Saudi Arabia

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

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

1.1 ANTIMICROBIAL RESISTANCE (AMR)

1.1.1 AMR surveillance, detection, and reporting

1.1.1a

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

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

Current Year Score: 2

Saudi Arabia has a national AMR plan for the surveillance, detection and reporting of priority AMR pathogens. Saudi Arabia launched its national plan, the Kingdom of Saudi Arabia National Action Plan on combatting Antimicrobial Resistance, in January 2017 [1]. The plan is comprised of an operational plan (implementation arrangements and a delineation of responsible entities); a monitoring and evaluation plan; plans to promote behavioural change and general awareness and study changes in the pattern of AMR in Saudi Arabia. The national plan adopts the WHO Global action plan on antimicrobial resistance's five objectives, which includes surveillance through setting up a national surveillance system for antimicrobial research (see Objective 3) [1]. The plan does not specifically mention detection of priority AMR pathogens (except for salmonella), but it is implicit in the sections covering surveillance, including establishing a national infection prevention and control program (see Objectives 5, 6 and 7). Objective 3.6 covers the establishment of IT systems to monitor AMR and link all sentinel sites to the national centre for analysis and reporting [1]. In 2017, Saudi Arabia also established the National Committee for the National Action Plan to Combat Antibiotic-resistant Bacteria [2, 3]. The committee includes the following five technical subcommittees that were formed in accordance with WHO objectives: AMR Awareness; Laboratory Surveillance; Infection Prevention and Control; Antimicrobial Stewardship; and Drugs and Economy [3]. According to the Joint External Evaluation Assessment of Saudi Arabia, published in March 2017, 30 out of 150 labs across Saudi Arabia are designated to conduct AMR detection and reporting of all priority AMR pathogens [1].

[1] Saudi Arabia Ministry of Health. January 2017. "Kingdom of Saudi Arabia National Action Plan on Combatting Antimicrobial Resistance". [http://extwprlegs1.fao.org/docs/pdf/sau171813.pdf]. Accessed 9 November 2020.
[2] Saudi Arabia Ministry of Health. November 2017. "WHO Publishes the Saudi National Action Plan for Combating Antibiotic-resistant Bacteria on its Portal". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2017-11-19-002.aspx]. Accessed 9th November 2020.
[3] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 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: 2

There is evidence to show that the Saudi national laboratory system can test for the 7+1 priority AMR pathogens. Saudi Arabia's National Action Plan on combating AMR, published in January 2017, highlights that Saudi Arabia is designating "a national reference laboratory for AMR surveillance" by June 2017 (objective 4.1) [1]. The National Laboratory is operational however access to the website is restricted [2]. The 2017 Joint External Evaluation (JEE) assessment of Saudi Arabia, published in May 2017 reports that of a total of 150 laboratories nationwide, 30 are designated to conduct AMR detection and reporting of all priority AMR pathogens [3]. There are six designated sentinel sites for surveillance of infections caused by priority AMR pathogens in Riyadh; Al-Hassa; Al-Dammam; Jeddah; Assir; and Al-Kharj. The report specifies that Saudi Arabia conducts surveillance for the detection of Salmonella, Campylobacter and total bacteria count in poultry, which began in 2016 [3]. As of May 2017, Saudi Arabia has become a member of the World Health Organizations' (WHO) Global Antimicrobial Resistance Surveillance System (GLASS), where eight pathogens, including E.coli, K.pneumoniae, S. aureus, S. pneumoniae, Salmonella spp, Shigella spp, and N.gonorrhoeae, were selected for its early implementation phase of GLASS [4, 5]. In the 2017 national action plan, Saudi Arabia endorsed the GLASS protocol [1]. According to the GLASS Saudi country profile on the WHO website, there are already 12 laboratories in Saudi performing surveillance and Antibiotic Susceptibility Testing [5].

[1] Saudi Arabia Ministry of Health. January 2017. "Kingdom of Saudi Arabia National Action Plan on Combatting Antimicrobial Resistance". [http://extwprlegs1.fao.org/docs/pdf/sau171813.pdf]. Accessed 9 November 2020.
[2] National Health Laboratory. [https://www.moh.gov.sa/_layouts/15/moh/ssologin.aspx?ReturnUrl=%2fdept%2fNational_Health_Laboratory%2f_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252Fdept%252FNational%255FHealth%255FLaboratory%252FPages%252Forganization%252Easpx&Source=%2Fdept%2FNational_Health_Laboratory%2FPages%2Forganization%2Easpx]. Accessed 9 November 2020.
[3] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 2020.
[4] World Health Organization. 2016-2017. "Global Antimicrobial Resistance Surveillance System (GLASS) Report, Early Implementation". [https://reliefweb.int/sites/reliefweb.int/files/resources/9789241513449-eng.pd]f. Accessed 9 November 2020.
[5] World Health Organization. "GLASS Country Profiles: Saudi Arabia". [http://apps.who.int/gho/tableau-public/tpc-frame.jsp?id=2004]. Accessed 9 November 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 insufficient publicly available evidence that the government of Saudi Arabia conducts surveillance activities for antimicrobial residues or AMR organisms. The Saudi Food and Drug Authority's [SFDA] key objectives include analysing chemical and microbial food and water samples and taking appropriate action where necessary; hygienic monitoring of plants producing foodstuffs and drugs with human consumption; monitoring animal and agricultural items under agriculture and animal quarantine statues; monitoring and inspecting animal slaughterhouses; and ensuring the safety of complementary biological and chemical substances and pesticides [1,2] However, there is no specific evidence of monitoring of antimicrobial residues or AMR organisms. Additionally, Saudi Arabia's National Action Plan on AMR, published in 2017, and publicly available in the WHO's Library of National Action Plans, does not include a statement about detection or surveillance activities by the environmental agency. It only mentions that the Ministry of Environment is a member of the National AMR

Committee. [3]

[1] Saudi Arabia Food and Drug Authority. "About SFDA". [https://www.sfda.gov.sa/en/about/Pages/overview.aspx]. Accessed 11 November 2020.
[2] Saudi Arabia Food and Drug Authority. "Functions of the Food Sector". [https://www.sfda.gov.sa/en/food/about/Pages/overview.aspx]. Accessed 11 November 2020.
[3] World Health Organization (WHO). "Library of National Action Plans, Saudi Arabia National Action Plan on AMR (2017)". [http://www.bsac.org.uk/antimicrobialstewardshipebook/Chapter%2015/National-AMR-Plan-2017.pdf]. Accessed 11 November 2020.

1.1.2 Antimicrobial control

1.1.2a

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

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

Current Year Score: 1

There is publicly available evidence that Saudi Arabia has national legislation or regulation in place requiring prescriptions for antibiotic use for humans, but there is also evidence of gaps in implementation. Under Article 23 of the Executive Regulations of Health Practice Law of 2005, pharmacists are prohibited from dispensing any antibiotics without prescriptions issued by a doctor with a license to practice in the Kingdom [1, 2]. Through an awareness campaign on its social media, the Ministry of Health (MoH) stated that violators will face legal actions, which include a fine of up to 100 thousand riyals (26,657 USD), an abolition of the practicing license, and imprisonment for up to six months [1]. However, despite the presence of laws that prohibit dispensing antibiotics without prescriptions, over-the-counter purchases of antibiotics without a prescription where reported as highly common in Saudi pharmacies. Furthermore, the Saudi National Action Plan for antimicorbial resistance (AMR) surveillance highlights that 77% of pharmacies in Riyadh dispensed antibiotics without a prescription [3]. In addition, according to news articles published in 2018 , the MoH has set up undercover teams to crack down on the violators after years of poor supervision and failure to implement the regulations governing pharmacies. "The undercover team members pose as patients and try to buy drugs, especially antibiotics without prescription to catch the violating pharmacists. In addition, the teams are tasked with checking records in pharmacies selling drugs with prescriptions." [4,5].

[1] Saudi Arabia Ministry of Health. April 2018. "MOH News: MOH Warns Against Selling Antibiotics without Prescription". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/news-2018-04-17-004.aspx]. Accessed 9 November 2020.
[2] Saudi Arabia Ministry of Health. September 2017. "Health Practice System: Royal Decree M/59". [https://www.moh.gov.sa/en/Ministry/Rules/Documents/Executive-Regulations-of-Health-Practice-Law-Ar.pdf]. Accessed 9 November 2020.
[3] Saudi Arabia Ministry of Health. January 2017. "Kingdom of Saudi Arabia National Action Plan on Combatting Antimicrobial Resistance". [http://extwprlegs1.fao.org/docs/pdf/sau171813.pdf]. Accessed 9 November 2020.
[4] Saudi Gazette May 2018. "Pharmacists Selling Drugs Over the Counter Warned". [https://saudigazette.com.sa/article/534576]. Accessed 9 November 2020.
[5] Alsharq Al-awsat. May 2018. [https://aawsat.com/home/article/1260001/]. Accessed 9 November 2020.

1.1.2b

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

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

Current Year Score: 0

There is no publicly avaliable evidence of national legislation or regulation in place requiring prescriptions for antibiotic use for animals in Saudi Arabia. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in May 2017, the veterinary authority under the umbrella of the Ministry of Environment, Water, and Agriculture (MEWA) is responsible for issuing ministerial decrees and regulations to enact animal health legislation, addressing surveillance for reportable animal diseases, and imposing quarantine and restrictions on animal movements in line with international standards set by the World Organization for Animal Health (OIE) [1]. However, no mention is made on the MEWA website with regard to antibiotic use in animals. According to two studies conducted on antimcrobial residues (AMR) in Saudi Arabia, inappropriate use of antibiotics as growth promoters in animal farming has been reported as a key contributor to the increasing prevalence of antimicrobial resistance, particularly in poultry farms in Saudi Arabia [2, 3]. However, there are likely plans to pass a legislation in this regard soon. As a member of the Gulf Cooperation Council (GCC) Centre for Infection Control (GCC-IC), a strategic plan was launched in 2016 in which Saudi Arabia has committed to requiring obligatory prescriptions by licensed veterinarians for all antimicrobials used for disease control in food animals [4]. Further, an online review of the websites of the Minstry of Health, Ministry of Enivorment, Water, and Agirculture; Deputy Ministry for Animal Resources; Saudi Arabia National Plan on AMR, and the verification research, training, and information centre (VERTIC) database did not reveal any relevant information on the existence of a legistlation nor any related practices requiring prescriptions for antibiotic use for animals [5 , 6, 7 , 8, 9].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 19 November 2020.
[2] Assiri, A., Banjar, W. 2017. "Strategic Plan for Combating Antimicrobial Resistance in Gulf Cooperation Council States, KSA Perspective". Journal of Infection and Public Health 10.
[https://reader.elsevier.com/reader/sd/pii/S1876034116301526?token=7C37FED04A0C8BD9911E927E8AC6DCD7C2459C57F2967DC5F12B4A280E53A61325F2758A57F80ED53C27B32CA8F02168]. Accessed 19 November 2020.
[3] Zowawi, H. 2016. "Antimicrobial Resistance in Saudi Arabia". [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5039611/]. Accessed 19 November 2020.
[4] Balkhy, H., Assiri, A., Al Mousa, H., Al-Abri, S., Al-Katheeri, H., Alansari, H., Abdulrazzaq, N., Aidara-Kane, A., Pittet, D, 2016. "The Strategic Plan for Combating Antimicrobial Resistance in Gulf Cooperation Council States". Journal of Infection and Public Health 9
[4]. [http://www.sciencedirect.com/science/article/pii/S1876034116300144]. Accessed 19 November 2020.
[5] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 19 November 2020.
[6] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 19 November 2020.
[7] Saudi Arabia Ministry of Environment, Water, and Agriculture. "Deputy Ministry for Animal Resources". [https://www.mewa.gov.sa/en/Ministry/Agencies/AgencyLivestock/Pages/AboutUs.aspx]. Accessed 19th November 2020.
[8] Saudi Arabia Ministry of Health. January 2017. "Kingdom of Saudi Arabia National Action Plan on Combatting Antimicrobial Resistance". [http://extwprlegs1.fao.org/docs/pdf/sau171813.pdf]. Accessed 19 November 2020.
[9] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/]. Accessed 19 November 2020.

1.2 ZOONOTIC DISEASE

1.2.1 National planning for zoonotic diseases/pathogens

1.2.1a

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

Yes = 1 , No = 0

Current Year Score: 1

Saudi Arabia does have a national law, plan, or equivalent strategy on zoonotic disease. According to the Joint External Evaluation (JEE) of Saudi Arabia, published in March 2017, legislation, policies, and circulars address the control of important animal diseases, including zoonotic disease, and support a "One Health" approach. Standard operating procedures are also in place for nine zoonotic diseases considered to be a national priority risk (e.g., rabies, MERS-CoV, brucellosis, avian influenza, Rift Valley fever, Alkhurma haemorrhagic fever) [1]. According to the Saudi Press Authority and national news sources, the Animal Disease Surveillance and Control Program was launched in March 2017 under the mandate of the Ministry of Environment, Water, and Agriculture (MEWA) and is part of the National 2020 Strategy. The program, which will be implemented in conjunction with the Ministry of Health, seeks to control transient and endemic animal diseases, targeting 21 diseases by 2021 through continuous monitoring and careful observation of the distribution and spread of diseases [2, 3, 4]. According to the Saudi Director-General of Livestock Services, the initiative is divided into four main projects: 1) the animal numbering project to quantify the animal resources within the country and facilitate disease surveillance; 2) a project for the surveillance and control of animal diseases; 3) a project to amend the legislative frameworks regulating livestock; and, finally, 4) an internal quarantine project to prevent the transmission of epidemic diseases [5]. As published in October 2019 on the website of the MEWA, the Ministry "has approved the establishment and rehabilitation of 13 centers for disease control and early warning in all regions of the Kingdom. MEWA indicated that the centers are important for the governance of animal disease by coordinating epidemiological surveillance, early warning alerts and response, applying emergency plans, as well as controlling disease risks in livestock. In addition, MEWA also indicated that the second phase will be initiated through the rehabilitation of four centers in the Eastern Province, Hail, Baha, and Asir." The reference also indicates that the plan is being excuted as it adds, "the centers are one of the main outputs of the initiatives of the National Transformation Program 2020. The centers will be working on animal disease investigation, developing preventive programs that work to control animal diseases, management of epidemiological status of animal diseases and rapid outbreak response, providing the headquarter with disease information needed to contribute to the epidemiological mapping, offering technical opinion in case of consulting, guiding veterinary teams to control animal diseases, and following up the implementation of animal diseases control plans bay region and geographical conditions" [6].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 15 November 2020.
[2] Saudi Press Authority. 6 May 2017. "Ministry of Environment Reviews the Animal Disease Surveillance and Control Program". [https://www.spa.gov.sa/1624499]. Accessed 15 November 2020.
[3] YouTube. 13 August 2017. "SaudiVision 2030: Initiative for the Surveillance and Control of Animal Diseases". [https://www.youtube.com/watch?v=dxWkezQj6IM]. Accessed 15 November 2020.
[4] Alsharq Al-awsat. 8 August 2017. "Saudi Initiative to Preserve Livestock and Food Security". [https://aawsat.com/home/article/994606/]. Accessed 15 November 2020.
[5] Al Riyadh. 8 August 2017. "The Ministry of Environment, Water and Agriculture Aims to Reduce the Prevalence of Zoonotic Diseases". [http://www.alriyadh.com/1614943]. Accessed 15 November 2020.
[6] The Ministry of Environment, Water, and Agriculture. "13 Animal Disease Control Centers Approved for Establishment and

Rehabilitation". [https://mewa.gov.sa/en/MediaCenter/News/Pages/News-23-10-2019.aspx]. Accessed 6 December 2020.

1.2.1b

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

Yes = 1 , No = 0

Current Year Score: 1

There is publicly availabe evidence of a national prevention plan, which includes measures for risk identification and reduction for zoonotic disease spillover events from animals to humans.

According to a news article published on Arab News website, the "bird market in Saudi Arabia's Qassim shut down as precaution against bird flu." It is stated that as a precautionary measure to prevent the spread of bird flu, the authorities have shut down the central bird market in Buraidah. Furthermore, the same evidence shows that the Ministry of Environment, Water, and Agriculture (MEWA) in Qassim as well as the municipality "banned anyone from bringing birds into the areas in which vendors commonly gather. All street vendors selling birds, animals, food, cages and other pet accessories have been shut down. Everyone at the market was ordered to leave the area, and vendors were instructed to stop selling immediately and to remove their birds and animals from the market, which will remain closed until further notice." [1].

Further, the "Regulation of Wild Animal Wet Markets" that was published on the Library of Congress website states that "The Director of the Environmental Health Department in Jeddah has announced the establishment of the Joint Deceases Commission. The main purpose of the commission is to monitor any violations concerning the sanitary requirements in the Al-Ahdl Market that might cause an outbreak of any kind." The Al-ahdl Market is "one of the largest markets in the Kingdom of Saudi Arabia for wild animals, birds, and reptiles." The same source also adds that "The Director of the Environmental Health Department in Jeddah has announced the establishment of the Joint Diseases Commission. The main purpose of the commission is to monitor any violations concerning the sanitary requirements in the Al-Ahdl Market that might cause an outbreak of any kind. The Director stated that 100 health observers are assigned to monitor health violations in the market as well." [2].

Royal Decree M/9 of 6/3/1421 (Hijiri) corresponding to June 8, 2000, regulates the possession and trade of wild creatures and their production. In Article 8, "the Decree grants authority to the local police, with the cooperation with the Ministry of Environment, to inspect animal markets and means of transportation to ensure the implementation of the Decree." [3]. In addition, the Ministry of Health website publishes a National Prevention Plan against avian influenza (Bird Flu) which aims to protect "the Kingdom of Saudi Arabia from the incidence of avian influenza (Bird Flu), by taking decisive preventive measures meant to prevent the virus (H5N1) from entering into the Kingdom. The plan also takes as its target avoiding human infection, as well as controlling or delaying the pandemic prevalence, aside from diminishing the disease and death toll, and addressing the social disorder in case of the occurrence of a pandemic." [4].

