020.
2. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
3. Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 15 August 2020.
4. Ministry of Defence. [<https://mod.gov.bd/>]. Accessed 15 August 2020.
5. Public Security Division. [<https://mhapsd.gov.bd/>]. Accessed 15 August 2020.
6. Ministry of Disaster Management and Relief. [<https://modmr.gov.bd/>]. Accessed 15 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 Bangladesh has a public plan in place to receive health personnel from other countries to respond to a public health emergency. However, Foreign doctors are working side by side with local doctors in Covid-19 health emergency situation in Bangladesh [1]. There is news report titled "Chinese medical team on way to Bangladesh to join fight against Covid-19" published in 'The Business Standard' mentioned that a Chinese medical team of experts comprising doctors, nurses and technicians is on the way to Bangladesh to help local physicians combat the deadly Covid-19 pandemic [1]. There is no information about receiving health personnel from other countries in the National Preparedness and Response Plan for COVID-19, Bangladesh [2]. Moreover, nothing regarding this is mentioned in the Joint External Evaluation (JEE) of IHR Core Capacities of the People 's Republic of Bangladesh, conducted in May 2016 or on the websites of Ministry of Health and Family Welfare, Ministry of Defence, Public Security Division, Ministry of Disaster Management and Relief [3, 4, 5,

6, 7].

1. TBS news desk. 26 April, 2020. "Chinese medical team on way to Bangladesh to join fight against Covid-19". [https://tbsnews.net/coronavirus-chronicle/covid-19-bangladesh/chinese-medical-team-way-bangladesh-join-fight-against]. Accessed 18 August 2020.
2. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh]. Accessed 09 August 2020.
3. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1]. Accessed 04 August 2020.
4. Ministry of Health and Family Welfare. [http://www.mohfw.gov.bd/]. Accessed 15 August 2020.
5. Ministry of Defence. [https://mod.gov.bd/]. Accessed 15 August 2020.
6. Public Security Division. [https://mhpsd.gov.bd/]. Accessed 15 August 2020.
7. Ministry of Disaster Management and Relief. [https://modmr.gov.bd/]. Accessed 15 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: 49.8

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: 69.67

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 Bangladesh government has given 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. However, there is a news published in an online newspaper in April 2020 titled 'United news of Bangladesh', Prime Minister of Bangladesh has announced incentives for doctors, nurses, health workers, government employees and also said that the government has decided to give incentives for doctors, nurses, health workers and other employees of the republic who deployed themselves with bravery in the war against COVID-19. According to the report, government announced a health insurance for the front liner if they are infected with COVID-19 while discharging their duties which will be Tk 5-10 lakh, if anyone dies, the amount of the health insurance will be five times higher and if any government employee is infected with COVID-19 while performing duties, the government will bear all the treatment cost but no mentioned they will receive prioritized care/treatment if they fall sick in the line of duty [1]. There is another news report in The Financial Express published on 22 June, 2020 where it is mentioned that the Health Ministry through the Directorate General of Health Services (DGHS) forwarded a letter to the hospital authority of Sheikh Russel Gastro Liver Institute and Hospital in Dhaka to provide priority basis treatment to health workers infected with COVID-19 but no mention to provide prioritized healthcare services to healthcare workers who become sick on COVID19 duty [2]. There is no information of prioritized healthcare services to healthcare workers in the Ministry of Health and Family Welfare (MoHFW), Ministry of Defence and Department of Disaster Management (DDM) websites [3, 4, 5].

1. UNB NEWS. 7 April 2020. "Coronavirus: PM announces incentives for doctors, nurses, health workers". United News of Bangladesh. [https://unb.com.bd/category/bangladesh/coronavirus-pm-announces-incentives-for-doctors-nurses-health-workers/48934]. Accessed 18 August 2020.
2. SM Najmus Sakib. June 22, 2020. "Health workers get priority care". 'The Financial Express'. [https://thefinancialexpress.com.bd/national/health-workers-get-priority-care-1592832647]. Accessed 03 September 2020.
3. Ministry of Health and Family Welfare (MoHFW). [http://www.mohfw.gov.bd/]. Accessed 09 September 2020.
4. Ministry of Defence. [https://mod.gov.bd/]. Accessed 09 September 2020.
5. Department of Disaster Management (DDM). [http://www.ddm.gov.bd/]. Accessed 09 September 2020.

September 2020.