According to a new article published in January 2018 on the country's adapted measures to limit the outbreak of bird flu, it is mentioned that the "Health authorities in Saudi Arabia have banned the transfer of live birds inside the country, after a fresh outbreak of bird flu in the kingdom on Saturday, the official Saudi news agency SPA said.The transport ban was imposed on poultry farms, transport firms, and bird breeders after seven cases of bird flu were reported in the last 24 hours throughout the Kingdom, the SPA said. The MEWA said poultry farms and transport firms would need to obtain the necessary licenses in order to transport poultry." The source also adds that "as part of an emergency response, field teams in Kharj and Dharma provinces have culled a total of 813 birds, with an additional 1,325 culled in Ahsa and 800 birds in Qassim.Veterinary teams from the MEWA carried out inspections of 25 markets and bird-breeding farms across the kingdom, the report said. The

ministry also advised bird breeders in Saudi Arabia to avoid purchasing live birds from unknown sources or selling at unauthorized markets in order to minimize the spread of the H5N8 avian flu, which are initiatives that inidcate the existence of a plan to fight bird flu [5]. The MEWA provides no futher information in this regard [6].

[1] Arab News Website. "Bird Market in Saudi Arabia's Qassim Shut Down as Precaution against Bird Flu". [https://www.arabnews.com/node/1634131/saudi-arabia]. Accessed 6 May 2021.
[2] Library of Congress. "Regulation of Wild Animal Wet Markets". [https://www.loc.gov/law/help/wet-markets/saudiarabia.php#_ftn12]. Accessed 6 May 2021.
[3] "Royal Decree M/9 of 6/3/1421 (Hijiri) corresponding to June 8, 2000". [https://perma.cc/KN6J-NFQW] Accessed 6 May 2021.
[4] Ministry of Health "National Prevention Plan". [https://www.moh.gov.sa/en/HealthAwareness/Campaigns/h5n1/Plan/Pages/005.aspx]. Accessed 6 May 2021.
[5] Arabia Industry. "Saudi Arabia Bans Transport of Live Poultry". [https://www.arabianindustry.com/hospitality/news/2018/jan/2/saudi-arabia-bans-transport-of-live-poultry-5863832/#close]. Accessed 6 May 2021.
[6] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx] Accessed 6 May 2021.

1.2.1c

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

Yes = 1 , No = 0

Current Year Score: 1

The Kingdom of Saudi Arabia (KSA) does have national plans, guidelines, or laws that account for the surveillance and control of zoonotic pathogens of public health concern. According to KSA's Joint External Evaluation (JEE) assessment, published in March 2017, "legislation, policies and circulars address the control of important animal diseases, including zoonotic disease, and support a "One Health approach." Standard operating procedures are also in place for zoonotic diseases that are considered to be a national priority risk (rabies, MERS-CoV, brucellosis, avian influenza, Rift Valley fever, Alkhurma haemorrhagic fever). This suggests that surveillance is in place for three or more diseases, although a review of online sources did not yield any publicly available evidence [1, 2]. Furthermore, the Animal Disease Surveillance and Control Program has a specific focus on surveillance, early detection, and disease control for a number of zoonotic diseases, including foot and mouth disease, brucellosis, and West Nile fever [2, 3]. However, the JEE notes that surveillance roles and responsibilities are not clearly defined for certain endemic zoonotic diseases (e.g., bovine tuberculosis and Q fever), while other diseases, like rabies, are neglected [1]. The guidelines accounting for surveillance and control of zoonotic pathogens were introduced during the MERS-CoV outbreak, where Saudi Arabia began maintaining regular surveillance of the disease with weekly reports sent to the World Health Organization (WHO) with updates on MERS-CoV cases (see reference for an example of a weekly report from April 2016) [4].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=]1. Accessed 9 November 2020.
[2] Al Riyadh. 8 August 2017. "The Ministry of Environment, Water and Agriculture Aims to Reduce the Prevalence of Zoonotic Diseases". [http://www.alriyadh.com/1614943]. Accessed 9 November 2020.
[3] Makkah Newspaper Website. 12 March 2017. "The Ministry of Environment Begins a Programme to Control 21 Animals Diseases". [https://makkahnewspaper.com/article/596461/]. Accessed 9 November 2020.

[4] Saudi Arabia Ministry of Health. April 2016. "Weekly Monitor MERS-CoV, Volume 2, Issue 15". [https://www.moh.gov.sa/en/CCC/Documents/Volume-2-Issue%2015-Tuesday-April%2012-2016%E2%80%8B.pdf]. Accessed 9 November 2020.

1.2.1d

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

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence to determine whether the government of Saudi Arabia has a department dedicated to zoonotic diseases that does function across ministries. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, a multisectoral approach is adopted to address the most significant zoonotic diseases. This includes sharing information and data amongst relevant stakeholders (Ministry of Health (MoH), Ministry of Municipalities, Ministry of Interior, Saudi Wildlife Authority, SFDA, Saudi Centre for Disease Control, and Saudi customs). However, there is no explicit mention of where this multisectoral approach takes place, thereby suggesting that relevant stakeholders may simply meet on an ad hoc basis. The JEE indicates that the effectiveness of multisectoral cooperative efforts were demonstrated by the joint surveillance of the Ministry of Environment, Water, and Agriculture (MEWA) and the MoH during the surveillance in camels following the MERS-CoV outbreak. Furthermore, coordination with other agencies has been successful in preventing the spread of highly pathogenic avian influenza during the 2007 outbreak [1]. The JEE also reports that there is an interministerial committee that links the human and animal health sectors; however it recommends strengthening and expanding the mandate of this committee. The JEE further adds that there is no well-defined mechanism for coordinating response to most priority zoonotic disease outbreaks involving public health, livestock, other domestic animals, and wildlife, thereby suggesting that coordination functions and clear delegation of responsibilities need to be strengthened [1]. A review of different committees and divisions within the MoH and MEWA has not provided any further indication that Saudi Arabia has a specific unit dedicated to zoonotic diseases that functions across ministries [2, 3].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 2020.
[2] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 9 November 2020.
[3] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 9 November 2020.

1.2.2 Surveillance systems for zoonotic diseases/pathogens

1.2.2a

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

Yes = 1 , No = 0

Current Year Score: 1

Saudi Arabia does have a national mechanism for owners of livestock to conduct and report on disease surveillance to a central government agency. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, the country has established an event-based surveillance system in which unusual health events in animals are reported directly by either individuals, municipalities, or security departments to the Ministry of Health (MoH) and the Ministry of

Environment, Water, and Agriculture (MEWA). In addition. the MoH has a dedicated hotline to receive reports of public health events, with a number available specifically for animal health. Once contacted, MoH and MEWA verify the public health problem and initiate active surveillance and field investigation unilaterally or together depending on the nature of the outbreak [1]. According to a new article published in October 2019 on the website of the Minsitry of Enviroment, Water, and Agriculture, it is evident that livestock owners as well as veterinaries can immediately report on any epedemic or contagious disease. "The Ministry of Environment, Water, and Agriculture (MEWA) urges all livestock owners and those who are working in the livestock sector to immediately report on any epidemic or contagious disease to protect the animal wealth in the Kingdom of Saudi Arabia against such diseases. MEWA pointed out that pursuant to Article 10 of the Livestock Law issued by Royal Decree No. M/13 dated 10/3/1424 AH (11/5/2003), cases of suspected diseases shall be reported to MEWA within a maximum of twenty-four hours, and animals suspected to have a disease, whether alive, dead or slaughtered, shall be kept separate from the healthy ones and not be disposed of or its products. And under Article 9 of the GCC Law of practicing veterinary professions, veterinarians must urgently report suspected cases of notifiable diseases to the competent authority or its representatives and provide them with the owner's information. MEWA stressed that those who fail to report epidemic or contagious disease immediately are liable to penalties under the Livestock Law, including fines up to SAR 1 million, publishing the names of violators or their livestock production business. MEWA calls on everyone to collaborate with it to apply disease control programs aimed at protecting the human, animals and the national economy in general from the negative impact of disease outbreaks, and to report such cases by calling the toll-free number (8002470000)." [2].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 2020.
[2] Ministry of Environment, Water, and Agriculture "MEWA Calls for Immediate Reporting of Animal Epidemics". [https://mewa.gov.sa/en/MediaCenter/News/Pages/News-17-10-2019.aspx]. Accessed 6 December 2020.

1.2.2b

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Saudi Arabia has laws or guidelines that safeguard the confidentiality of information gathered through surveillance activities for animals. A review of current privacy and data confidentiality laws has not provided evidence of specific guidelines regarding health data for animals or animal owners [1, 2, 3]. Moreover, there is no evidence in this regard on the websites of the Ministry of Environment, Water and Agriculture (MEWA), the Ministry of Health, or Saudi Arabia's Joint External Evaluation assessment, published in March 2017 [4, 5, 6]. However, Shari'a principles, upon which Saudi laws are primarily based, generally protect the privacy and personal data of individuals and provide that an individual will be compensated if he suffers loss as a result of the disclosure of his personal information by another party [7,8]. Along with the Regulations for the Protection of Confidential Commercial Information (issued by Minister of Commerce and Industry Decision No. (3218), they may protect livestock owners from making public information specific to their livestock [1, 9].

[1] DLA Piper. January 2017. "Data Protection Laws of the World: Saudi Arabia". 2017. [https://www.dlapiperdataprotection.com/index.html?t=law&c=SA]. Accessed 15 November 2020.
[2] Latham & Watkins. Middle East & Africa Technology, IP and Sourcing Focus. "Data Protection in the Kingdom of Saudi Arabia: A Primer". [https://www.lw.com/presentations/Data-Protection-in-the-Kingdom-of-Saudi-Arabia]. Accessed 15 November 2020.

[3] Financier Worldwide. April 2015. "Cyber Security and Data Privacy Law in Saudi Arabia". [https://www.financierworldwide.com/cyber-security-and-data-privacy-law-in-saudi-arabia/#.WoIqApPwbBI]. Accessed 15 November 2020.
[4] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 15 November 2020.
[5] Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 15 November 2020.
[6] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 15 November 2020.
[7] Thomson Reuters Practical Law. October 2012. "Data Protection in Saudi Arabia: Overview". [https://www.dlapiperdataprotection.com/system/modules/za.co.heliosdesign.dla.lotw.data_protection/functions/handbook.pdf?country=all]. Accessed 15 November 2020.
[8] Shari'ah Law Framework 3 May 2011. "Saudi Arabia: Data Protection Update 5—Data Protection In The Kingdom Of Saudi Arabia". [https://www.mondaq.com/saudiarabia/privacy-protection/130992/data-protection-update-5--data-protection-in-the-kingdom-of-saudi-arabia]. Accessed 15 November 2020.
[9] WIPO Lex. 4 May 2005. "Regulations for the Protection of Confidential Commercial Information" Issued by the Minister of Commerce and Industry's Decision No. (3218). Unofficial Translation. [https://www.wto.org/english/thewto_e/acc_e/sau_e/WTACCSAU59A6_LEG_7.pdf]. Accessed 15 November 2020.

1.2.2c

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

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Saudi Arabia conducts surveillance of zoonotic diseases in wildlife. While the Ministry of Environment, Water, and Agriculture (MEWA) is mandated to conduct the surveillance and monitoring of animal diseases, it does not specifically mention wild animals [1]. Similarly, the Saudi Wildlife Authority does not mention any surveillance functions for zoonotic diseases are conducted, nor does the Ministry of Health [2, 3, 4]. However, according to both the FAO and the US Centre for Disease Control, following the outbreak of the MERS virus in Saudi Arabia in 2012, the Ministry of Health, in collaboration with the Centre for Infection and Immunity of Columbia University and EcoHealth Alliance, did collect samples from bats and camels in regions where MERS cases have been identified, thereby suggesting that wildlife surveillance does take place in rare cases [5, 6]. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, coordination among different agencies, including the Saudi Wildlife Authority, must be improved for better detection of zoonotic diseases as well as for follow-up to animal exposures (e.g. rabies), positive surveillance results (e.g. toxoplasmosis), and wildlife surveillance implementation [7]. A review of online sources has not provided any further evidence on a well-established passive surveillance. According to the JEE assessment of Saudi Arabia, published in March 2017, "reporting of unusual health events by individuals, municipalities, and security departments to MoH." Moreover, in a publication entitled "Surveillance of Communicable Diseases in Era of Emerging Viral Zoonotic Infections: Lessons from H1N1 and MERS-CoV" and published in 2014 on the Journal of Public Health and Epidemiology, among the recommendations are to develop, strengthen, and put in place different types of surviellance systems [7,8].

[1] Saudi Arabia Ministry of Environment, Water, and Agriculture. "Department of Health and Veterinary Control". [https://www.mewa.gov.sa/ar/Ministry/Agencies/AgencyLivestock/Departments/Pages/dept6.aspx]. Accessed 14 November 2020.
[2] Saudi Wildlife Authority website. "Regulations and Legislation". [https://www.swa.gov.sa/ar/].Accessed 14 November 2020.

[3] Saudi Arabia Ministry of Health. "Regulations".
[https://www.moh.gov.sa/en/Ministry/Rules/Pages/default.aspx?PageIndex]=1. Accessed 14 November 2020.
[4] Saudi Arabia Ministry of Health website. "Initiatives and Projects".
[https://www.moh.gov.sa/Ministry/Projects/Pages/default.aspx]. Accessed 14 November 2020.
[5] Center for Disease Control and Prevention. November 2013. "Emerging Infectious Diseases".
[https://wwwnc.cdc.gov/eid/article/19/11/13-1172_article]. Accessed 14 November 2020.
[6] Food and Agriculture Organization 2016. "Understanding MERS-CoV at the Animal-Human Interface".
[http://www.fao.org/3/a-i5682e.pdf]. Accessed 14 November 2020.
[7] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=]1. Accessed 14 November 2020.
[8] The Journal of Public Health and Epidemiology 2014 "Surveillance of Communicable Diseases in Era of Emerging Viral Zoonotic Infections: Lessons from H1N1 and MERS-CoV". [https://austinpublishinggroup.com/public-health-epidemiology/fulltext/ajphe-v1-id1005.php]. Accessed 14 November 2020.

1.2.3 International reporting of animal disease outbreaks

1.2.3a

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

Yes = 1 , No = 0

Current Year Score: 0

2019

OIE WAHIS database

1.2.4 Animal health workforce

1.2.4a

Number of veterinarians per 100,000 people

Input number

Current Year Score: 6.78

2018

OIE WAHIS database

1.2.4b

Number of veterinary para-professionals per 100,000 people

Input number

Current Year Score: 1.76

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: 1

Saudi Arabia has a national plan on zoonotic disease that includes working with the private sector in controlling or responding to zoonoses. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, the Saudi government trains private veterinarians to serve as surge capacity in the event of an outbreak [1]. In addition, the National Prevention Plan for Avian Influenza includes epidemiological surveillance in private hospitals, distributing health scientific material to private health facilities, and raising the health awareness of health staff in private health sectors [2]. Furthermore, according to Saudi news reports, the Ministry of Environment, Water, and Agriculture's (MEWA) Animal Disease Surveillance and Control Program launched in 2017 seeks to engage in partnerships in order to improve the capacities and competencies of public entities [3]. MEWA is also reported to be working on the establishment of a national centre for excellence and animal research of the Agency for Animal Resources in partnership with the private sector and Saudi universities and aims to conduct research and studies on the conservation of livestock strains [4].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9th November 2020
[2] Saudi Arabia Ministry of Health website. 2012. "National Prevention Plan: H5N1". [https://www.moh.gov.sa/en/HealthAwareness/Campaigns/h5n1/Plan/Pages/005.aspx]. Accessed 9 November 2020.
[3] Al Riyadh. 8 August 2017. "The Ministry of Environment, Water, and Agriculture Aims to Reduce the Prevalence of Zoonotic Diseases". [http://www.alriyadh.com/1614943]. Accessed 9 November 2020.
[4] Makkah Newspaper Website. 12 March 2017. "The Ministry of Environment Begins a Programme to Control 21 Animals Diseases". [https://makkahnewspaper.com/article/596461/]. Accessed 9 November 2020.

1.3 BIOSECURITY

1.3.1 Whole-of- government biosecurity systems

1.3.1a

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

Yes = 1 , No = 0

Current Year Score: 0

Saudi Arabia does not publicly indicate the existence of a record of the facilities in which especially dangerous pathogens and toxins are stored, or an inventory management system for such facilities. A review of reports and statistical data released by the Ministry of Health and Ministry of Environment, Water, and Agriculture (MEWA) has yielded no evidence that a record of these facilities exists [1, 2]. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March

2017, the specimens of positive infectious diseases are mainly stored in the major laboratories, such as the regional laboratory network of the Ministry of Health or at the Riyadh Veterinary Diagnostic Laboratory (for animals) [3,4]. However, there is no public evidence to indicate that a record exists listing these facilities. Moreover, the JEE notes that without a central public health laboratory, confirmatory and referral testing has been distributed among regional laboratories. Currently, laboratory information systems are not standardized or well integrated. A National Health Laboratory has now been established and will soon become fully functional [3]. Although Saudi Arabia has submitted Confidence Building Measures Reports for the past several years, access to the reports is restricted to the public, and it is unknown if they contain information on this matter [5]. The verification, research, training, and information centre (VERTIC) database does not provide additional information on this subject [6].

[1] Saudi Arabia Ministry of Health. "General Administration of Laboratories". [https://www.moh.gov.sa/dept/Laboratories/Pages/guide-manual.aspx]. Accessed 13 November 2020.
[2] Saudi Arabia Ministry of Environment, Water and Agriculture. "Data and Statistics". https://www.mewa.gov.sa/ar/InformationCenter/Pages/default.aspx]. Accessed 13 November 2020.
[3] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 13 November 2020.
[4] Khan, O. 2008. "Isolation and Identification of Highly Pathogenic Avian Influenza H5N1 Virus from Houbara Bustards (Chlamydotis undulata macqueenii) and Contact Falcons". Avian Pathology 38[1]. [http://www.tandfonline.com/doi/full/10.1080/03079450802609815?src=recsys]. Accessed 13 November 2020.
[5] United Nations Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 13 November 2020.
[6] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/]. Accessed 13 November 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

Saudi Arabia does not yet have national biosecurity legislation or regulations in place. National biosecurity legislation and guidelines are yet to be finalized, enacted, and implemented. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, Saudi Arabia does not have biosecurity legislation or regulation [1]. The General Administration of Laboratories on the Ministry of Health website has a document titled 'The Primary Guide for Workers in Medical Laboratories and Blood Banks' however the link was not working during the time of access [2]. The JEE adds that "different sectors have developed biosecurity programmes, some of which (such as human health) are stronger than others. The recently established National Committee on Biosafety and Biosecurity, with representatives from relevant governmental sectors, should improve cross-sector coordination" and coherence in regulations. Furthermore, "various government agencies have their own training programmes for biosecurity; however, there is no unified and comprehensive training curriculum. All laboratory employees receive safety training upon appointment and regularly thereafter" [1]. In addition, Article 5 of the Royal Decree on the Biological Weapons Convention of 1972 states that activities conducted using biological agents for peaceful purposes are required to obtain the necessary licenses to conduct such activities and prepare periodic reports for the relevant authorities on these activities. Furthermore, Article 19 adds that the relevant authority shall establish

controls and procedures to ensure safe handling of biological agents, but no specific regulations related to biosecurity are mentioned [3]. Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public, and it is unknown if they contain information on this matter [4]. The websites of the Verification Research, Training, and Information Centre (VERTIC) database and the Ministry of Environment, Water, and Agriculture (MEWA) do not provide additional information on this subject [5,6].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 13 November 2020.
[2] Saudi Arabia Ministry of Health. "General Administration of Laboratories". [https://www.moh.gov.sa/dept/Laboratories/Pages/guide-manual.aspx]. Accessed 13 November 2020.
[3] Government of Saudi Arabia. 1972. "Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons: Royal Decree M/8 March 1972". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulation_BWC_AR.pdf]. Accessed 13 November 2020.
[4] United Nations Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 13 November 2020.
[5] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/]. Accessed 13 November 2020.
[6] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 13 November 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 public evidence that Saudi Arabia has an established agency or committee responsible for the enforcement of biosecurity legislation and regulations. There is also no evidence of the existence of biosecurity legislations in the country. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI), which operates under the jurisdiction of the Ministry of Health (MoH), sets national accreditation standards for medical and public health laboratories and includes a section on biosecurity [1, 2]. Compliance with CBAHI's standards is mandatory for all medical laboratories and healthcare delivery facilities located within the Kingdom, including private medical laboratories [1]. The JEE further notes that all laboratories receive safety audits as part of their accreditation assessments once every two years, but a review of CBAHI's website has not provided any evidence to indicate whether that includes enforcement of biosecurity legislation and regulations [1, 2]. Furthermore, Article 6 of the Royal Decree on the Biological Weapons Convention of 1972 states that facilities licensed to deal with biological agents for peaceful purposes are subject to inspection by the relevant authority, and Article 7 adds that inspections may take place at any time when suspected to be in violation of the necessary procedures to be followed; however, specific references to what the correct procedures are or who the relevant authority is are not provided [3]. A review of online sources, including the websites of the Ministry of Health (MoH), Ministry of Environment, Water, and Agriculture (MEWA) does not provide any further evidence in this regard [4, 5]. Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public, and it is unknown if they contain information on this matter [6]. The verification research, training, and information centre (VERTIC) database does not provide additional information on this

subject [7].

[1] Saudi Central Board for Accreditation of Healthcare Institutions. "About CBAHI". [https://cbahi.gov.sa/surveyor/AboutUs.aspx]. Accessed 13 November 2020.
[2] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=]1. Accessed 13 November 2020.
[3] Government of Saudi Arabia. 1972. "Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons: Royal Decree M/8 March 1972". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulation_BWC_AR.pdf]. Accessed 13 November 2020.
[4] Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 13 November 2020.
[5] Ministry of Environment, Water and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 13 November 2020.
[6] United Nations Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 13 November 2020.
[7] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/]. Accessed 13 November 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 indicates that Saudi Arabia 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) assessment of Saudi Arabia, published in March 2017, laboratory services across sectors are in a poor condition, which the JEE attributes to the lack of a comprehensive cross-sectoral national laboratory policy, or a national laboratory strategic plan. Saudi Arabia currently does not have designated reference laboratories for any priority diseases other than polio, thereby suggesting that efforts to consolidate the number of laboratories holding dangerous pathogens have not yet taken place [1]. Saudi Arabia's National Action Plan on AMR, published in 2017, does not cover pathogen storage or inventory [2]. A review of the Ministry of Health, Ministry of Environment, Water, and Agriculture (MEWA), and the Verification Research, Training, and Information Centre (VERTIC) Database websites has not provided any further evidence in this regard [3, 4, 5]. Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public, and it is unknown if they contain information on this matter [6]. Access to Ministry of Defense website was denied as the website is down during search time [7].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 18 November 2020.
[2] World Health Organization (WHO). "Library of National Action Plans, Saudi Arabia National Action Plan on AMR (2017)". Accessed 18 November 2020. [http://www.bsac.org.uk/antimicrobialstewardshipebook/Chapter%2015/National-AMR-Plan-2017.pdf]. Accessed 11 November 2020.
[3] Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 18 November 2020.

[4] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[5] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/nuclear-and-other-radioactive-material/nuclear-security-legislation-database/s/]. Accessed 18 November 2020.
[6] United Nations Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 18 November 2020.
[7] Ministry of Defence. [https://www.mod.gov.sa/en/Pages/default.aspx]. Accessed 18 November 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 that Saudi Arabia has in-country capacity to conduct polymerase chain reaction (PCR) diagnostic testing for anthrax or Ebola. No mention of such capacity was made on the websites of the Ministry of Health (MoH), Ministry of Environment, Water and Agriculture, or the Joint External Evaluation (JEE) of Saudi Arabia published in March 2017 [1, 2, 3]. Access to the website of the Ministry of Defense was denied, as the website is down during search time [4]. According to statements released by the MoH in 2014, samples suspected to contain strains of the Ebola virus were submitted to the US Centre for Disease Control and Prevention (CDC) for testing, thereby suggesting that national level diagnostic capacities were not available [5, 6]. Furthermore, there is public evidence that Saudi Arabia has in-country capacity to conduct PCR testing for other dangerous pathogens. In 2014, the Ministry of Health established a specialized medical laboratory in Madinah that is capable of conducting PCR-based testing for MERS-CoV, Hepatitis (B and C), and HIV [7]. More recently, in 2017, according to an academic study published in the Canadian Journal of Infectious Diseases and Medical Microbiology , reverse transcription PCR was used to detect dengue virus (DENV) serotypes at the laboratories of Umm Al-Qura University [8]. According to another academic study published in the Saudi Journal of Gastroenterology in 2017, PCR was also used to test Hepatitis D (HDV-Ab) cases at the Special Infectious Agents Unit at the King Fahd Medical Research Centre [9].

[1] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx[. Accessed 18 November 2020.
[2] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[3] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017." [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 18th November 2020.
[4] Saudi Arabia Ministry of Defence. [https://www.mod.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[5] Saudi Arabia Ministry of Health. 8 September 2014. "News Update: Lab Tests Negative for Ebola Virus". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2014-08-09-001.aspx]. Accessed 18 November 2020.
[6] Saudi Arabia Ministry of Health. 8 May 2014. "News: Saudi Arabia Testing Blood Samples of Suspected Ebola Case". [https://www.moh.gov.sa/en/CCC/News/Pages/News-2014-08-09-001.aspx]. Accessed 18 November 2020.
[7] Saudi Arabia Ministry of Health. 19 November 2014. "MOH Launches New Corona Laboratory in Madinah". [https://www.moh.gov.sa/en/Mobile/Pages/Go.aspx?url=/en/Ministry/MediaCenter/News/Pages/News-2014-11-19-001.aspx&title=%20MOH%20Launches%20New%20Corona%20Laboratory%20in%20Madinah]. Accessed 18 November 2020.
[8] Organji, S., Abulreesh, H., Osman.. G. January 2017. "Circulation of Dengue Virus Serotypes in the City of Makkah, Saudi Arabia, as Determined by Reverse Transcription Polymerase Chain Reaction". Canadian Journal of Infectious Diseases and Medical Microbiology 2017.[https://www.hindawi.com/journals/cjidmm/2017/1646701/]. Accessed 18 November 2020.

[9] Jamjoom, G., El-Daly, M. 2017. "Prevalence and Molecular Characterization of Hepatitis D Virus In Saudi Arabia: A Single-Center Study". Saudi Journal of Gastroenterology, 23 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5470377/]. Accessed 18 November 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 trainthe-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly avaliable evidence that Saudi Arabia requires biosecurity training, using a standardized, required approach, such as through a common curriculum or a train-the-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential.

According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, various government agencies have their own training programmes for biosecurity; however, there is no unified or comprehensive training curriculum available [1]. All laboratory employees receive safety training upon appointment and regularly thereafter. The Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) sets national accreditation standards for medical and public health laboratories and included a section on biosecurity [1, 2]. Compliance with CBAHI's standards is mandatory for all medical laboratories and healthcare delivery facilities located within the Kingdom, including private medical laboratories [2]. Moreocer, CBAHI provides ongoing orientation programs at different locations throughout the country throughout the year; these programs discuss standards and accreditation policies. Attendance is voluntary and it is not evident whether trainings relating to biosafety or biosecurity specifically are covered [3].

The Saudi Press Agency reported that in the first half of 2018, the Ministry of Health organized 29 training programs conducted throughout the country, which were attended by 1,220 trainees. The course included specialized training programs for medical laboratories, which addressed safety in medical laboratories, working in parasitic laboratories, blood collection, transfer and treatment methods, and methods for the diagnosis of tuberculosis [4].

In addition, the Ministry of Defence and Aviation's guidelines on hazardous waste control, published in 2002, contains guidelines regarding hazard waste management facilities. Article 7 states that all owners or operators of hazardous waste facilities must develop a plan containing a training plan for staff working in the facility on hazardous waste management processes, including emergency procedures and how to use emergency equipment. However, it is not clear whethere these hazardous wastes include dangerous pathogens, toxins or biological materials with pandemic potential [5].

Furthermore, a review of the websites of the Ministry of Health and Ministry of Environment, Water and Agriculture websites has not yielded any further evidence [6, 7]. Access to the website of the Ministry of Defense was denied as the website is down during search time [8] Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public and it is unknown if they contain information in this regard [9].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 18 November 2020.

[2] Saudi Central Board for Accreditation of Healthcare Institutions website. "About CBAHI". [https://cbahi.gov.sa/surveyor/AboutUs.aspx]. Accessed 18 November 2020.
[3] Saudi Central Board for Accreditation of Healthcare Institutions. "Central Blood Banks And Reference Laboratories Accreditation Program". [https://portal.cbahi.gov.sa/english/accreditation-programs/medical-laboratory-and-blood-banks-accreditation-program]. Accessed 18 November 2020.
[4] Saudi Press Agency. 14 May 2018. "Implementation of 29 Courses Targeting 1220 Trainees in the Field of Laboratories and Blood Banks". [https://www.spa.gov.sa/1765925]. Accessed 18 November 2020.
[5] Verification Research, Training, and Information Centre (VERTIC) Database "Saudi Arabia Ministry of Defence and Aviation. 2002. "Rules and Procedures for the Control of Hazardous Waste". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulations_Hazardous_Waste_Control_01-2002.pdf]. Accessed 18 November 2020.
[6] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 18 November 2020.
[7] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[8] Saudi Arabia Ministry of Defence. [https://www.mod.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[9] Biological Weapons Convention. "Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 18 November 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 publicly available evidence that Saudi Arabia 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.

The Department of Laboratories under the Ministry of Environment, Water, and Agriculture is mandated with setting the standards, conditions, and technical controls for the establishment and operation of diagnostic veterinary laboratories; however, no guidelines on hiring personnel are publicly available [1]. The Ministry of Health issued a document entitled "Regulations for Private Laboratories," but it does not include guidelines on background checks for personnel [2]. Similarly, the Saudi Accreditation Committee website also published a document on regulations for private laboratories, but this too does not include guidelines on background checks [3]. Furthermore, Article 5 of the private laboratory law, published in 2004, states that part of the licensing process includes providing certified copies of the scientific qualifications and professional experience of employees; however, no mention is made regarding background checks, drug testing, psychological or mental fitness checks [4].

A review of the websites of the Ministry of Health and Ministry of Environment, Water, and Agriculture has not indicated the presence of any further evidence [5, 6]. Access to the website of the Ministry of Defense was denied as the website was down during search time [7]. Although Saudi Arabia has submitted Confidence Building Measures for the past several years,

access to the reports is restricted to the public, and it is unknown if they contain information on this matter [8].

[1] Saudi Arabia Ministry of Environment, Water and Agriculture. "General Administration of Laboratories". [https://www.mewa.gov.sa/ar/Ministry/Agencies/AgencyLivestock/Departments/Pages/dept3.aspx]. Accessed 18 November 2020.
[2] Ministry of Health. "Regulations for Private Laboratories". [https://www.moh.gov.sa/Ministry/Rules/Documents/015.pdf]. Accessed 18 November 2020.
[3] The Saudi Accreditation Committee. "Systems and Regulations for Private Laboratories". [http://www.saac.gov.sa/ar/MediaLibrary//DocumentsLibrary.pdf.] Accessed 18 November 2020.
[4] Verification Research, Training, and Information Centre (VERTIC) Database. " Saudi Arabia Minister of Commerce and Industry. 2004. Regulations for Private Medical Laboratories: Ministerial Decision Number 6386". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulations_Private_Laboratories_Law_AR.pdf]. Accessed 18 November 2020.
[5] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 18 November 2020.
[6] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[7] Saudi Arabia Ministry of Defence. [https://www.mod.gov.sa/en/Pages/default.aspx]. Could not be accessed 18 November 2020.
[8] Biological Weapons Convention. "Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 18 November 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 insufficient publicly available evidence that Saudi Arabia has publicly available information on national regulations on the safe and secure transport of infectious substances (specifically including those in Categories A and B).

The Ministry of Health's (MoH) Command and Control Centre (CCC) published MERS related guidelines for healthcare professionals in 2018. This includes a section on the guidelines for MERS-CoV sample collection, packaging, labelling and shipping protocol [1]. The CCC also published the "Interim Guidance for MERS Sampling Packaging and Shipment" with further guidelines [2]. In addition, the MoH also released guidelines that include the transportation of samples suspected of containing bird flu [3].

In addition, the Ministry of Defence and Aviation published guidelines on hazardous waste control in 2002; this includes guidelines regarding offsite shipping of hazardous waste (packing and reporting guidelines) as well as rules for hazardous waste carriers. However, it remains unclear if these hazardous wastes include Categories A and B substances [4]. Furthermore, the Gulf Cooperation Council (GCC) Centre for Infection Control published an infection prevention and control manual in 2013, which includes a few preliminary specimen collection guidelines for a number of diseases, including methicillin-resistant staphylococcus aureus and haemorrhagic fever, with a few transportation guidelines (e.g., specimens of haemorrhagic fever must be "transported directly") [5].

Although Saudi Arabia has submitted Confidence Building Measures Reports for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [6]. A review of the webiste of the Ministry of Environment, Water and Agriculture website has not yielded any further evidence [7]. Access to the website of the Ministry of Defense was denied as the website was down at the time of searching [8].

[1] Saudi Arabia Ministry of Health. May 2018. "Middle East Respiratory Syndrome Coronavirus; Guidelines for Healthcare Professionals". [https://www.moh.gov.sa/CCC/healthp/regulations/Documents/MERS-CoV%20Guidelines%20for%20Healthcare%20Professionals%20-%20May%202018%20-%20v5.1%20%281%29.pdf]. Accessed 18 November 2020.
[2] Saudi Arabia Ministry of Health. 30 June 2014. "Interim Guidance for MERS Sampling Packaging and Shipment". [https://www.moh.gov.sa/CCC/Documents/Interim%20Guidance%20for%20MERS%20Sampling%20Packaging%20and%20Shipment%20v1.0.pdf]. Accessed 18 November 2020.
[3] Saudi Arabia Ministry of Health. "Method of Taking a Laboratory Sample from a Suspected Case of Bird Flu". [https://www.moh.gov.sa/HealthAwareness/Campaigns/h5n1/Plan/Pages/023.aspx]. Accessed 18 November 2020.
[4] Verification Research, Training, and Information Centre (VERTIC) Database. "Saudi Arabia Ministry of Defence and Aviation. 2002. Rules and Procedures for the Control of Hazardous Waste". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulations_Hazardous_Waste_Control_01-2002.pdf]. Accessed 18 November 2020.
[5] Gulf Cooperation Council-Centre for Infection Control (GCC-CIC) [hosted by Saudi Arabia's National Guard of Health Affairs]. 2013. "Infection Prevention & Control Manual-Second Edition". [https://www.moh.gov.sa/CCC/Documents/GCC%20Infection%20control%20manual%202013%20revisedOPT.pdf]. Accessed 18 November 2020.
[6] Biological Weapons Convention. "Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 18 November 2020.
[7] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[8] Saudi Arabia Ministry of Defense. [https://www.mod.gov.sa/en/Pages/default.aspx]. Could not be accessed 18 November 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 publicly available evidence that Saudi Arabia 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.

However, the "Standardized System for the Management of Healthcare Waste in the GCC States" manual published on the Saudi Bureau of Experts website has a section on procedures for transferring hazardous substances. Article 19 specifically pertains to the transboundary transport of hazardous substances and re-affirms the commitment of GCC countries to comply with regional and international agreements [1]. Saudi Arabia became party to the Cartagena Protocol on Biosafety in 2007 [2], which suggests the protocols of the agreement guide Saudi cross-border movement of dangerous pathogens.

No additional mention on regulations are made on the websites of the Ministry of Environment, Water, and Agriculture; Ministry of Health; Verification Research, Training, and Information Centre (VERTIC) Database; website of the Ministry Commerce and Investment, or the Joint External Evaluation (JEE) of Saudi Arabia published in March 2017 [3, 4, 5, 6, 7]. Although Saudi Arabia has submitted Confidence Building Measures Reports for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [8]. Access to Ministry of Defense website was denied, as the website was down when this research was conducted [9].