4.5 COMMUNICATIONS WITH HEALTHCARE WORKERS DURING A PUBLIC HEALTH EMERGENCY

4.5.1 Communication with healthcare workers

4.5.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Bangladesh has a system in place for public health officials and healthcare workers to communicate during a public health emergency. There is no information about the system for public health officials and healthcare workers to communicate in the Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016 and also there is no mention about communication system of public health official and health in the "Disaster Management Reference Handbook (2020) - Bangladesh" and National Preparedness and Response Plan for COVID-19, Bangladesh [1, 2, 3]. There is no information regarding this in the Ministry of Health and Family Welfare (MoHFW) and Ministry of Disaster Management and Relief [4, 5].

1. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
2. Center for Excellence, In Disaster Management & Humanitarian Assistance. Disaster Management Reference Handbook (2020) - Bangladesh. Published May 2020. [<https://reliefweb.int/report/bangladesh/disaster-management-reference-handbook-2020-bangladesh>]. Accessed 18 August 2020.
3. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
4. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 15 August 2020.
5. Ministry of Disaster Management and Relief. [<https://modmr.gov.bd/>]. Accessed 15 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 no evidence that Bangladesh has a system for public health officials and healthcare workers to communicate during an emergency encompassing healthcare workers in both the public and private sector. There is no information about the system for public health officials and healthcare workers to communicate in the Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh (JEE), conducted in May 2016 and also there is no mention about communication system of public health official and health in the "Disaster Management Reference Handbook (2020) - Bangladesh" and National Preparedness and Response Plan for COVID-19, Bangladesh [1, 2, 3]. Moreover, there is no information regarding this in the Ministry of Health and Family Welfare (MoHFW) and Ministry of Disaster Management and

Relief [4, 5].

1. World Health Organization (WHO). May 2016. "Joint External Evaluation of IHR Core Capacities of the People's Republic of Bangladesh". [<http://apps.who.int/iris/bitstream/handle/10665/254275/WHO-HSE-GCR-2016.23-eng.pdf;jsessionid=3F75AD312A0787F9EFE1D091BFEB146F?sequence=1>]. Accessed 04 August 2020.
2. Center for Excellence, In Disaster Management & Humanitarian Assistance. Disaster Management Reference Handbook (2020) - Bangladesh. Published May 2020. [<https://reliefweb.int/report/bangladesh/disaster-management-reference-handbook-2020-bangladesh>]. Accessed 18 August 2020.
3. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
4. Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 15 August 2020.
5. Ministry of Disaster Management and Relief. [<https://modmr.gov.bd/>]. Accessed 15 August 15, 2020.

4.6 INFECTION CONTROL PRACTICES AND AVAILABILITY OF EQUIPMENT

4.6.1 Healthcare associated infection (HCAI) prevention and control programs

4.6.1a

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

Yes = 1, No = 0

Current Year Score: 0

There is no evidence that Bangladesh national public health system is monitoring for and tracking the number of healthcare associated infections (HCAI) that take place in healthcare facilities. However, Ministry of Health and Family Welfare (MoHFW) published a 'National Patient Safety Strategic Plan in Bangladesh' which mentioned healthcare associated infections (HCAI) that take place in healthcare facilities but nothing about the monitoring for and tracking is mentioned [1]. Moreover, there is no information on the National Institute of Laboratory Medicine Referral Center website [2].

1. Quality Improvement Secretariat, Ministry of Health and Family Welfare (MoHFW). 2018. "National Patient Safety Strategic Plan in Bangladesh". [<http://qis.gov.bd/strategy-guidelines/>]. Accessed 18 August 2020.
2. National Institute of Laboratory Medicine Referral Center. [<http://nilmrc.gov.bd/>]. Accessed 18 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

There is an evidence that Bangladesh has a requirement for ethical review (e.g., from an ethics committee or via Institutional Review Board approval) before beginning a clinical trial. There is a Guideline published by Directorate General of Drug Administration, Ministry of Health and Family Welfare (MoHFW) entitled Bangladesh for Good Clinical Practice (GCP) for Trials on Pharmaceutical Products Bangladesh which was finalized on 23 November 2015 but was made publicly available on 07 June 2017. According to the guidelines there is a Trial checklist of Requirement for conducting Clinical Trial and the Institutional Review Board (IRB) or Independent Ethics Committee (IEC) is constituted in agreement with GCP and approved by Bangladesh Medical Research Council (BMRC) or National Ethical Committee [1].