[1] Bureau of Experts at the Council of Ministers Saudi Arabia website. December 2005. "Standardized System for the Management of Health Care Waste in the GCC States". [https://www.boe.gov.sa/printsystem.aspx?lang=ar&systemid=163&versionid=177]. Accessed 18 November 2020.
[2] Convention on Biological Diversity. "Parties to the Cartagena Protocol and its Supplementary Protocol on Liability and Redress". [https://bch.cbd.int/protocol/parties/]. Accessed 18 November 2020.
[3] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[4] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[5] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/]. Accessed 18 November 2020.
[6] Saudi Arabia Ministry of Commerce and Investment. [https://mci.gov.sa/en/Pages/default.aspx]. Accessed 18 November 2020.
[7] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 18 November 2020.
[8] Biological Weapons Convention. "Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia. Accessed 18 November 2020.
[9] Saudi Arabia Ministry of Defense. [https://www.mod.gov.sa/en/Pages/default.aspx]. Could not be accessed 18 November 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

Saudi Arabia does not yet have national biosafety legislation or regulations in place. National biosafety legislation and guidelines are yet to be finalized, enacted, and implemented.

According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, individual laboratories have safety manuals, guidelines, and standard operating procedures for both human and animal health, which were issued by the Ministries of Health, Agriculture, and National Guard Health Affairs [1]. The General Administration of Laboratories within the Ministry of Health (MoH) has a document entitled "The Primary Guide for Workers in Medical Laboratories and Blood Banks", but the link was not working when access was attempted [2].

Further, the Rules and Procedures for the Control of Hazardous Waste published in 2002 and accessible on theVerification Research, Training, and Information Centre (VERTIC) database, contains guidelines regarding biosafety in hazard waste management facilities. For example, Article 7 states that all owners or operators of hazardous waste facilities must develop a plan containing training protocols for staff, which must include emergency procedures and how to use emergency equipment. There must also be a security plan in place that limits the entry of unauthorized persons to the facility, procedures for safeguarding the safety and security of equipment used, and a log of all inspections of the facility [3]. However, these hazardous waste control guidelines do not apply specifically to laboratories but merely to hazardous waste. Furthermore, the extent to which the regulations are enforced and the government agency responsible for enforcement of these regulations is unclear.

In addition, news notices from the Ministrty of Health (MoH) website indicate that formulating biosafety regulations have been underway. For example, the National Health Laboratory organized a workshop in March 2016 to discuss the technical specifications for proposed biosafety levels 3 and 4 laboratories in the Kingdom [4]. Furthermore, the recently established National Committee on Biosafety and Biosecurity, with representatives from relevant governmental sectors, are tasked with improving cross-sector coordination and coherency in regulations [1].

Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [5].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 10 November 2020.
[2] Saudi Arabia Ministry of Health. "General Administration of Laboratories". [https://www.moh.gov.sa/dept/Laboratories/Pages/guide-manual.aspx]. Accessed 10 November 2020.
[3] Verification Research, Training, and Information Centre (VERTIC) Database. 2002. "Rules and Procedures for the Control of Hazardous Waste". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulations_Hazardous_Waste_Control_01-2002.pdf]. Accessed 10 November 2020.
[4] Saudi Arabia Ministry of Health. 15 March 2016. "MoH News: Al-Falih Orders to Accelerate Equipping and Operating the National Health Laboratory in Riyadh". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2016-03-15-001.aspx]. Accessed 10 November 2020.
[5] Biological Weapons Convention. "Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 10 November 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 publicly available evidence that Saudi Arabia has an established agency or committee responsible for the enforcement of biosafety legislation and regulations. There is also no evidence of the existence of biosafety legislation in Saudi Arabia.

According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) sets national accreditation standards for medical and public health laboratories, which includes a section on biosafety [1, 2]. Compliance with CBAHI's standards is mandatory for all medical

laboratories and healthcare delivery facilities located within the Kingdom [1]. Moreover, the JEE notes that all laboratories receive safety audits as part of their accreditation assessments once every two years [2]. However, a review of the CBAHI website does not provide any evidence to indicate whether that includes enforcement of biosafety legislation and regulations [1].

Furthermore, a review of online sources, including the websites of the Ministry or Health and the Ministry of Environment, Water, and Agriculture, the Verification Research, Training, and Information Centre (VERTIC) Database has not provided any further evidence [3, 4, 5]. Although Saudi Arabia has submitted Confidence Building Measures Reports for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [6].

[1] Saudi Central Board for Accreditation of Healthcare Institutions. "About CBAHI". [https://cbahi.gov.sa/surveyor/AboutUs.aspx]. Accessed 11 November 2020.
[2] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 11 November 2020.
[3] Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 11 November 2020.
[4] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 11 November 2020.
[5] Verification Research, Training, and Information Centre (VERTIC) Database. "Royal Decree on the Biological Weapons Convention". [https://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulation_BWC_AR.pdf]. Accessed 11 November 2020.
[6] United Nations (UN) Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 11 November 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 trainthe-trainer program, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Saudi Arabia has a standardized approach to biosafety training in place for personnel working in facilities holding dangerous pathogens, toxins or biological materials.

According to Saudi Arabia's Joint External Evaluation (JEE) report, published in March 2017, several government agencies have their own training programmes for biosafety; however, there is no unified or comprehensive training curriculum available [1]. All laboratory employees receive safety training upon appointment and regularly thereafter. The Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) sets national accreditation standards for medical and public health laboratories, which includes a section on biosafety [1, 2]. Compliance with CBAHI's standards is mandatory for all medical laboratories and healthcare delivery facilities located within the Kingdom, including private medical laboratories [2].

Furthermore, Article 6 of the Private Laboratories Law of 2002 states that licenses shall only be granted to operate laboratories if the technical staff to operate the laboratory provide certified copies of their academic qualifications and training courses attended [3]. Article 7 of the Ministry of Defence and Aviation's guidelines on hazardous waste control—

published in 2002 and avaliable on the Verification Research, Training, and Information Centre (VERTIC) database—further adds that all owners or operators of hazardous waste facilities must develop a plan containing training protocols for staff, which must include emergency procedures and how to use emergency equipment [4]. Furthermore, CBAHI provides ongoing orientation programs at different locations throughout the country throughout the year that discuss standards and accreditation policies. Attendance is voluntary and it is not evident that trainings specifically related to biosafety are covered [5].

The Saudi Press Agency reported that in the first half of 2018, the Ministry of Health organized 29 training conducted throughout the country, which were undertaken by a total of 1,220 trainees. The course included specialized training programs for medical laboratories, which looked at safety in medical laboratories, working in parasitic laboratories, blood collection, transfer and treatment methods, and methods for the diagnosis of tuberculosis [6].

A review of online sources, including the websites of the Ministry or Health and the Ministry of Environment, Water, and Agriculture did not provide any further evidence [7, 8]. Although Saudi Arabia has submitted Confidence Building Measures Reports for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [9].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 11 November 2020.
[2] Saudi Central Board for Accreditation of Healthcare Institutions. "About CBAHI". [https://www.cbahi.gov.sa/phcs/AboutUs.aspx]. Accessed 11 November 2020.
[3] The Embassy of the Kingdom of Saudi Arabia, Washington D.C. 21 April 2002. "Private Laboratories—Law; Royal Decree No.M/3". [https://www.saudiembassy.net/private-laboratories-law]. Accessed 11November 2020.
[4] Verification Research, Training, and Information Centre (VERTIC Database. "Rules and Procedures for the Control of Hazardous Waste". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulations_Hazardous_Waste_Control_01-2002.pdf]. Accessed 11 November 2020.
[5] Saudi Central Board for Accreditation of Healthcare Institutions. "Central Blood Banks And Reference Laboratories Accreditation Program". [https://portal.cbahi.gov.sa/english/accreditation-programs/medical-laboratory-and-blood-banks-accreditation-program]. Accessed 11 November 2020.
[6] Saudi Press Agency website. 14 May 2018. "Implementation of 29 Courses Targeting 1220 Trainees in the Field of Laboratories and Blood Banks".[https://www.spa.gov.sa/1765925]. Accessed 11 November 2020.
[7] Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 11 November 2020.
[8] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 11 November 2020.
[9] United Nations Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 11 November 2020.

1.5 DUAL-USE RESEARCH AND CULTURE OF RESPONSIBLE SCIENCE

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

1.5.1a

Is there publicly available evidence that the country has conducted an assessment to determine whether ongoing research is occurring on especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research?

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Saudi Arabia has conducted an assessment to determine whether ongoing research is occurring on especially dangerous pathogens, toxins, and/or pathogens with pandemic potential.

A review of online sources—including the websites of the Ministry of Health's Communicable Diseases Control General Department; the Ministry of Environment, Water, and Agriculture; and Verification Research, Training, and Information Centre (VERTIC) Database—has not provided evidence of the existence of a such an assessment [1, 2, 3, 4].

However, there is some evidence that there are committees responsible for overseeing this research on a specific infectious disease or an aspect of the research process. For examples, an Oversight Committee oversees the "Infectious Diseases Research Grant Program," which comprises representatives from the Ministry of Health; the Ministry of Environment, Water, and Agriculture; and the King Abdulaziz City for Science and Technology [5]. The committee manages the program and oversees a Scientific Review Panel, whose role is to monitor, guide, and facilitate the entire grant review process.

Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [6].

[1] Saudi Arabia Ministry of Health. "Communicable Diseases Control General Department". [https://www.moh.gov.sa/depten/Infectious/Pages/Home.aspx]. Accessed 13 November 2020.
[2] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 13 November 2020.
[3] Saudi Arabia Ministry of Defence. [https://www.mod.gov.sa/en/Pages/default.aspx]. Accessed 13 November 2020.
[4] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/]. Accessed 13 November 2020.
[5] King Abdulaziz City for Science and Technology. May 2017. "Infectious Diseases Research Grant Program". [https://gpurc.kacst.edu.sa/Docs/Infectious_Diseases_Research_Grant_Program.pdf]. Accessed 13 November 2020.
[6] United Nations Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 13 November 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 publicly available evidence that Saudi Arabia has legislation and/or regulation requiring oversight of research with especially dangerous pathogens, toxins, pathogens with pandemic potential and/or other dual-use research. Article 5 of Saudi Arabia's Royal Decree on the Biological Weapons Convention of 1972 states that activities conducted using biological agents for peaceful purposes are required to obtain the necessary licenses to conduct such activities and prepare periodic reports for the relevant authorities on these activities. Further, Article 19 also adds that the relevant authority shall establish controls and procedures to ensure safe handling of biological agents; however, the extent to which this is enforced in practice is not clear [1]. According to the World Health Organization's (WHO) "National Health Research System Mapping in the Eastern Mediterranean" study, published in 2008, national health research in Saudi Arabia is conducted by the Ministry of Health (MoH) and the King Abdulaziz City for Science and Technology; however, it is the MoH that is responsible for health research governance. Furthermore, the report states that Saudi Arabia commits researchers to adhere to ethical principles, but no further information on research oversight is provided [2]. According to an academic study published in BMC Medicine in 2016, there is some evidence that specific committees have been established to oversee some aspects of research, such as the "MERS-CoV Research Oversight Committee" and the Committee overseeing the Infectious Diseases Research Grant Program [3, 4]. A review of online sources including the websites of the Ministry of Health, the Ministry of Environment, Water, and Agriculture, and the Ministry of Defence has not provided evidence of the existence of a national policy overseeing dual use research [5, 6, 7]. Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [8].

[1] Government of Saudi Arabia. 1972. "Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons: Royal Decree M/8 March 1972". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulation_BWC_AR.pdf[. Accessed 13 November 2020.
[2] World Health Organization (WHO) Regional Office for the Eastern Mediterranean. 2008. "National Health Research System Mapping in the Eastern Mediterranean Region—A Study of Ten Countries". [http://www.cohred.org/wp-content/uploads/2011/05/NHRS-in-EMRO-study-2008.pd]f. Accessed 13 November 2020.
[3] Zumla, A., Alagaili, A., Cotten, M., Azhar, A. September 2016. "Infectious Diseases Epidemic Threats and Mass Gatherings: Refocusing Global Attention on the Continuing Spread of The Middle East Respiratory Syndrome Coronavirus (MERS-CoV)". BMC Medicine. [https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-016-0686-3]. Accessed 13 November 2020.
[4] King Abdulaziz City for Science and Technology. May 2017. "Infectious Diseases Research Grant Program". [https://gpurc.kacst.edu.sa/Docs/Infectious_Diseases_Research_Grant_Program.pdf. Accessed 13 November 2020.
[5] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/en/Pages/Default.aspx]. Accessed 13 November 2020.
[6] Saudi Arabia Ministry of Environment, Water, and Agriculture Website. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 13 November 2020.
[7] Saudi Arabia Ministry of Defence. [https://www.mod.gov.sa/en/Pages/default.aspx]. Could not be accessed 13 November 2020.
[8] United Nations Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 13 November 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 publicly available evidence that Saudi Arabia has an agency responsible for overseeing research with especially dangerous pathogens, toxins, and/or pathogens with pandemic potential or dual use research. Article 5 of Saudi Arabia's Royal Decree on the Biological Weapons Convention of 1972 states that activities conducted using biological agents for peaceful purposes are required to obtain the necessary licenses to conduct such activities and prepare periodic reports for the relevant authorities on these activities. In addition, Articles 6 and 19 allude to the fact that the relevant authorities would have oversight over this research; however, there is no specific mention of which government agency this is [1] . According to the World Health Organization's (WHO) national health research system mapping in the Eastern Mediterranean study, published in 2008, the Ministry of Health (MoH) is responsible for health research governance [2] . A review of online sources, including the websites of the Ministry of Health, the Ministry of Environment, Water, and Agriculture, and the Ministry of Defence, as well as the Verification Research, Training, and Information Centre (VERTIC) database, do not provide further evidence of the existence of a national policy overseeing dual-use research or an agency responsible for the oversight of such research [3, 4, 5,6]. However, there is evidence that committees have been established to oversee research on a specific infectious disease or an aspect of the research process. For example, according to an academic study published in BMC Medicine in 2016, a MERS-CoV Research Oversight Committee was established [7]. Another example is the committee overseeing the "Infectious Diseases Research Grant Program," which comprised representatives from the Ministry of Health, the Ministry of Environment, Water, and Agriculture, and the King Abdulaziz City for Science and Technology. The committee manages the program and oversees a Scientific Review Panel, whose role is to monitor, guide and facilitate the entire grant review process [8]. Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [9].

[1] Government of Saudi Arabia. 1972. "Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons: Royal Decree M/8 March 1972". [http://www.vertic.org/media/National%20Legislation/Saudi%20Arabia/SA_Regulation_BWC_AR.pdf]. Accessed 13 November 2020.
[2] World Health Organization (WHO) Regional Office for the Eastern Mediterranean. 2008. "National Health Research System Mapping in the Eastern Mediterranean Region—A Study of Ten Countries". [http://www.cohred.org/wp-content/uploads/2011/05/NHRS-in-EMRO-study-2008.pdf]. Accessed 13 November 2020.
[3] Saudi Arabia Ministry of Health Website. [https://www.moh.gov.sa/en/Pages/Default.aspx]. Accessed 13 November 2020.
[4] Saudi Arabia Ministry of Environment, Water, and Agriculture Website. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 13 November 2020.
[5] Saudi Arabia Ministry of Defence Website. [https://www.mod.gov.sa/en/Pages/default.aspx]. Could not be accessed 13 November 2020.
[6] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/]. Accessed 13 November 2020.
[7] Zumla, A., Alagaili, A., Cotten, M., Azhar, A. September 2016. "Infectious Diseases Epidemic Threats and Mass Gatherings: Refocusing Global Attention on the Continuing Spread of The Middle East Respiratory Syndrome Coronavirus (MERS-CoV)", BMC Medicine. [https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-016-0686-3]. Accessed 13 November 2020.
[8] King Abdulaziz City for Science and Technology. May 2017. "Infectious Diseases Research Grant Program". [https://gpurc.kacst.edu.sa/Docs/Infectious_Diseases_Research_Grant_Program.pdf]. Accessed 13 November 2020.
[9] United Nations Biological Weapons Convention. "Confidence Building Measures Reports, Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]s. Accessed 13 November 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 publicly available evidence that Saudi Arabia has a national legislation, regulation, policy, or other guidance, requiring the screening of synthesized DNA before it is sold.

A review of regulations issued by the websites of the Ministry of Health (MoH) (including the MOH's Communicable Diseases Control General Department), the Ministry of Environment, Water, and Agriculture as well as the regulations issued by the Saudi Food and Drug Authority (SFDA) has not provided evidence for the existence of any requirement for the screening of synthesized before it is sold [1, 2, 3, 4]. The Saudi Food and Drug Authority's (SFDA) 'Policy Guidance for Lot Release of Biological Products', published in 2010, also does not contain provisions related to synthesized DNA [5].

Saudi Arabia applies Gulf Standardization Organization (GSO) biotech regulations on food and agricultural products. The GSO regulations, issued in 2010, call for biotech labelling if the biotech content of processed or unprocessed agricultural products exceeds one percent; however, it is unclear whether the regulation relates to non-plant life or that it is inclusive of DNA and not just crops [6, 7].

Although Saudi Arabia has submitted Confidence Building Measures for the past several years, access to the reports is restricted to the public and it is unknown if they contain information on this matter [8]. A review of Verification Research, Training, and Information Centre (VERTIC) Database as well as the website of the Ministry of Defense website, to which access was denied, did not provide any relevant information [9, 10].

[1] Saudi Arabia Ministry of Health Website. "Regulations". [https://www.moh.gov.sa/en/Ministry/Rules/Pages/default.aspx]. Accessed 14 November 2020.
[2] Saudi Arabia Ministry of Health Website. "Communicable Diseases Control General Department".[https://www.moh.gov.sa/depten/Infectious/Pages/Home.aspx]. Accessed 14 November 2020.
[3] Saudi Arabia Ministry of Environment, Water, and Agriculture Website. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 14 November 2020.
[4] Saudi Food and Drug Authority. "Drug Guidelines". [https://www.sfda.gov.sa/en/drug/drug_reg/Pages/default.aspx]. Accessed 14 November 2020.
[5] Saudi Food and Drug Authority. 2010. "Policy Guidance for Lot Release of Biological Products - Version 1.1". [https://www.sfda.gov.sa/en/drug/drug_reg/Regulations/LotReleaseofBiologics_v11.pdf]. Accessed 14 November 2020.
[6] United States Department of Agriculture—Foreign Agricultural Services. November 2016. "Saudi Arabia—Agricultural Biotechnology Annual". [https://www.fas.usda.gov/data/saudi-arabia-agricultural-biotechnology-annual-1]. Accessed 14 November 2020.
[7] Gulf Cooperation Council (GCC) Standardization Organization. 2010. "General Requirements for Genetically Modified Processed Food and Feed". [https://members.wto.org/crnattachments/2010/tbt/KWT/10_3895_00_e.pdf]. Accessed 14 November 2020.
[8] Biological Weapons Convention. "Saudi Arabia". [https://bwc-ecbm.unog.ch/state/saudi-arabia]. Accessed 14 November 2020.
[9] Verification Research, Training, and Information Centre (VERTIC) Database. [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/s/]. Accessed 14

November 2020.
[10] Saudi Arabia Ministry of Defence Website. [https://www.mod.gov.sa/en/Pages/default.aspx]. Could not be accessed on 14 November 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: 1

Saudi Arabia's national laboratory system has the capacity to conduct diagnostic tests for at least 5 of the 10 core tests defined by the World Health Organization (WHO), but evidence on the names is unavailable. According to the Joint External Evaluation (JEE) assessment, published in March 2017, Saudi Arabia scores a 4 out of 5 on laboratory testing for detection of priority diseases, which according to the scoring criteria implies that the country is able to conduct at least 5 of the core 10 tests; however, specific mention of which tests are conducted is not included [1, 2]. The JEE reports that well-developed capabilities are available for conducting core tests on several priority diseases, including avian influenza, malaria, tuberculosis, acute flaccid paralysis (AFP), brucellosis, cholera, HIV, measles, meningococcal meningitis, MERS-CoV, and viral haemorrhagic fever [1]. The JEE does not specify which of these tests are the official four country core tests. A national health laboratory was recently established; however, access to its website is restricted [1, 3]. According to a study published in 2014 on the "The role of rapid testing and clinical decision in the diagnosis of human influenza A H1N1 infection" it is mentioned that "in November 2009, 290 suspected influenza patients were examined for H1N1 during an outbreak in Riyadh, Saudi Arabia. Nasopharyngeal swabs were analyzed using Directigen EZ Flu A+B kit. Monoclonal anti-human influenza A/B and reverse transcriptionpolymerase chain reaction (RT-PCR) were used," which indicates that Saudi Arabia has the capacity to do the PCR test [4]. An online review of the website of the Ministry of Health, Media Center yeiled no further infromation on the country's capacity to conduct virus culture for poliovirus (polio), serology for HIV, microscopy for mycobacterium tuberculosis (tuberculosis/TB), rapid diagnostic testing for plasmodium spp. (malaria), and bacterial culture for Salmonella enteritidis serotype Typhi (typhoid) [5].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 2020.
[2] World Health Organization (WHO). 2016. "Joint External Evaluation Tool ". 2016. [http://apps.who.int/iris/bitstream/10665/204368/1/9789241510172_eng.pdf]. Accessed 9 November 2020.
[3] National Health Laboratory Website. [https://www.moh.gov.sa/_layouts/15/moh/ssologin.aspx?ReturnUrl=%2fdept%2fNational_Health_Laboratory%2f_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252Fdept%252FNational%255FHealth%255FLaboratory%252FPages%252Forganization%252Easpx&Source=%2Fdept%2FNational_Health_Laboratory%2FPages%2Forganization%2Easpx]. Accessed 9 November 2020.
[4] World Health Organization (WHO) Regional Office for the Eastern Mediterranean. "The Role of Rapid Testing and Clinical Decision in the Diagnosis of Human Influenza A H1N1 Infection". [https://applications.emro.who.int/imemrf/Saudi_Med_J/Saudi_Med_J_2014_35_3_277_284.pdf]. Accessed 6 December 2020.
[5] The Minsitry of Health Website. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 6 December 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

Publically available evidence shows that Saudi Arabia has 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.

As published in a research article titled "Controlling COVID-19 Pandemic: A Mass Screening Experience in Saudi Arabia," it is shown that Saudi Arabia has a startegy for conducting a three-phased mass screening campagins to fight COVID-19. In the first phase, "both symptomatic and asymptomatic suspected COVID-19 cases were screened with their close contacts. This first phase is also known as the active screening phase involved field teams from MoH targeting intensely populated neighborhoods and labor residential buildings in several cities. Although increasing the number of positive cases detected, this phase helped to contain and locate local outbreaks areas. Accordingly, escalated measures were enforced to limit the spread of COVID-19 from these heavily infected areas; an intense lockdown was imposed soon after." The second phase also known as the community screening phase; targeted low-to-intermediate-risk groups based on their epidemiological risk profile. Risk groups were determined with the aid of the electronic application “Mawid” screening tool. Professional health care workers (HCWs) then collected the samples of the targeted population through scheduled appointments in primary care centers. Given the success of these first two phases, the third phase of the mass testing campaign involved screening asymptomatic individuals after applying for electronic appointments through specialized drive through (Takkad) centers, serving over two million beneficiaries from its launch by the end of May 2020 until August 2020 and is still ongoing, as it is planned to continue until the pandemic is eradicated." [1]. The website of the Ministry of Health also has a specific section that defines and outlines how to benefit from the expanding system intiative [2].

[1] Frontiers in Public Health. "Controlling COVID-19 Pandemic: A Mass Screening Experience in Saudi Arabia". [https://www.frontiersin.org/articles/10.3389/fpubh.2020.606385/full]. Accesed 6 May 2021.
[2] Ministry of Health. "Expanded Testing". [https://www.moh.gov.sa/en/HealthAwareness/EducationalContent/PublicHealth/Pages/Expanded_Testing.aspx]. Accesed 6 May 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: 0

There is insufficient publicly available evidence that Saudi Arabia has a national laboratory that serves as a reference facility that has received international accreditation. In 2016, the World Health Organization (WHO) renewed its accreditation of the Regional Laboratory of Riyadh in which the Saudi National Polio Laboratory is located and serves as a reference facility for polio; according to the Ministry of Health (MoH), no recent updates were found in this regard [1]. In addition, according to the MoH, the Saudi National Polio Laboratory was accredited by the WHO in 2017 [2]. However, it is likely the Saudi National Laboratory for Polio Control (NLPC) was transferred from the Regional Laboratory of Riyadh to the National Public Health Laboratory, the newly established national reference laboratory [3]. While the NHL has a website, access is not permitted [4]. Moreover, news sources report that the Regional Laboratory and Blood Bank in the Eastern Province has become the first laboratory in the region to receive accreditation from the College of American Pathologists (CAP), however it does not serve as a national reference facility [5]. According to what is published in "National Polio Laboratory Check List for Annual WHO Accreditation" on WHO, "accreditation provides documentation that the laboratory has the capability and the capacity to detect, identify, and promptly report wild polioviruses and vaccine derived polioviruses (VDPV) that may be present in clinical and environmental specimens. The accreditation process further provides a learning opportunity, a mechanism for identifying resource and training needs, a measure of progress, and a link to the Global WHO Laboratory Network" [6].

[1] Ministry of Health Website. 2016. "Regional Laboratory Gets Full Mark in External Quality Control Program". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2016-01-25-001.aspx]. Accessed 9 November 2020.
[2] Ministry of Health Website. 12 November 2017. "WHO Renews its Accreditation of the Saudi National Laboratory for Polio". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/news-2017-11-12-001.aspx]. Accessed 9 November 2020.
[3] Ministry of Health Website. 2017. "WHO Renews its Accreditation of the Saudi National Laboratory for Polio". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/news-2017-11-12-001.aspx]. Accessed 9 November 2020.
[4] Saudi Arabia Ministry of Health, National Health Laboratory Website. [https://www.moh.gov.sa/_layouts/15/moh/ssologin.aspx?ReturnUrl=%2fdept%2fNational_Health_Laboratory%2f_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252Fdept%252FNational%255FHealth%255FLaboratory%252FPages%252Forganization%252Easpx&Source=%2Fdept%2FNational_Health_Laboratory%2FPages%2Forganization%2Easpx]. Accessed 9th November 2020
[5] Arab News Website. 2 December 2018. "Saudi Lab Receives International Accreditation". [http://www.arabnews.com/node/1414606/saudi-arabia]. Accessed 9 November 2020.
[6] World Health Organization. "National Polio Laboratory Check List for Annual WHO Accreditation." [https://www.who.int/ihr/training/laboratory_quality/11_cd_rom_ab_network_nationl_polio_labs_checklist.pdf]. Accessed 6 December 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

Saudi Arabia has a national laboratory that serves as a reference facility that is subject to external quality assurance review. According to the World Health Organization (WHO), the Saudi National Polio Laboratory, which serves as a reference facility for polio, is accredited by the WHO and has successfully completed Phase 1 of laboratory containment of polioviruses, the WHO's external quality assurance review for polio [1, 2]. Furthermore, according to the 2017 Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, all laboratories in the human health sector are covered by external quality assessment schemes (EQAS), most of which are outsourced. A few laboratories exchange split samples with each other as an alternative approach to EQAS [3]. News releases by the Ministry of Health confirm that the WHO renewed its accreditation for the Saudi National Laboratory for Polio Control (NPLC) in both 2016 and 2017, but no news updates were available for 2018 [4, 5].

[1] World Health Organization (WHO). "Polio Eradication Initiative: Saudi Arabia". [http://www.emro.who.int/polio/countries/saudi-arabia.html]. Accessed 9 November 2020.
[2] World Health Organization (WHO). "EMR Progress on Phase 1 of Survey and Inventory of Containment Activities". [http://www.emro.who.int/images/stories/polio/documents/Update-CONTAINMENT.pdf?ua=1]. Accessed 9 November 2020.
[3] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 2020.
[4] Ministry of Health Website. 2016. "Regional Laboratory Gets Full Mark in External Quality Control Program". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2016-01-25-001.aspx]. Accessed 9 November 2020.
[5] Ministry of Health Website. 12 November 2017. "WHO Renews its Accreditation of the Saudi National Laboratory for Polio". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/news-2017-11-12-001.aspx]. Accessed 9 November 2020.

2.2 LABORATORY SUPPLY CHAINS

2.2.1 Specimen referral and transport system

2.2.1a

Is there a nationwide specimen transport system?

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Saudi Arabia has a nationwide specimen transport system in place. Although there is evidence of a system, there is insufficient evidence that it is nationwide. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, the Ministry of Health (MoH) has four contracts with a courier company (SMSA)— a Saudi logistics service company with cold chain capabilities—to transport polio, MERS-CoV, neonatal screening, and routine testing specimens, respectively [1]. According to SMSA's domestic coverage map for Saudi Arabia, it does operate nationwide and has the widest coverage area in the Kingdom [2]. However, the JEE does note that these contracts do not cover primary health care facilities, which have to arrange specimen transport on a case-by-case basis, often resulting in inefficiencies and delays. Moreover, the existing arrangement only covers transportation services for the above mentioned specimens and does not apply to other diseases and other International Health Regulations (IHR) hazards [1]. In addition, the JEE scores Saudi Arabia as a 3 on the JEE for D.1.2, thereby indicating that a "system is in place to transport specimens to national laboratories from 50- 80% of intermediate level/districts within the country for advanced diagnostics, indicating that this system is not nationwide" [1,3]. According to Saudi Arabia's MoH, in 2014, during the peak of the MERS outbreak in Saudi Arabia, the MoH announced upgrades in testing facilities that include the development and implementation of efficient specimen transport protocols to guarantee the integrity of samples during transport and ensure accuracy as well as improving access to authorized MoH labs through implementation of a robust countrywide courier transportation system for rapid transfer of specimens to regional labs [4].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1. Accessed 9 November 2020.
[2] SMSA Express. "Our Domestic Coverage". [http://www.smsaexpress.com/DCoverage]. Accessed 9th November 2020
[3] World Health Organisation (WHO). 2016. "Joint External Evaluation Tool". [https://apps.who.int/iris/bitstream/handle/10665/204368/9789241510172_eng.pdf?sequence=1]. Accessed 9th November 2020.
[4] Saudi Arabia Ministry of Health Website. June 2014. "Update in Statistics: Ministry of Health Institutes New Standards for Reporting of MERS-CoV". [https://www.moh.gov.sa/en/CCC/news/pages/news-2014-06-03-001.aspx]. Accessed 9 November 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 publicly available evidence of a plan in place to rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak.

The Ministry of Health webiste published a news article stating that "the Saudi Center for Disease Prevention and Control (Weqaya) has accredited the regional laboratory in the Northern Borders Health Affairs to perform COVID-19 testing after confirming application of the approved standards and specifications" [1]. Moreover, a news article indicated that Saudi Arabia has put efforts into preparing more Laboratories to fight against COVID-19, "Saudi Arabia's National Unified Procurement Company (NUPCO) have signed an agreement to establish Six "Huo-Yan" ("Fire Eye") laboratories in Saudi Arabia to fight the COVID-19 pandemic" [2]. However, there is no publicly availabe 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.

An online review of the Ministry of Environment, Water, and Agriculture (MEWA) provided no further information [3].

[1] Ministry of Health. "Northern Borders: Regional Laboratory Accredited to Perform COVID-19 Testing". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2020-09-02-001.aspx] Accessed 22 November 2020.
[2] PR Newswire Website "BGI Supports Saudi Arabia to establish Six Huo-Yan Laboratories to Enable COVID-19 testing for 30% of the Population in the Next 8 Months". [https://www.prnewswire.com/news-releases/bgi-supports-saudi-arabia-to-establish-six-huo-yan-laboratories-to-enable-covid-19-testing-for-30-of-the-population-in-the-next-8-months-301047527.html]. Accessed 22 November 2020.
[3] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 22 November 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 public evidence that Saudi Arabia is conducting ongoing event-based surveillance and analysis for infectious disease, although there is insufficient publicly available evidence to determine if the data is being analyzed on a daily basis.

According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, Saudi Arabia has established an EBS system in which any unusual health events including sudden high mortality rates or suspicious deaths amongst animals which "are reported directly by individuals, municipalities and security departments to the Ministry of Health (MoH) and the Ministry of Environment, Water, and Agriculture (MEWA)" [4,5]. Saudi's EBS system operates at the ministry-level and appears to be a reactive form of surveillance, where ministries verify the public health problem and initiate active surveillance and field investigations either unilaterally or together depending on the outbreak [1].

The JEE also reports that syndromic surveillance is in place for a number of syndromes including AFP, fever with rash, severe acute respiratory infection, influenza like illness, haemorrhagic fever, and sexually transmitted diseases [1]. Saudi Arabia also

has an indicator-based surveillance system for 47 notifiable infectious diseases [1]. All notifiable diseases are reported using an electronic notification system called the Health Electronic Surveillance Network (HESN), which was established in 2014 and is able to produce alerts and send notifications to key experts and decision- makers. However, the frequency with which EBS data is analyzed remains unclear.

According to the World Health Organization's (WHO) high-level mission to Saudi Arabia report, published in 2016, a surveillance system for detecting and monitoring both suspected and laboratory-confirmed cases of MERS has improved through the establishment of HESN. All suspected and laboratory-confirmed cases of MERS are now entered into this web-based surveillance system, which is accessible to most healthcare facilities and facilitates for the Ministry a real-time alert, investigation and response [2].

In addition, an academic study published in the Journal of Clinical Microbiology and Infection in 2015 notes that Saudi Arabia has actively invested in and successfully enacted two major digital surveillance systems specifically designed for infectious diseases among pilgrims, but it is unclear whether this is only during the month of Hajj or throughout the rest of the year during the umrah pilgrimage [3]. Furthermore, following the swine flu outbreak in 2009, the MoH and the U.S. Centre for Disease Control launched the Hajj Mobile Disease Surveillance System (Hajj-MDSS), which was used for the rapid detection of various infectious diseases among pilgrims (influenza and others) [3]. According to the study, the Hajj-MDSS information is made readily available for semi-automated analysis, which can then be used for rapid decision-making [3].

A review of the MoH's Surveillance and Data Management Unit, the MEWA, and the websites of the Ministry of Interior does not provide any further clarification on the frequency of EBS surveillance [4, 5, 6].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 2020.
[2] World Health Organization (WHO). January 2016. "WHO's High-level Mission to Saudi Arabia on Middle East Respiratory Syndrome Coronavirus (MERS-CoV), 11-14 January 2016". [http://www.emro.who.int/pandemic-epidemic-diseases/news/mers-mission-january2016.html]. Accessed 9 November 2020.
[3] Nsoesie, E., Kluberg, S., Mekaru, S., Majumder, M., Khan, K., Hay, S., Brownstein, J. 2015. "New Digital Technologies for the Surveillance of Infectious Diseases at Mass Gathering Events". Clinical Microbiology and Infection 21 [2]. [https://www.sciencedirect.com/science/article/pii/S1198743X14001700]. Accessed 9 November 2020.
[4] Saudi Arabia Ministry of Health Website. "Surveillance and Data Management Unit". [https://www.moh.gov.sa/en/Ministry/Structure/AssistantAgencies/PreventiveHealth/SDMU/Pages/reports.aspx]. Accessed 9 November 2020.
[5] Ministry of Environment, Water, and Agriculture, Home. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 9 November 2020.
[6] Ministry of Interior. Home. [https://www.moi.gov.sa/wps/portal/Home/Home/]. could not be accessed 9 November 2020.

2.3.1b

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

Yes = 1 , No = 0

Current Year Score: 1

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

According to the WHO's Disease Outbreak News profile of Saudi Arabia, since the MERS-CoV outbreak in 2012, the country reports regular disease outbreak news of MERS CoV to the WHO [1] . The latest update reported to the WHO was in July 2020, which reported that between April 1 and May 31, 2020, there were nine new cases of MERS-CoV infection, including five deaths. The cases were reported [1, 2].

The latest detailed report of disease outbreak news was published by the WHO in October 2018 and outlines demographic data of all new infection cases, including age, sex, dates of hospitalization and city of residence [3, 4].