1. Directorate General of Drug Administration. 2017. "Guidelines for Good Clinical Practice (GCP) for Trials on Pharmaceutical Products Bangladesh". [<https://dgda.gov.bd/index.php/2013-03-31-05-16-29/registered-medical-device-list-4/129-good-clinical-practice-gcp-guidelines>]. Accessed 03 September 2020.

4.7.1b

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Bangladesh has an expedited process for approving clinical trials for unregistered medical countermeasures (MCM) to treat ongoing epidemics. There is no mention of an expedited process for approving clinical trials for unregistered medical countermeasures (MCM) to treat ongoing epidemics in the guideline published by Directorate General of Drug Administration under Ministry of Health and Family Welfare titled Bangladesh for Good Clinical Practice (GCP) for Trials on Pharmaceutical Products Bangladesh finalized on 23 November, 2015 but it was publicly available on 07 June, 2017 [1]. Moreover, there is no information regarding this in the Ministry of Health and Family Welfare (MoHFW) and Directorate General of Drug Administration (DGDA) [2, 3].

1. Directorate General of Drug Administration. 2017. Guidelines for Good Clinical Practice (GCP) for Trials on Pharmaceutical Products Bangladesh. [<https://dgda.gov.bd/index.php/2013-03-31-05-16-29/registered-medical-device-list-4/129-good-clinical-practice-gcp-guidelines>]. Accessed 02 September 2020.
2. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 19 August 2020.
3. Directorate General of Drug Administration, Ministry of Health and Family Welfare Bangladesh. [<https://www.dgda.gov.bd/>]. Accessed 19 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 an evidence that Bangladesh has a government agency responsible for approving new medical countermeasures (MCM) for humans. Directorate General of Drug Administration under Ministry of Health and Family Welfare Bangladesh is responsible for approving new medical countermeasures (MCM) for humans and also supervises and implements all prevailing Drug Regulations in the country and regulates all activities related to import, procurement of raw and packing

materials, production and import of finished drugs, export, sales, pricing, etc. of all kinds of medicines including those of Ayurvedic, Unani, Herbal and Homoeopathic systems [1]. It also covers approval of new medications, vaccines, devices [1].

[1] Directorate General of Drug Administration. [<https://www.dgda.gov.bd/index.php/downloads/background>]. Accessed 05 September 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 Bangladesh has an expedited process for approving medical countermeasures (MCM) for human use during public health emergencies. There is no mention about an expedited process for approving medical countermeasures (MCM) for human use during public health emergencies in the guideline published by Directorate General of Drug Administration, Ministry of Health and Family Welfare (MoHFW) entitled Bangladesh for Good Clinical Practice (GCP) for Trials on Pharmaceutical Products Bangladesh finalized on 23 November, 2015 but it was publicly available on 07 June, 2017 [1]. Moreover, there is no information regarding this in the Ministry of Health and Family Welfare (MoHFW) and Directorate General of Drug Administration (DGDA) [2, 3].

1. Directorate General of Drug Administration, Published 2015. Guidelines for Good Clinical Practice (GCP) for Trials on Pharmaceutical Products Bangladesh. [<https://www.dgda.gov.bd/index.php/2013-03-31-05-16-29/registered-medical-devi-ce-list-4/129-good-clinical-practice-gcp-guidelines/file>]. Accessed 19 August 2020. 2. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 19 August 2020. 3. Directorate General of Drug Administration, Ministry of Health and Family Welfare Bangladesh [<https://www.dgda.gov.bd/>]. Accessed 19 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 epidemics and pandemics are integrated into the national risk reduction strategy or there is a standalone national disaster risk reduction strategy for epidemics and pandemics in Bangladesh. Moreover, there is no risk reduction strategy in Bangladesh for national / standalone. There is a document titled "Bangladesh Emergency Response Preparedness Plan 2014" mentioned about risk reduction but not mentioned for epidemic and pandemic [1]. Also there is another standalone Plan for COVID19 but no mentioned risk reduction strategy [2]. There is no information about risk reduction strategy for epidemic and pandemic in the websites of Ministry of Health and Family Welfare and Ministry of Disaster Management and Relief [3, 4].