[1] World Health Organization (WHO). "Emergencies, Preparedness, Response: Saudi Arabia". [https://www.who.int/csr/don/archive/country/sau/en/]. Accessed 9 November 2020.
[2] World Health Organization. 9 May 2019. "Emergencies, Preparedness, Response: Middle East Respiratory Syndrome Coronavirus (MERS-CoV)—The Kingdom of Saudi Arabia". [https://www.who.int/csr/don/02-jul-2020-mers-saudi-arabia/en/]. Accessed 9 November 2020.
[3] World Health Organization. "Disease Outbreak News: Middle East respiratory syndrome coronavirus (MERS-CoV), Saudi Arabia". [https://www.who.int/csr/don/20-november-2018-mers-saudi-arabia/en/]. Accessed 9 November 2020.
[4] World Health Organization (WHO). "Disease Outbreak News: Middle East Respiratory Syndrome Coronavirus (MERS-CoV), Saudi Arabia—MERS-CoV cases reported between 15 and 30 October 2018". [https://www.who.int/csr/don/20-nov-2018-mers-saudi-arabia.xls?ua=1]. Accessed 9 November 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 publicly available evidence that the government of Saudi Arabia does operate an electronic reporting surveillance system at both the national and sub-national level.

According to the Joint External Evaluation of Saudi Arabia, published in March 2017, for all Class 1 diseases that require immediate action, notifications are sent electronically through the Health Electronic Surveillance Network (HESN), an electronic reporting system developed specifically for reporting outbreaks of infectious diseases established in 2012 [1, 2].

According to the MoH, HESN was launched with the goal of supporting the objectives of the MoH's directorate of public health by securing better outputs, enhancing vaccination coverage, identifying public health issues, taking preventive measures to combat infectious diseases, and bettering the cooperation among the MoH facilities and relevant bodies [2]. Cases reported via HESN are immediately notified to the relevant regional public health departments, the Ministry of Health headquarters, key experts, and decision-makers [1]. The JEE adds that in addition to registering diseases, HESN also includes detailed case investigations, outcomes, and laboratory results. HESN has reporting tools that enable sharing data with each region so they have the opportunity to look at their own surveillance data [1].

Furthermore, the JEE notes that the Ministry of Environment, Water, and Agriculture (MEWA) has also developed an electronic notification system for 13 high priority animal diseases, which should be notified to the system by regional focal points; however, the system is still in its early stages [1].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 8 November 2020.
[2] Saudi Arabia Ministry of Health Website. 24 October 2012. "Dr. Al-Rabeeah Launches HESN System". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2012-10-24-011.aspx]. Accessed 8 November 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

Saudi Arabia's electronic reporting surveillance system does collect data in real time.

According to the 2017 Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, "electronic surveillance systems are in place for both human and animal diseases and are sustained by the Government. The systems are able to produce reports of surveillance data that can be accessed by regional and local authorities. Currently, data are shared traditionally between human and veterinary sectors; the functioning electronic surveillance systems are not yet interconnected. Weekly reports of surveillance data are produced, and the data are also reviewed during weekly Command and Control Centre meetings. There are several public health specialists at national level able to analyse and interpret surveillance data." In addition, real-time surveillance for MERS cases collected timely data with almost 100% coverage [1]. This capability is currently being expanded for developing real-time surveillance for other infectious diseases [1].

According to a study published in the Journal of Travel Medicine in May 2017 on strengthening health security systems during the annual Hajj, two electronic surveillance systems were operational during the 2015 Hajj: the health electronic surveillance network (HESN) and the electronic statistical system for Hajj referred to as CITREX [2]. During the 2015, Hajj season, hospital surveillance teams collated and entered data on infectious diseases directly into HESN once a notification was received from a laboratory or hospital department. The uploaded data was immediately displayed on electronic dash boards in the Ministry of Health's Command and Control Centers, where data was analyzed and reports generated in real-time that could be immediately accessed by public health officials and decision makers for immediate action [2].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 2020.
[2] Alotaibi, Badriah, Abdul-Aziz Saeed, Saber Yezli, Abdulhafeez Turkestani, Amnah Alawam, Kingsley Bieh. May 2017. "Strengthening Health Security at the Hajj Mass Gatherings: Characteristics of the Infectious Diseases Surveillance Systems Operational During the 2015 Hajj". Journal of Travel Medicine Volume 24[1]. [https://academic.oup.com/jtm/article/24/3/taw087/3053462]. Accessed 9 November 2020.

2.4 SURVEILLANCE DATA ACCESSIBILITY AND TRANSPARENCY

2.4.1 Coverage and use of electronic health records

2.4.1a

Are electronic health records commonly in use?

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

Current Year Score: 1

There is publicly available evidence while electronic health records (EHRs) are in use in Saudi Arabia, it does not appear as though they are commonly used.

There is not enough data to provide a precise estimate of the EHR adoption rates in Saudi Arabia, and the findings of studies have not been consistent. A study published in the Global Journal of Health Studies in 2018 found that only 46.6% of surveyed hospitals had functional EHRs in place [1]. Another study conducted by Nuance Communications and HIMMS Europe found that 81% of 109 interviewees mentioned having an EHR system in the hospital, 18% of which used EMR only in certain departments [2].

A study published in the Journal of Health Informatics in Developing Countries in 2015 which examines the barriers to EHR implementation in Saudi Arabia, particularly amongst public hospitals identifies two key barriers: the lack of technical knowledge and familiarity using EMR systems, and staff resistance to using the implemented EMR systems, both of which are particularly pronounced in public hospitals [3, 4]. This is expected to change as the Ministry of Health has undertaken a project to digitize the medical records of all citizens. Increasing the percentage of citizens who have a digital medical record to 70% by 2020 is a strategic objective under Saudi Arabia's National Transformation 2020 Program [5].

[1] Jabali, K., Jarrar, M. 5 March 2018. "Electronic Health Records Functionalities in Saudi Arabia: Obstacles and Major Challenges". Global Journal of Health Studies 10
[4].
[https://www.researchgate.net/publication/323565584_Electronic_Health_Records_Functionalities_in_Saudi_Arabia_Obstacles_and_Major_Challenges]. Accessed 9 November 2020.
[2] Saudi Gazette Website. 19 April 2018. "Electronic Medical Records to Lead Digital Transformation of KSA's Healthcare Sector". [http://saudigazette.com.sa/article/533070/BUSINESS/Electronic-medical-records-to-lead-digital-transformation-of-KSAs-healthcare-sector]. Accessed 9 November 2020.
[3] Hasanain, R., Vallmuur, K., Clark, M. 29 April 2015. "Electronic Medical Record Systems in Saudi Arabia: Knowledge and Preferences of Healthcare Professionals". Journal of Health Informatics in Developing Countries 9 [1].
[http://www.jhidc.org/index.php/jhidc/article/viewFile/135/186]. Accessed 9 November 2020.
[4] Alqahtani, A., Crowder, R., Wills, G. 9th July 2017. "Barriers to the Adoption of EHR Systems in the Kingdom of Saudi Arabia: An Exploratory Study Using a Systematic Literature Review". Journal of Health Informatics in Developing Countries 11 [2]. [https://eprints.soton.ac.uk/412537/1/160_591_1_SM.pdf]. Accessed 9 November 2020.
[5] Saudi Gazetter. "Electronic Medical Records to Lead Digital Transformation of KSA's Healthcare Sector".
[https://saudigazette.com.sa/article/533070]. Accessed 9 November 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 insufficient evidence that Saudi Arabia's national public health system has access to electronic health records (EHRs) of individuals in the country. According to UptoDate, an evidence-based, clinical decision support resource, in 2014 the Ministry of Health (MoH) launched its initiative to digitize medical records, but no sufficient evidence is provided on whether the public health authorities have access to the EHRs [1]. In 2016, this goal was formalized into the 2020 National

Transformation Plan, a subsidiary of the broader national "Vision 2030" plan, with the specific objective of increasing the percentage of citizens who have a digital medical record to 70% by 2020 [2]. As of March 2018, the first phase of the plan was reported to have been well underway according to a news report issued by GE's Healthcare division [3]. The project is intended to ensure that all hospitals under the MoH (which Oxford Business Group estimates to be 60% of healthcare providers in the Kingdom) are able to operate under a unified, comprehensive medical management system in order to optimize health care delivery [4, 5]. The current implementation rate of EHRs under the public health system are unclear. In addition, in 2016, the Saudi Health Council and the Ministry of the National Guard launched the Unified Electronic Medical Record system for National Guard personnel and their dependents, which is currently operational [6, 7]. Moreover, on the website of the National Guard Health Affairs, there is a "Unified Electronic Medical Record" platform, but this is not accessible to the public [8].

[1] Wolters Kluwer Website. 15 January 2014. "Saudi Arabia's Ministry of Health Launches Nationwide Access to UpToDate Evidence-Based Clinical Decision Support". [https://www.uptodate.com/home/saudi-arabias-ministry-health-launches-nationwide-access]. Accessed 9 November 2020
[2] Kingdom of Saudi Arabia—Vision 2030 Website. "National Transformation Program 2020". [https://vision2030.gov.sa/sites/default/files/NTP_En.pdf]. Accessed 9 November 2020.
[3] GE Global Healthcare Website. 15 March 2018. "Saudi Arabian Ministry of Health and GE Deliver the First Phase of its Digital Health MOU". [https://www.healthcareglobal.com/technology/saudi-arabian-ministry-health-and-ge-deliver-first-phase-its-digital-health-mou]. Accessed 9 November 2020.
[4] Oxford Business Group Website. "Optimization of Hospitals and Clinics in Saudi Arabia Under Way". [https://oxfordbusinessgroup.com/overview/right-prescription-work-under-way-optimise-use-hospitals-and-clinics-and-boost-preventative-and]. Accessed 9 November 2020.
[5] Saudi Arabia Ministry of Health Website. "National eHealth Strategy". https://www.moh.gov.sa/Ministry/nehs/Pages/The-New-Hospital-Systems.aspx. Accessed 9 November 2020.
[6] Ministry of National Guard Health Affairs, "Unified Electronic Medical Record", November 2016. [http://ngha.med.sa/Arabic/MediaCenter/News/Pages/XVINovV.aspx]. Accessed 9 November 2020.
[7] Ministry of National Guard Health Affairs. "Patients eServices". [http://ngha.med.sa/English/eServices/Pages/eservicesp.aspx]. Accessed 9 November 2020.
[8] National Guard Health Affairs. "Unified Electronic Medical Record". [https://ngha.med.sa/English/MediaCenter/News/Pages/XVINovV.aspx]. Accessed 8 December 2020.

2.4.1c

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

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that Saudi Arabia does have data standards in place to ensure data is comparable.

The Saudi Health Information Exchange Policy, published in April 2016, lays out an exhaustive list of standards that must be complied with for matters related to data exchange [1]. Some of these standards are compulsory, for example, "all Saudi Health Information Exchange Systems shall be managed in accordance with one of: ISO 27000, SAS70/ SSAE 16, supporting physical safeguards, clearance, access, supervising those with access and other core secure management practices"; some of these are optional, for example, "all Saudi Health Information Exchange system components should be managed and operated in conformance with the ISO/TC 215 standard" [1].

The National eHealth Strategy and Change Management Office has also issued several guiding documents to ensure the

comparability of electronic documents, including with regard to documenting clinical notes and summaries, sharing coded laboratory results, and sharing documents containing health records, among others [2, 3, 4].

[1] Kingdom of Saudi Arabia National Health Information Center. 21 April 2016. "Enabling Standards-Based eHealth Interoperability—IS0303—Saudi Health Information Exchange Policies, Version 1.0". [https://nhic.gov.sa/eServices/STD/Documents/IS0303/Saudi/Health/Information/Exchange/Policies/v1.0.pdf]. Accessed 9 November 2020.
[2] Saudi Arabia Ministry of Health—National eHealth Strategy and Change Management Office. 22 February 2015. "Enabling Standards-Based eHealth Interoperability—IS0007 Saudi eHealth Core Interoperability Specification for Clinical Notes and Summaries—Version 1.0". [https://www.moh.gov.sa/en/Ministry/ehealthstd/Documents/eHealth%20Standards/Files/Clinical/Notes/and/Summaries/IS0007/Saudi/Health/Core/20IS/for/Clinical/Notes/nd/Summaries/IS/v1.0.pdf]. Accessed 9 November 2020.
[3] Saudi Arabia Ministry of Health—National eHealth Strategy and Change Management Office. 22 February 2015. "Enabling Standards-Based eHealth Interoperability—IS0003 Saudi eHealth Core Interoperability Specification for Sharing Coded Laboratory Results—Version 1.0". [https://www.moh.gov.sa/en/Ministry/ehealthstd/Documents/eHealth/Standards/Files/Laboratory/IS0003/Saudi/eHealth/Core/IS/for/Sharing/Coded/Lab/Results/v1.0.pdf]. Accessed 9 November 2020.
[4] Saudi Arabia Ministry of Health—National eHealth Strategy and Change Management Office. 22nd February 2015. "Enabling Standards-Based eHealth Interoperability—IS0102 Saudi eHealth Document Sharing Interoperability Specification, Version 1.0". [https://www.moh.gov.sa/en/Ministry/ehealthstd/Documents/eHealth/Standards/Files/Medication/IS0102/Saudi/eHealth/Document/Sharing/Interoperability/Specification/v1.0.pdf]. Accessed 9 November 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: 1

There is sufficient evidence to suggest that Saudi Arabia has established mechanisms at the relevant ministries responsible for animal, human, and wildlife surveillance to share data.

According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, electronic surveillance systems are in place for both human and animal diseases and are sustained by the government [1]. The systems are able to produce reports of surveillance data that can be accessed by regional and local authorities. However, the human and veterinary sectors currently do not have access to each other's databases and data continues to be shared traditionally by way of fax or email [1].

Furthermore, event-based surveillance systems do exist for a number of syndromes including the MERS-CoV database which is well-developed and functioning. A cooperation agreement signed between the Ministry of Health (MoH), Ministry of Environment, Water, and Agriculture (MEWA) and the King Abdulaziz City for Science and Technology in the form of a memorandum of understanding (MOU) serves to coordinate the efforts, expertise, and capabilities of the three parties in building a national MERS database [2]. The successful Saudi experiences with the MERS-CoV database is reportedly going to

be used for developing surveillance capabilities for other infectious diseases, which may include other animal-related diseases with implications for human health [1].

A review of the MoH's technical guidelines on public health surveillance, published in 2017, makes no mention of a collaborative approach to share surveillance data nor is there any indication of surveillance data sharing on the MEWA website, and access to the National Health Laboratory website is restricted [3, 4, 5].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9 November 2020.
[2] King Abdulaziz City for Science and Technology (KACST) website. "City News: A Cooperation Agreement Between "Science & Technology" City and the Ministries of Health and Agriculture to Face Coruna". [https://www.kacst.edu.sa/eng/about/news/Pages/news733.aspx]. Accessed 9 November 2020.
[3] Ministry of Health. 2017. "Public Health Surveillance: Technical Guidelines". [https://www.moh.gov.sa/en/Ministry/Structure/AssistantAgencies/PreventiveHealth/SDMU/Documents/Public/Health/Surveillance/Technical/Guidlines/2017.pdf]. Accessed 9 November 2020.
[4] Ministry of Environment, Water, and Agriculture. https://www.mewa.gov.sa/en/Pages/default.aspx. Accessed 9 November 2020.
[5] National Health Laboratory Website. [https://www.moh.gov.sa/_layouts/15/moh/ssologin.aspx?ReturnUrl=%2fdept%2fNational_Health_Laboratory%2f_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252Fdept%252FNational%255FHealth%255FLaboratory%252FPages%252Forganization%252Easpx&Source=%2Fdept%2FNational_Health_Laboratory%2FPages%2Forganization%2Easpx]. Accessed 9 November 2020.

2.4.3 Transparency of surveillance data

2.4.3a

Does the country make de-identified health surveillance data on infectious diseases publicly available via reports (or other format) on government websites (such as the Ministry of Health, Ministry of Agriculture, or similar)?
Yes = 1 , No = 0

Current Year Score: 0

There is insufficient publicly available evidence that Saudi Arabia makes de-identified health surveillance data on disease outbreaks publicly available on government websites.

Although the Ministry of Health (MoH) website affirms its commitment to transparency and to making all confirmed cases known to the media and general public, the publications shared on the website do not include all disease reporting [1]. The MoH has established a publicly available MERS-CoV weekly report for counting weekly cases from 2018 [2]. Moreover, the MoH also posts updates and developments of the virus through the MoH's press releases. For example, under the "MoH News" section of the website, weekly updates on MERS-CoV outbreaks are posted, along with notifications regarding the number of infected patients, the region in which the outbreak has taken place, as well as information on the aggregate record of the number of cases [3, 4]; however, this is only related to Mers-COV and does not cover all disease reporting.

[1] Saudi Arabia Ministry of Health Website. "FAQs—Coronavirus (MERS-CoV)". [https://www.moh.gov.sa/en/CCC/FAQs/Corona/Pages/default.aspx]. Accessed 13 November 2020.
[2] Ministry of Health, MERS Weekly Report. [https://www.moh.gov.sa/en/CCC/healthp/statistics/Pages/default.aspx]

Accessed 7 December 2020.
[3] Saudi Arabia Ministry of Health website. 21 June 2015. "MoH News—'7 MERS-CoV Cases Reported Last Week'". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2015-06-21-003.aspx]. Accessed 13 November 2020.
[4] Saudi Arabia Ministry of Health Website. 7 September 2015. "MoH News - '34 MERS-CoV Cases Reported Last Week'". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2015-09-07-002.aspx]. Accessed 13 November 2020.

2.4.3b

Does the country make de-identified COVID-19 surveillance data (including details such as daily case count, mortality rate, etc) available via daily reports (or other formats) on government websites (such as the Ministry of Health, or similar)?
Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that Saudi Arabia makes de-identified health surveillance data on infectious diseases publicly available via a COVID19 Dashboard that is updated daily on the website of the Ministry of Health. This dashboard include a section for a daily update and another for a comulative update [1].

[1] Ministry of Health. "COVID-19 Dashboard". [https://covid19.moh.gov.sa/]. Accessed November 13 2020.

2.4.4 Ethical considerations during surveillance

2.4.4a

Is there legislation and/or regulations that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities?
Yes = 1 , No = 0

Current Year Score: 1

There is publicly avaliable evidence that Saudi Arabia has legislation and/or regulations that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities. According to the Ministry of Health website, the Saudi Health Information Exchange Policy serves to "ensure that the information security is conducted in a manner that protects personal health information and supports the availability, confidentiality, integrity, and accountability of the Saudi Health Information Exchange shared clinical information" [1]. The policy applies to all individuals and organizations that have access to Saudi Health Information Exchange systems, including participating healthcare subscribers and subcontractors providing services related to the provision of the electronic infrastructure [1]. In addition, other legal provisions safeguarding the privacy of health data include section 3 of the MoH's "Patient's Bill of Rights and Responsibilities," which provides guidelines restricting access to patient's medical records [2]. The Saudi Commission for Health Specialists "Professionalism and Ethics Handbook for Residents," published in 2015, contains a section on guidelines to protect the confidentiality of patients' information, including electronic records [3]; and Article 21 of the Kingdom of Saudi Arabia Healthcare Practice Code, published in 2005, requires healthcare professionals to protect the confidentiality of patient information unless prior consent for information disclosure was provided in writing [4].

[1] Saudi Arabia Ministry of Health Website. "Policy # 3—Saudi Health Information Exchange Information Security Policy". [https://www.moh.gov.sa/en/Ministry/eParticipation/Policies/Pages/Policy.aspx?PID=3]. Accessed 13 November 2020.
[2] Saudi Arabia Ministry of Health Website. "Patient's Bill of Rights and Responsibilities". [https://www.moh.gov.sa/HealthAwareness/EducationalContent/HealthTips/Documents/Patient-Bill-of-Rights-and-Responsibilities.pdf]. Accessed 6 December 2020.

[3] The Saudi Commission for Health Specialists—Department of Medical Education and Postgraduate Students. 2015. "Professionalism and Ethics Handbook for Residents—A Practical Guide". [https://www.scfhs.org.sa/en/Media/OtherPublications/Documents/Professionalism%20and%20Ethics%20Handbook%20for%20Residents.pdf]. Accessed 13 November 2020.
[4] Saudi Arabia Ministry of Health. May 2005. "Health Practice Code—Issued by Royal Decree No. (M/59), and its Executive Regulations Issued by the Ministerial Decision No. 4080489 October 2017". [https://www.moh.gov.sa/Portal/WhatsNew/Documents.pdf]. Accessed 16 December 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: 1

There is publicly avaliable evidence that Saudi Arabia does have policies in place that safeguard the confidentiality of identifiable health information for individuals which does include protection from cyberattacks.

Section 4 of the Saudi Health Information Exchange Information Security Policy states that all Saudi Health Information Exchange systems "shall encrypt their communications when exchanging health information" and "shall implement intrusion detection measures" [1]. In addition, Articles 3 and 5 of the Saudi Anti-Cybercrimes Law of 2007 contain provisions related to the unlawful access to computers with intention of deleting, altering, or redistributing personal data, and Article 3 contains a general provision prohibiting the unlawful access to a computer system with the intention of threatening or blackmailing a person to either accept or refrain from undertaking a certain action; however, there is no specific mention of health-related data [2].

[1] Kingdom of Saudi Arabia National Health Information Center. 21st April 2016. "Enabling Standards-Based eHealth Interoperability - IS0303 - Saudi Health Information Exchange Policies Version 1.0". [https://nhic.gov.sa/eServices/STD/Documents/IS0303/Saudi/Health/Information/Exchange/Policies/v1.0.pdf]. Accessed 13 November 2020.
[2] Kingdom of Saudi Arabia Bureau of Experts at the Council of Ministers. 26 March 2017. "Anti-Cyber Crime Law—Royal Decree No. M/17". [http://www.citc.gov.sa/en/RulesandSystems/CITCSystem/Documents/LA_004_/E_/Anti-Cyber/Crime/Law.pdf]. Accessed 13th November 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 = 2, Yes, commitments have been made to share data only for one disease = 1, No = 0

Current Year Score: 0

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

Saudi Arabia participates in agreements on cross-border collaboration with other Gulf Cooperation Council (GCC) countries, which have made a commitment to cooperate on health efforts including biological hazards, however it is not clear whether this includes sharing surveillance data [1, 2]. The GCC Emergency Management Centre was also established in 2013 for the purposes of coordinating actions during emergency outbreaks, but it is unclear whether this includes sharing surveillance data [3]. In October 2018, talks were held amongst GCC heads of states regarding the establishment of joint early warning health surveillance system, but there is no evidence this has been put into action [4].

As per the Health Ministry's press release, on March 14, 2020, the GCC's Health Ministers "reviewed the COVID-19 current situation in each country in the Gulf [...], the coordination process between the countries, as well as identifying a contact person to transfer the information" [5]. Although it is not publicly available what exactly is the information that is being shared, there is evidence that regular cooperation among the countries, including Oman, is being maintained. As per the Bawabaa newspaper, GCC health undersecretaries held their 10th meeeting on August 13, 2020 to discuss the COVID-19 pandemic. [6] Furthermore, on March 14, 2020, Bawabaa newspaper stated that there was a joint decision made by all Ministers of Health in GCC countries to establish a situation room to share information and coordinate responses [7].

Saudi Arabia is also a member of the Organization of Islamic Cooperation (OIC), which has information-sharing agreements in place. During the OIC Islamic Conference of Health Ministers (ICHM) in 2011, there were talks to establish a web-based OIC ICHM information sharing mechanism within the OIC Secretariat; however, it is unclear whether this has been established [8,9]. Furthermore, in June 2018, Saudi Arabia and the UAE signed a plan to undertake a joint strategic project consisting of 44 strategic projects which include the establishment of a joint reference laboratory and a commitment to exchange experiences even medical staff during health emergencies; however, there is no evidence that this plan has come into effect yet [10].

[1] Secretariat General of the Gulf Cooperation Council Website. "Human and Environmental Affairs". [http://www.gcc-sg.org/ar-sa/CooperationAndAchievements/Achievements/CooperationinthefieldofHumanandEnvironmentAffairs/Pages/CooperationintheFiledofHealth.aspx]. Accessed 12 November 2020.
[2] Secretariat General of the Gulf Cooperation Council website. 10 December 2018. "News: The GCC Center for Emergency Management Holds a Workshop Called "Foundations of Chemical and Biological Threats". [https://www.gcc-sg.org/en-us/MediaCenter/NewsCooperation/News/Pages/news2018-12-10-2.aspx]. Accessed 12 November 2020.
[3] Emirates News Agency website. 26th December 2017. "NCEMA, GCC Emergency Management Centre Discuss Cooperation". [http://wam.ae/en/details/1395302656628]. Accessed 12 November 2020.
[4] Kuwait News Agency Website. 6 October 2018. "Health Ministry Hosts 4th Joint GCC Meeting on Sunday". [https://www.kuna.net.kw/ArticleDetails.aspx?id=2749813&language=en]. Accessed 12 November 2020.
[5] Ministry of Health. "Through Video Conference, GCC Health Minister Meets" (14 March 2020). [https://www.moh.gov.om/ar/-/--1259]. Accessed 25 April 2021.
[6] Bawabaa Newspaper. "The 10th meeting of GCC Health Undersecrateries to Discuss Recents Updates in Regards to COVID-19". (13 August 2020). [https://bawabaa.org/news/473018]. Accessed 25 April 2021.
[7] Bawabaa Newspaper. "Joint Decision by Ministers of Health in GCC Countries to respond to the Coronavirus". (14 March 2020). قرار مشترك لوزراء الصحة بدول مجلس التعاون الخليجي لمواجهة كورونا). [https://bawabaa.org/news/167091]. Accessed 25 April 2021.
[8] Organization of Islamic Cooperation. 2011. "Proposal to Establish an Institutional Mechanism to Follow Up and Monitor the Implementation of the Declarations and Resolutions Adopted by the Islamic Conferences of Health Ministers". [http://ww1.oic-

oci.org/external_web/health_ministers/3rd/en/docs/Concept/on/establishment/of/Health/Org/and/Health/Secretariat/Final/version.pdf]. Accessed 12 November 2020.
[9] Organization of Islamic Cooperation. September-October 2011. "Report of the Secretary General", 2011. [http://ww1.oic-oci.org/external_web/health_ministers/3rd/en/docs/ICHM%20report%20July%202011.pdf]. Accessed 12 November 2020.
[10] Khaleej Times Website. 7 June 2018. "UAE, Saudi Announce Strategic Partnership in 44 Projects". [https://www.khaleejtimes.com/region/saudi-arabia/uae-saudi-announce-strategic-partnership-in-44-projects]. Accessed 12 November 2020.

2.5 CASE-BASED INVESTIGATION

2.5.1 Case investigation and contact tracing

2.5.1a

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

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

Current Year Score: 0

There is no publicly available evidence that Saudi Arabia has a national system in place to provide support at the sub-national level (e.g., training, metrics standardization and/or financial resources) to conduct contact tracing in the event of a public health emergency by either providing support to prepare for future public health emergencies or only in response to active public health emergencies.

According to the weekly monitor report published by the Ministry of Health in 2016 on the contact Tracing of Mers-COV, it is mentioned that "Contact tracers are about 60 teams around the Kingdom. Each team consists of two to four members. From Jan1 to May 8, 2016, an average of 595 contacts required daily monitoring. During this interval, 15 contacts who displayed signs or symptoms of MERS were identified and investigated; among these 15 contacts, 8 (53.3%) had confirmed MERS" [1].

In addition, the website of the Ministry of Health mentioned in its "The COVID-19 guidelines" that "the public health team or rapid response team (RRT) at regional health affairs (or equivalent body) is responsible of initiating the epidemiological investigation. After activation through regional command and control leader, the team should complete the epidemiological investigation in both settings; healthcare settings and the community settings using the COVID-19 epidemiological investigation forms. The form includes detailed items such as travel history and possible exposures which needs vigilant history taking and probing. Contacts identification is another important part of needed information (contacts as defined within surveillance case definition paragraph) and then list them for their tracing documentation (Contact tracing form)" [2].

The above efforts do not consititue evidence of a well-estbalished, permanent national system in place to provide support at the sub-national level to conduct contact tracing in the event of a public health emergency.

[1] Ministry of Health. "Mers-Cov Weekly Monitor". [https://www.moh.gov.sa/en/CCC/Documents/Volume%202%20-%20Issue%2019%20-%20Tuesday,%20May%2010,%202016.pdf]. Accessed 6 December 2020.
[2] Ministry of Health. "Covid-19 Coronavirus Disease Guidelines". [https://www.moh.gov.sa/Ministry/MediaCenter/Publications/Documents/Coronavirus-Disease-2019-Guidelines-v1.2.pdf].

Accessed 6 December 2020.

2.5.1b

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

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

Current Year Score: 0

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

The available evidence is mostly specific to COVID-19. According to an article published in March 2020 on the website of the Ministry of Finance, the governement of Saudi Arabia is taking immidiate measures to address the fiscal, financial, and economic impact of COVID-19. According to the source, Acting Minister of Economy and Planning stated, "the government has taken precautionary and strong measures to protect citizens and residents in the Kingdom, and to ensure the availability of immediate financial resources which will guarantee that all direct preventive measures to limit the spread of the virus and address this pandemic crisis' consequences, as well as protect government facilities and agencies and ensure the continuity of their work" [1].

Furthermore, the International Monetary Fund Policy Tracker for Saudi Arabia states that the Saudi Arabian Ministry of Human Resources and Social Development ("MHRSD") has issued several resolutions and directives to deal with the measures taken in relation to employee entitlements during COVID-19 [2]. In addition, "on April 6, 2020, the MHRSD issued Ministerial Decision No. (142906) introducing a new Article 41 to the Executive Regulations of the Labor Law with the aim of regulating the employment relationship in cases of exceptional circumstances and force majeure events (Article 41). "In the event the KSA Government implements measures concerning a situation or condition that requires a reduction of working hours or precautionary measures to be taken, including situations of force majeure provided for in Paragraph 5 of Article 74 of the Labor Law, an employer shall, within six months following the commencement of the implementation of such measures, agree with their employees to implement any of the following: 1) reduce an employee's wage on a pro-rata basis proportionate to their actual working hours; 2) grant an employee a period of leave to be deducted from their payable annual leave; and/or 3) grant an employee exceptional leave in accordance with Article 116 of the Labour Law (i.e. unpaid leave)" [3].

An online review of the website of the Ministry of Health does not provide any evidence of arrangments that the country 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 [4].

[1] Ministry of Finance Website. March 2020. "With More Than SAR 120 bn: Government of Saudi Arabia Implements Urgent Measures to Mitigate the Impact of Coronavirus on Economic Activities and Private Sector". [https://www.mof.gov.sa/en/MediaCenter/news/Pages/News_20032020.aspx]. Accessed 21 November 2020.
[2] International Monetary fund "Policy Tracker—Saudi Arabia". [https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19]. Accessed 21 November 2020.
[3] Lexology Website. June 2020. Managing Employment Relationships Affected by COVID-19 in the Kingdom of Saudi Arabia". [https://www.lexology.com/library/detail.aspx?g=bd3ab58a-2b77-4b86-9035-b89a35d5c3f5]. Accessed 21 November 2020.

[4] Minstry of Health. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 8 December 2020.

2.5.1c

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

Yes = 1 , No = 0

Current Year Score: 0

Saudi Arabia does not make de-identified data on contact tracing efforts for COVID-19 available via daily reports (or other format) on government websites.

Although the Ministry of Health publishes a daily and a comulative update of COVID19 cases via the COVID19 Dashboard, this is not linked to contract tracing [1]. Moroever, the Tabaud Application makes de-identified data on contact tracing efforts for COVID-19, but it does not provide any information about how frequent are these figures updated [2].

[1] Ministry of Health. COVID-19 Dashboard. [https://covid19.moh.gov.sa/]. Accessed 22 November 2020.
[2] Tabaud. [https://tabaud.sdaia.gov.sa/IndexEn]. Accessed 22 November 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: 2

There is publicly available evidence that Saudi Arabia has a joint plan or cooperative agreement between the public health system and border control authorities to identify suspected and potential cases in international travelers and trace their contacts in the event of an active or future public health emergency.

The Joint External Evaluation (JEE) of IHR Core Capacities of the Kingdom of Saudi Arabia Mission Report, conducted in April 2017, states that "In Saudi Arabia, cooperation between public and security sectors has grown and has been tested in the event of emergencies and exercises. The Royal Decree and the Civil Defence Act facilitate the current linkages between the health and the security sectors under the Ministry of Interior and Ministry of National Guard. Integrated with security sectors, the health authorities can undertake contact tracing for suspected/ confirmed cases of Saudi nationals and those coming from overseas." [1] it also adds that "Sharing of information in the context of chemical, biological, radiological and nuclear events is in place, which extends to include countries under the GCC." [1]

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 9th November 2020.

2.6 EPIDEMIOLOGY WORKFORCE

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

2.6.1a

Does the country meet one of the following criteria?

- Applied epidemiology training program (such as FETP) is available in country

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

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

Current Year Score: 1

There is publicly available evidence that Saudi Arabia has an established field epidemiology training program (FETP) available in the country as well as regional and international partnerships related to FETP; however. there is insufficient evidence that resources are provided by the government to send citizens to other countries to participate in applied epidemiology training programmes.

According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, the Saudi FETP was established in 1989 in collaboration with King Saud University in Riyadh and has trained 168 students as of 2017 [1]. The JEE also notes that Saudi Arabia has regional and international partnerships with Emory University (USA), Liverpool University (UK), the Sultanate of Oman, the US Centers for Disease Control and Prevention (CDC), the Eastern Mediterranean Public Health Network (EMPHNET), the WHO Regional Office for the Eastern Mediterranean, the Food and Agriculture Organization (for the veterinary workforce), and the Arab Organization for Agricultural Development for improved training. However, there is insufficient public evidence regarding whether these cooperative efforts are to enhance Saudi's domestic FETPs or to send Saudi citizens aboard to undergo these organization's FETPs [1].

In addition, the Task Force for Global Health (TEPHINET) inidcates that the Saudi Arabia Field Epidemiology Training Program has "graduated 29 batches with the field epidemiology diploma. The total number of graduates reached 143, of which there are fourteen graduates from the Omani Ministry of Health. The rest are the Saudis working in the different health regions of the country" [2]. Moreover, an review of the website of the Minstry of Health indicated that there have been real implmentation of FETP programs and publication of the program achievements; however, access to those links were restricted [3,4]. Furthermore, the Ministry of Health does not mention that resources are provided by the government to send citizens abroad for epidemiology training [5].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 18 November 2020.
[2] Training Programs in Epidemiology and Public Health Intervention Network (TEPHINET). "Saudi Arabia Field Epidemiology Training Program". [https://www.tephinet.org/training-programs/saudi-arabia-field-epidemiology-training-program] Accessed 18 November 2020.
[3] Saudi Arabia Ministry of Health website. February 2020. "Field Epidemiology Training Program—Objecitives". [https://www.moh.gov.sa/depten/Epidemiology/Pages/Goals.aspx]. Accessed 18 November 2020.
[4] Saudi Arabia Ministry of Health Website. February 2020. "Field Epidemiology Training Program—Achievements".

[https://www.moh.gov.sa/depten/Epidemiology/Pages/Achievements.aspx]. Accessed 18 November 2020.
[5] Ministry of Health [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 18 November 2020.

2.6.1b

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

Yes = 1 , No = 0

Current Year Score: 0

There is no publicy available evidence that available field epidemiology training programs in Saudi Arabia are explicitly inclusive of animal health professionals or is there a specific animal health field epidemiology training program offered (such as FETPV).

While Saudi Arabia does have an established field epidemiology training program (FETP), it does not include training for animal health professions and there is no specific animal health FETP offered by the Saudi FETP. According to the Saudi FETP website, none of the courses undertaken in the two-year diploma program explicitly mention animal health, nor do the short courses offered by the Saudi FETP, or the course titles of the FETP training events [1, 2, 3].

The 2017 Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, recommends capacity-building in the area of veterinary and animal health workforce capabilities (such as an FETP), and introducing an accreditation system for the country's veterinarians [4].