1. Humanitarian Response. 2014. "Bangladesh: Emergency Response Plan 2014". [<https://www.humanitarianresponse.info/en/operations/asia/document/bangladesh-emergency-response-plan-2014>]. Accessed 05 September 2020.
2. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
3. Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 05 September 2020.
4. Ministry of Disaster Management and Relief. [<https://modmr.gov.bd/>]. Accessed 05 September 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 no evidence that Bangladesh has cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to public health emergencies. In the website of High commission of India, Dhaka Bangladesh, there is a section about Bilateral Relations but no document about cross-border with regards to public health emergencies [1]. In addition, in the website of South Asian Association for Regional Cooperation (SAARC) Disaster Management Centre (Bangladesh is a member of SAARC), mentioned that as member of South Asian Association for Regional Cooperation (SAARC), a Memorandum of Understanding (MoU) has been signed by India, Bangladesh and Nepal for the

control of kala-azar on 28 July 2006 [2]. The Memorandum of Understanding (MoU) that has been signed is not clearly related to public health emergency, but includes four priority communicable diseases namely HIV/AIDS, Tuberculosis, malaria and leishmaniosis but there is no evidence for cross-border agreements, protocols, or MOUs with neighboring countries, or as part of a regional group, with regards to public health emergencies [2]. According to Inter-Country Meeting on Cross-border Collaboration to Eliminate Malaria in South Asia, the main objective was to reignite the cross-border collaboration effort for malaria in South Asia and identify and establish a suitable collaboration mechanism and identify key areas of collaboration based on an assessment of the situation in different countries but nothing about cross border agreement is mentioned [3]. According to a report named "Cross-border Collaboration on Emerging Infectious Diseases", published by World Health Organization (WHO) on 26-28 February 2007, the goal of cross-border collaboration for disease control was to institutionalize collaborative mechanisms among 11 border districts in Bangladesh, Bhutan, India and Nepal to maximize disease control activities on four priority communicable diseases (HIV/AIDS, Tuberculosis, malaria and leishmaniosis) but there is no mention of any cross border agreements [4]. There is no information regarding this in the Ministry of Health and Family Welfare [5].

1. High Commission of India, Dhaka Bangladesh. [<https://hcidhaka.gov.in/pages?id=eyJpdil6lIFxYzFDZXNcLzJEc0RfCzhiS3k5T2N3PT0iLCJ2YWx1ZSI6IkdmdHcVkcGIBK1BOMTFqWDJ2M3c9PSlsm1hYyI6IjJMTYzZTNiMTRjNjk3OWYwZTVkOTkyNzQ4OGVkdDk2OWNkNjU5Yjk0MmQ2MmY3NjEwYTlxNDc2ZTQ5OGI4ZTAifQ==>]. Accessed 21 August 2020.
2. South Asian Association for Regional Cooperation (SAARC), Disaster Management Centre. [<http://www.covid19-sdmc.org/>]. Accessed 21 August 2020.
3. World Health Organization (WHO). 12-13 February 2016. "Inter-Country Meeting on Cross-border Collaboration to Eliminate Malaria in South Asia". [<http://apps.who.int/iris/bitstream/handle/10665/272763/sea-mal-283.pdf?sequence=1&isAllowed=y&ua=1>]. Accessed 21 August 2020.
4. World Health Organization (WHO). 26-28 February 2007. "Cross-border Collaboration on Emerging Infectious Diseases". [http://apps.searo.who.int/PDS_DOCS/B0632.pdf]. Accessed 21 August 2020.
5. Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 05 September 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 no evidence of cross-border agreements, protocols, or memorandums of understanding (MOUs) with neighbouring countries, or as part of a regional group, with regard to animal health emergencies in Bangladesh. According to a report entitled "Cross-border Collaboration on Emerging Infectious Diseases", published by the World Health Organization (WHO) on 26-28 February 2007, Bangladesh being a member of the South Asian Association for Regional Cooperation (SAARC), participated in a cross-border meeting which has been held with neighbouring countries under the framework of sub-regional cooperation for prevention and control of epidemic-prone and transboundary animal diseases; however, there is no mention of animal health emergencies [1]. Further, there is no mention of this on the websites of the Ministry of Fisheries and Livestock, the Ministry of Health and Family Welfare (MoHFW) and Ministry of Disaster Management and Relief [2, 3, 4].

1. World Health Organization (WHO). 26-28 February 2007. "Cross-border Collaboration on Emerging Infectious Diseases". [http://apps.searo.who.int/PDS_DOCS/B0632.pdf]. Accessed 05 September 2020.
2. Ministry of Fisheries and Livestock. [<https://mofl.gov.bd/>]. Accessed 05 September 2020.
3. Ministry of Health and Family Welfare. [<http://www.mohfw.gov.bd/>]. Accessed 05 September 2020.
4. Ministry of Disaster Management and Relief. [<https://modmr.gov.bd/>]. Accessed 05 September 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: 0

2021

Biological Weapons Convention

5.3.1c

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

Yes = 1 , No = 0

Current Year Score: 1

2021

Biological Weapons Convention

5.3.1d

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

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

Current Year Score: 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: 1

2021

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

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

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

5.4.1a

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

Yes = 1 , No = 0

Current Year Score: 1

2021

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

5.4.1b

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

Yes = 1 , No = 0

Current Year Score: 0

2021

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

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

5.4.2a

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

Yes = 1 , No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.4.2b

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

Yes = 1 , No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.5 FINANCING

5.5.1 National financing for epidemic preparedness

5.5.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Bangladesh has allocated national funds to improve capacity to address epidemic threats within the past three years. Although there is a news report published in 'The Business Standard' mentioned that the health budget this year has been hiked by 23.44 percent from the revised budget of Tk23,692 crore for the fiscal year 2019-20. The allocation has been increased, keeping in mind that part of the fund will be spent on dealing with the pandemic. Apart from that, the government has proposed Tk10,000 crore to be kept aside to deal with any emergency health crisis and meet the healthcare needs in the fight against the Covid19 pandemic but not mentioned allocated national funds to improve capacity to address any epidemic threats [1]. There is another news published in WaterAid website about water, sanitation and hygiene (WASH) allocation in upcoming National Budget 2020-2021. According to the news, there will be an increase in immediate investment in WASH, including hygiene and WASH in health care facilities, not only as a priority of COVID-19 prevention and response but as well as to build resilience against future disease outbreaks, with a particular focus on hard-to-reach areas and other marginalized groups but no mention of allocation for epidemic threats. [2]. There is no further information about allocation of national fund for epidemic threats in the Ministry of Health, Ministry of Agriculture and Ministry of Finance websites [3, 4, 5].

1. The Business Standard. 11 June, 2020. "Health sector gets priority in the budget for 2020-21". ‘The Business Standard'. [<https://tbsnews.net/economy/budget/health-sector-gets-priority-budget-2020-21-91807>]. Accessed 10 September 2020.
2. WaterAid. June 2020. "WASH allocation in upcoming National Budget 2020-2021". [<https://www.wateraid.org/bd/media/wash-allocation-in-upcoming-national-budget-2020-2021>]. Accessed 10 September 2020.
3. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 10 September 2020.
4. Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 10 September 2020.
5. Finance Division, Ministry of Finance. [<https://mof.gov.bd/>]. Accessed 10 September 2020.

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

5.5.2a

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

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

Current Year Score: 0

2021

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

5.5.2b

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

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

Current Year Score: 0

2021

OIE PVS assessments

5.5.3 Financing for emergency response

5.5.3a

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

Yes = 1 , No = 0

Current Year Score: 1

There is a publicly identified special emergency public financing mechanism and funds which Bangladesh can access in the face of a public health emergency. As an eligible International Development Association (IDA) borrowing country, Bangladesh

can access the World Bank's Pandemic Emergency Financing Facility, which was introduced in 2017 to provide financial support to low-income countries [1, 2]. There is a news published in an online newspaper named 'UNFPA Bangladesh' mentioned the Government of Bangladesh has selected United Nations Population Fund (UNFPA) and World Food Programme (WFP) to implement this fund. Working closely with the Ministry of Health and Family Welfare (MoHFW) and other United Nations agencies and partners, the activities delivered by UNFPA include strengthening laboratory and surveillance capacities for COVID-19 testing, and supporting the government with providing COVID-19 treatment and ensuring infection prevention and control [3].

1. International Development Association. 2020. "Borrowing Countries". [<http://ida.worldbank.org/about/borrowing-countries>]. Accessed 19 August 2020.
2. Pandemic Emergency Financing Facility. December 2017. "Operational Brief for Eligible Countries". [<http://pubdocs.worldbank.org/en/119961516647620597/PEF-Operational-Brief-Dec-2017.pdf>]. Accessed 19 August 2020.
3. United Nations Population Fund (UNFPA) Bangladesh. 23 July 2020. "World Bank provides support to UNFPA through the Pandemic Emergency Financing Facility". [<https://bangladesh.unfpa.org/en/news/world-bank-provides-support-unfpa-through-pandemic-emergency-financing-facility>]. Accessed 19 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 Bangladesh have made a public commitment to support other countries in improving the capacity to address epidemic threats by providing financing or support or to improving its own domestic capacity to address epidemic threats by expanding financing or requesting support to improve capacity in the past three years. There is no evidence in the Public Financial Management (PFM) Reform Strategy 2016-2021 of the Government of the People's Republic of Bangladesh, published in June 2016 [1]. There is also no mention of such a commitment on the websites of the Ministry of Health and Family Welfare (MoHFW), Ministry of Foreign Affairs (MoFA), or the World Health Organization (WHO) [2, 3, 4].

1. Government of the People's Republic of Bangladesh. June 2016. "Public Financial Management (PFM) Reform Strategy 2016-2021". [https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/710cb4b9_e331_4036_812e_8fb8e36cb2a0/PMF%20Reform%20Strategy%202016-21%20Final.pdf]. Accessed 19 August, 2020.
2. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 19 August, 2020.
3. Ministry of Foreign Affairs (MoFA). [<https://mofa.gov.bd/>]. Accessed 19 August, 2020.
4. World Health Organization (WHO). [<https://www.who.int/countries/bgd/en/>]. Accessed 19 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 evidence that Bangladesh has requested financing or technical support from donors to improve the country's domestic capacity to address epidemic threats. There is publicly available evidence from the Global Health Security (GHS) Tracking Dashboard that Bangladesh has received finances from the US Agency for International Development (USAID) named 'PREDICT II' [1]. PREDICT II is a capacity building program to improve surveillance for emerging zoonotic diseases (PREDICT II was active through 2019). Additionally, Bangladesh has received funds from USAID to support the fight against TB and funds from the Bill&Melinda Gates Foundation to support in drug discovery against Malaria.[1].

1. Global Health Security (GHS) Tracking. [<https://tracking.ghscosting.org/table/888/recipient>]. Accessed 7 March 2021.

5.5.4c

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

Yes = 1 , No = 0

Current Year Score: 0

2021

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

5.6 COMMITMENT TO SHARING OF GENETIC AND BIOLOGICAL DATA AND SPECIMENS

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

5.6.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Bangladesh has 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. Although, there is a National Preparedness and Response Plan for COVID-19 where it is mentioned that the International Health Regulation (IHR) Emergency Committee for the COVID-19 emphasized,

"it's expected that further international exportation of cases may appear in any country. Thus, all countries should be prepared for containment, including active surveillance, early detection, isolation and case management, contact tracing and prevention of onward spread of COVID-19 infection, and to share full data with World Health Organization (WHO)" [1]. This Plan does not explicitly mention sharing genetic data, clinical specimens etc. and also there is no elaboration of full data [1]. According to the World Health Organization (WHO) situation report of COVID-19 Bangladesh has been sharing COVID-19 on data weekly basis but nothing mentions about sharing genetic data, clinical specimens, and/or isolated specimen [2]. There is no mention of sharing genetic data, clinical specimens, and/or isolated specimens (biological materials) along with the associated epidemiological data with international organizations in the Ministry of Health, Ministry of Agriculture and Institute of Epidemiology, Disease Control and Research (IEDCR) websites [3, 4, 5].

1. Ministry of Health and Family Welfare. 16 March 2020. "National Preparedness and Response Plan for COVID-19, Bangladesh". [<https://reliefweb.int/report/bangladesh/national-preparedness-and-response-plan-covid-19-bangladesh>]. Accessed 09 August 2020.
2. World Health Organization (WHO). [[https://www.who.int/bangladesh/emergencies/coronavirus-disease-\(covid-19\)-update/coronavirus-disease-\(covid-2019\)-bangladesh-situation-reports](https://www.who.int/bangladesh/emergencies/coronavirus-disease-(covid-19)-update/coronavirus-disease-(covid-2019)-bangladesh-situation-reports)]. Accessed 19 August 2020.
3. Ministry of Health and Family Welfare (MoHFW). [<http://www.mohfw.gov.bd/>]. Accessed 10 September 2020.
4. Ministry of Agriculture. [<https://moa.gov.bd/>]. Accessed 10 September 2020.
5. Institute of Epidemiology, Disease Control and Research (IEDCR). [<https://iedcr.gov.bd/>]. Accessed 10 September 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 Bangladesh has not shared samples in accordance with the Pandemic Influenza Preparedness (PIP) framework in the past two years. The World Health Organization (WHO) has not reported any non-compliance in the past two years by Bangladesh. Moreover, a search for media articles on this did not yield any results [1].

1. World Health Organization (WHO). [<https://www.who.int/bangladesh/health-topics>]. Accessed 19 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 Bangladesh has not shared pandemic pathogen samples during an outbreak in the past two years. The World Health Organization (WHO) has not reported any non-compliance in the past two years by Bangladesh. Moreover, Bangladesh has been reported to the WHO weekly basis [1].

1. World Health Organization (WHO). [<https://www.who.int/bangladesh/>]. Accessed 19 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: 1

2020

Economist Intelligence

6.1.1c

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

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.1d

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

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.1e

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

Input number

Current Year Score: 26

2020

Transparency International

6.1.1f

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

Input number

Current Year Score: 0

2020

Economist Intelligence

6.1.1g

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

Input number

Current Year Score: 1

2020

Economist Intelligence

6.1.2 Orderly transfers of power

6.1.2a

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

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

Current Year Score: 2

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: 1

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: 2

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: 2

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: 3

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: 73.91

2018

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

6.2.2 Gender equality

6.2.2a

United Nations Development Programme (UNDP) Gender Inequality Index score

Input number

Current Year Score: 0.46

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: 2.7

2016

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

The employment in the informal sector is 85.1 percent. According to a Report on Labour Force Survey (LFS) 2016-2017 published in 2018 conducted by the Bangladesh Bureau of Statistics (BBS) which functions under the Ministry of Planning, 85.1 per cent of the employed population are engaged in informal employment [1]. In addition, a news report in the Daily Star on Informal economy and economic inclusion published by Mustafa K Mujeri on 18 February, 2020, mentioned that according to the Labour Force Survey (LFS) 2016-17, 85.1 percent works in the informal sector [2].

1. Bangladesh Bureau of Statistics (BBS). January 2018. "Report on Labour Force Survey (LFS) 2016-2017". [<http://www.bbs.gov.bd/site/page/111d09ce-718a-4ae6-8188-f7d938ada348/>]. Accessed 21 August 2020.
2. Mustafa K Mujeri. 18 February 2020. "Informal economy and economic inclusion". The Daily Star. [<https://www.thedailystar.net/supplements/29th-anniversary-supplements/digitisation-and-inclusivity-taking-everyone-along/news/informal-economy-and-economic-inclusion-1869601>]. Accessed 21 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: 0.32

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: 1

2021

Economist Intelligence

6.4 ENVIRONMENTAL RISKS

6.4.1 Urbanization

6.4.1a

Urban population (% of total population)

Input number

Current Year Score: 37.41

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: -0.09

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: 72.32

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: 473.7

2019

WHO

6.5.1c

Population ages 65 and above (% of total population)

Input number

Current Year Score: 5.18

2019

World Bank

6.5.1d

Prevalence of current tobacco use (% of adults)

Input number

Current Year Score: 39.1

2018

World Bank

6.5.1e

Prevalence of obesity among adults

Input number

Current Year Score: 3.6

2016

WHO

6.5.2 Access to potable water and sanitation

6.5.2a

Percentage of homes with access to at least basic water infrastructure

Input number

Current Year Score: 97.02

2017

UNICEF; Economist Impact

6.5.2b

Percentage of homes with access to at least basic sanitation facilities

Input number

Current Year Score: 48.23

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: 18.62

2018

WHO Global Health Expenditure database

6.5.4 Trust in medical and health advice

6.5.4a

Trust medical and health advice from the government

Share of population that trust medical and health advice from the government , More than 80% = 2, Between 60-80%, or no data available = 1, Less than 60% = 0

Current Year Score: 2

2018

Wellcome Trust Global Monitor 2018

6.5.4b

Trust medical and health advice from medical workers

Share of population that trust medical and health advice from health professionals , More than 80% = 2, Between 60-80%, or no data available = 1, Less than 60% = 0

Current Year Score: 2

2018

Wellcome Trust Global Monitor 2018