[1] Saudi Field Epidemiology Training Program Website. "Diploma in Field Epidemiology Training Program: Course Layout: Course Units with Credit Hours". [http://fetp.edu.sa/DFE_Course_Layout.html]. Accessed 18 November 2020.
[2] Saudi Field Epidemiology Training Program website. "Short Courses". [http://fetp.edu.sa/Short_Course.html]. Accessed 18 November 2020.
[3] Saudi Field Epidemiology Training Program website. "FETP Training Events". [http://fetp.edu.sa/TrainingEvents.html]. Accessed 18 November 2020.
[4] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 18 November 2020.

2.6.2 Epidemiology workforce capacity

2.6.2a

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

Yes = 1 , No = 0

Current Year Score: 1

2020

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

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

3.1 EMERGENCY PREPAREDNESS AND RESPONSE PLANNING

3.1.1 National public health emergency preparedness and response plan

3.1.1a

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

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

Current Year Score: 1

There is available evidence that the Kingdom of Saudi Arabia (KSA) has a national public health emergency response plan in place that addresses planning for multiple communicable diseases with pandemic potential, but the plan is not publicly available. According to Saudi Arabia's 2017 Joint External Evaluation (JEE) report, KSA has developed and implemented a multihazard national public health emergency preparedness and response plan that incorporates IHR core capacity requirements [1]. A multi-sectoral collaborative approach was adopted to identify priority public health risks and map resources to mitigate these risks for an effective emergency response plan, which the JEE praised for its meticulous planning which could be used a regional standard for the other GCC countries to emulate. However, while the JEE confirms the existence of a multi-hazard plan, it does not mention how the plan covers health emergencies, such as pandemics, nor does it mention specific diseases which are included in this plan [1]. In addition, according to an academic study published in the Journal of Hospital and Medical Management in 2017, a Health Emergency General Department under the Ministry of Health was established in 2015 and has reportedly developed a comprehensive Disaster Response and Relief Framework [2]. Moreover, as published on the website of the Ministry of Health in 2015 that upon the Stampede of pilgrims in Mina "The Ministry's emergency response plan was immediately activated at the onset of the disaster and we are coordinating closely with all relevant entities to provide the best possible care for the victims," which further proves that the country has a national emergency response plan [3]. In spite of these sources indicating the existence of a national emergency response plan, the plan is not publicly available. It is possible that it is being revised as one of the goals under the not yet published Vision 2030 National Transformation, under which strategic objective 11 pertains to the implementing a national plan for emergency response to public threats in line with international standards [4,5].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 10 November 2020.
[2] Alraga, Saeed. August 2017. "An Investigation into Disaster Health Management in Saudi Arabia". Journal of Hospital and Medical Management 2
[2] :18). [http://hospital-medical-management.imedpub.com/an-investigation-into-disaster-health-management-in-saudi-arabia.php?aid=20683]. Accessed 10 November 2020.
[3] Ministry of Health Website ""Stampede of pilgrims in Mina, near the holy city of Makkah". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2015-09-25-020.aspx]. Accessed 6 December 2020.
[4] Kingdom of Saudi Arabia—Vision 2030 Website. "National Transformation Program 2020". [https://vision2030.gov.sa/sites/default/files/NTP_En.pdf]. Accessed 10 November 2020].
[5] Al Tamimi & Co Website. January 2017. "Vision 2030 and the Opportunities it Represents in Healthcare in Saudi Arabia".

[https://www.tamimi.com/law-update-articles/vision-2030-and-the-opportunities-it-represents-in-healthcare-in-saudi-arabia/]. Accessed 10 November 2020.

3.1.1b

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

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

Current Year Score: 0

There is available evidence that the Kingdom of Saudi Arabia (KSA) has a national public health emergency response plan in place, which addresses planning for multiple communicable diseases with pandemic potential. However, the plan is not publicly available and there is no evidence on when it was last updated. According to Saudi Arabia's 2017 Joint External Evaluation (JEE) report, KSA has developed and implemented a multihazard national public health emergency preparedness and response plan that incorporates IHR core capacity requirements [1]. A multisectoral collaborative approach was adopted to identify priority public health risks and map resources to mitigate these risks for an effective emergency response plan, which the JEE praised for its meticulous planning, which could be used a regional standard for the other GCC countries to emulate. However, while the JEE confirms the existence of a multihazard plan, it does not mention how the plan covers health emergencies, such as pandemics, nor does it mention specific diseases that are included in this plan [1]. In addition, according to an academic study published in the Journal of Hospital and Medical Management in 2017, a Health Emergency General Department under the Ministry of Health was established in 2015 and has reportedly developed a comprehensive Disaster Response and Relief Framework [2]. As published on the website of the Ministry of Health in 2015 that upon the Stampede of pilgrims in Mina "The Ministry's emergency response plan was immediately activated at the onset of the disaster and we are coordinating closely with all relevant entities to provide the best possible care for the victims," which further proves that the country has a national emergency response plan [3]. In spite of these sources indicating the existence of a national emergency response plan, the plan is not publicly available. It is possible that it is being revised as one of the goals under the not yet published Vision 2030 National Transformation, under which strategic objective 11 pertains to the implementing a national plan for emergency response to public threats in line with international standards [4,5].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 10 November 2020.
[2] Alraga, Saeed. August 2017. "An Investigation into Disaster Health Management in Saudi Arabia". Journal of Hospital and Medical Management 2
[2] :18. [http://hospital-medical-management.imedpub.com/an-investigation-into-disaster-health-management-in-saudi-arabia.php?aid=20683]. Accessed 10 November 2020.
[3] Ministry of Health Website ""Stampede of pilgrims in Mina, near the holy city of Makkah".
[https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2015-09-25-020.aspx] Accessed 6 December 2020.
[4] Kingdom of Saudi Arabia—Vision 2030 Website. "National Transformation Program 2020".
[https://vision2030.gov.sa/sites/default/files/NTP_En.pdf]. Accessed 10 November 2020].
[5] Al Tamimi & Co Website. January 2017. "Vision 2030 and the Opportunities it Represents in Healthcare in Saudi Arabia".
[https://www.tamimi.com/law-update-articles/vision-2030-and-the-opportunities-it-represents-in-healthcare-in-saudi-arabia/]. Accessed 10 November 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 available evidence that the Kingdom of Saudi Arabia (KSA) has a national public health emergency response plan in place, which addresses planning for multiple communicable diseases with pandemic potential; however, the plan is not publicly available and, thus, it cannot be confirmed whether or not such a plan includes considerations for pediatric and other vulnerable populations. Saudi Arabia's Joint External Evaluation (JEE) report, published in March 2017, cites the existence of a multihazard national public health emergency preparedness and response plan; however, it is unclear whether this refers to multiple communicable diseases with pandemic potential or if considerations are made for vulnerable populations [1]. The specifics of the plan are not publicly available and are likely being revised for the "Vision 2030" Strategic Plan, for which the specificities of the healthcare components of the plan have not yet been made publicly available [2, 3]. In addition, according to an academic study published in the Journal of Hospital and Medical Management in 2017, a Health Emergency General Department under the Ministry of Health was established in 2015 has reportedly developed a comprehensive Disaster Response and Relief Framework [4]. However, this too was not publicly available online. The Ministry of Health's (MoH) "Crisis Management and Emergency Evacuation Plan" does specifically include protocols related to safety procedures for school children. The plan addresses the evacuation procedures of students from schools and the formation and effective training of emergency management teams in schools; it also includes guidelines for school teachers and principals [5]. However, it is not clear that this specifically relates to health emergency outbreaks. There was only one mention of special considerations for the elderly in the MoH's Hajj emergency response plan, where it was reported that over 300 scout volunteers were available to escort the elderly to clinics and pharmacies [6]. Otherwise, there were no mentions of vulnerable populations. In addition, the JEE recommends strengthening targeted communication are resources available for communication outreach to vulnerable groups, such as Bedouin tribes and unregistered migrants [1].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 10 November 2020.
[2] Kingdom of Saudi Arabia—Vision 2030 Website. "Vision 2030". [https://vision2030.gov.sa/download/file/fid/417]. Accessed 10 November 2020.
[3] Al Tamimi & Co Website. January 2017. "Vision 2030 and the Opportunities it Represents in Healthcare in Saudi Arabia". [https://www.tamimi.com/law-update-articles/vision-2030-and-the-opportunities-it-represents-in-healthcare-in-saudi-arabia/]. Accessed 10 November 2020.
[4] Alraga, Saeed. August 2017. "An Investigation into Disaster Health Management in Saudi Arabia". Journal of Hospital and Medical Management 2
[2] :18. [http://hospital-medical-management.imedpub.com/an-investigation-into-disaster-health-management-in-saudi-arabia.php?aid=20683]. Accessed 10 November 2020.
[5] The Minostry of Health Website. "Crisis Management and Emergency Evacuation Plan". [http://www.e-moh.com/vb/t39845/]. Accessed 10 November 2020.
[6] Saudi Arabia Ministry of Health Website. 31 August 2016. "Media Report on Ministry of Health's Services during Hajj Season 2016". [https://www.moh.gov.sa/en/Ministry/MediaCenter/Publications/Pages/Publications-2016-08-31-001.aspx]. Accessed 10 November 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 Saudi Arabia has a specific mechanism for engaging with the private sector to assist with outbreak emergency preparedness and response. However, according to an academic study published in the Journal of Hospital and Medical Management in 2017, in 2015 Saudi Arabia established the Emergency Committee Health Central Directorate of Health Affairs which is responsible for overseeing public and private hospitals' preparation for potential emergencies [1].

During emergency situations, the committee coordinates with both government and private agencies to ensure the adequate deployment of resources and response measures. For example, it ensures the "timely provision and transfer of the necessary amount of blood and plasma for blood banks" and "that every healthcare facility has evacuation plans and takes measures to coordinate their activities with other healthcare entities" [1].

In addition, according to Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, during a simulation exercise performed for the JEE team in the Dammam region, the Eastern Province Civil Defense and the subnational response decontamination unit demonstrated their ability to effectively coordinate with civilian hospitals (many of which were likely privately owned), to promptly resolve public health emergencies [2]. A review of the website of the Ministry of Health does not provide any further evidence [3].

[1] Alraga, S. August 2017. "An Investigation into Disaster Health Management in Saudi Arabia". Journal of Hospital and Medical Management 2
[2] :18. [https://hospital-medical-management.imedpub.com/an-investigation-into-disaster-health-management-in-saudi-arabia.php?aid=20683]. Accessed 16 December 2020.
[2] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 11 November 2020.
[3] Ministry of Health. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 11 November 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: 0

There is insufficient publicly available evidence that Saudi Arabia has a policy, plan, and/or guidelines in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic for one or more diseases, although cetain NPIs were put in place for the COVID-19 pandemic.

Although, evidence shows that Saudi Arabia has specific requirements and recommendations for travellers to Saudi Arabia for Hajj and Umrah to combat the spead of infectious and viral diseases (including MERS-COV), there is no publicly avaliable evidence that elaborates on specific criteria to trigger the implmentation of NPIs, and there is also no evidence beyond these specific events [1 , 2]. The Ministry of Health has also published guidelines in 2015 for home isolation, which includes guidelines for infected patients as well as their caretakers [3]. But these were specific to the MERS-CoV outbreak. An online review of the website of the Minsitry of Health provided no relevant inormation [4].

During the COVID-19 pandemic, Saudi has implemented many non-pharmaceutical interventions to curtail the spread of the disease. For example, in March 2020, the Saudi Arabian government announced closure of non-essential public places (retail, restaurants, public houses, etc.) Pharmacies and supermarkets were excluded from this decision [5]. In April 2020, the Saudi Arabian government announced a 24-hour curfew in most of its larger cities. The curfew included all factories and construction sites except for vital sectors, such as pharmacies, food supply stores, gas stations, banking services, maintenance and operation, plumbing technicians, electricity and air conditioning, water delivery services, and sanitation tanks [6]. In addition, the Saudi Arabian government suspended all domestic flights and land travel [7].

In end-May 2020, the government launched a major campaign titled “We All Return Cautiously.” This campaign was accompanied by a set of established guidelines on the gradual return to what was considered as normal life. General guidelines included mandatory wearing of face masks in public, measuring people’s temperature prior to their entry to public places, setting a maximum capacity for closed locations, ensuring social-distancing, and minimizing the handling of items by multiple people where possible. Violators of face mask requirements will be penalized with a fine of SAR 1000 (~USD 267). This has also become an entry requirement to any closed place. The number of people in a closed area has also been limited according to its surface area. A surface area of 1.5 square meters was determined for each person, so that shops could determine their maximum capacity of people at any given time, including staff [8,9].

[1] Ministry of Health "Health Requirements and Recommendations For Travelers to Saudi Arabia for Hajj and Umrah. 2018/1439H". [https://www.moh.gov.sa/en/CCC/healthp/regulations/Documents/1439-2018-Hajj-and-Umrah-Health-Requirements.pdf]. Accessed 22 November 2020.
[2] Health Requirements and Recommendations for Travellers to Saudi Arabia for Hajj and Umrah [https://www.who.int/ith/ITH-Haj-2019.pdf]. Accessed 22 November 2020.
[3] Saudi Arabia Ministry of Health website. June 2015. "Guidelines for Home Isolation Related to MERS Corona Virus Infections". [https://www.moh.gov.sa/CCC/Documents/Home/Isolation.pdf]. Accessed 8 December 2020.
[4] Ministry of Health. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 8 December 2020.
[5] Al-Arabiya. "Saudi Shuts Down Malls and Restaurants to Fight Corona". March 2020. https://www.alarabiya.net/saudi-today/2020/].
[6] Al-Arabiya, "Coronavirus: Saudi Arabia Imposes 24-hour Curfew in Several Cities, Including Riyadh" April 2020. https://english.alarabiya.net/News/gulf/2020/04/06/Coronavirus-Saudi-Arabia-imposes-24-hour-curfew-in-several-cities-including-Riyadh].
[7] Arab News. "Saudi Arabia Suspending Domestic Flights, Mass Land Transport in Fight Against COVID-19". March 2020. [https://www.arabnews.com/node/1644101/saudi-arabia].
[8] Gulf News. "COVID-19: Saudi Arabia to Slap Fines on Those Who Don't Wear Masks". May 2020. [https://gulfnews.com/world/gulf/saudi/covid-19-saudi-arabia-to-slap-fines-on-those-who-dont-wear-masks-1.71770068].

[9] Sayed AA. 2021. "The Progressive Public Measures of Saudi Arabia to Tackle Covid-19 and Limit Its Spread". International Journal of Environmental Research and Public Health. [https://doi.org/10.3390/ijerph18020783"].

3.2 EXERCISING RESPONSE PLANS

3.2.1 Activating response plans

3.2.1a

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

Current Year Score: 1

There is evidence that Saudi Arabia has activated their national emergency response plan for an infectious disease outbreak in the past year, but no evidence that the country has completed a national-level biological threat-focused exercise (either with WHO or separately) in the past year [1].

"The Kingdom of Saudi Arabia's Experience in Health Preparedness and Response to COVID-19 Pandemic," a document shared on the ministry of Health website reflects on the measures implemented by the country to fight COVID-19 and highlights "the Kingdom of Saudi Arabia's health preparedness and response efforts at the national level, since the virus's emergence in early January, until August 23, 2020" [2].

There is no information regarding any national-level biological threat-focused exercise on the websites of the Ministry of Health and the Ministry of Environment, Water, and Agriculture [3,4].

[1] World Health Organization (WHO). WHO Extranet—Simulation Exercise. [https://extranet.who.int/sph/simulation-exercise#parallax-process]. Accessed 10 November 2020.
[2] Mnistry of Health. "The Kingdom of Saudi Arabia's Experience in Health Preparedness and Response to COVID-19 Pandemic". [https://www.moh.gov.sa/en/Ministry/MediaCenter/Publications/Documents/COVID-19-NATIONAL.pdf]. Accessed 8 December 2020.
[3] Minstry of Health. [https://www.moh.gov.sa/en/Pages/Default.aspx]. Accessed 10 November 2020.
[4] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 10 November 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 public evidence that Saudi Arabia has undergone an exercise to assess gaps and developed action plans accordingly in the past year.

The World Health Organization's (WHO) Strategic Partnership Portal's list of after action reviews does not indicate that Saudi Arabia has ever either conducted or planned for an after action review [1]. A review the Ministry of Health's recent press releases and the WHO IHR website also provide no evidence that an after-action review or a biological threat-focused IHR exercise has been conducted over the past year [2, 3].

According to Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, a simulation exercise was performed for the JEE team in the Dammam region, which was a successful demonstration of the national capacity to promptly resolve public health emergencies; however it is unclear whether this entailed identifying gaps through an after-action review [4].

According to the King Saud Bin Abdulaziz University for Health Sciences, after-action reviews are used more extensively in the military; however, they have also been conducted in Saudi airports to improve the preparedness of airports to respond to mass emergency outbreaks, but the frequency with which they are conducted remains unclear [5, 6].

[1] World Health Organization (WHO) Strategic Partnership Portal. "After Action Review". [https://extranet.who.int/sph/after-action-review]. Accessed 22 November 2020.
[2] Saudi Arabia Ministry of Health Website. "Ministry News". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/default.aspx]. Accessed 22 November 2020.
[3] World Health Regulations. "International Health Regulations News". [http://www.who.int/ihr/ihrnews/en/]. Accessed 22 November 2020.
[4] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 22 November 2020.
[5] King Saud Bin Abdulaziz University for Health Sciences. 2017. "Patient Safety Forum 21–23 March: Conference Proceedings". [http://patientsafetyforum.org/wp-content/uploads/2017/04/Conference-Proceedings-PRINT-v2.0.pdf]. Accessed 22 November 2020.
[6] Ezreqat, S., and Khan, A. September 2017. "Evaluation of a Saudi Major Airport's Medical Preparedness for Mass Casualty Incident: A Mixed-Methodology Study". MOJ Public Health 6
[3]. [https://medcraveonline.com/MOJPH/MOJPH-06-00173.pdf]. Accessed 22 November 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 publicly available evidence that the country has undergone an exercise to assess gaps and take action accordingly in the first place.

The World Health Organization's (WHO) After Action Review and the Simulation Exercise website does not provide information that Saudi Arabia has undergone any exercise in the past year to identify a list of gaps and best practices through either an after-action review (post-emergency response) or a biological threat-focused IHR exercise [1,2]. Furthermore, press announcements on the websites of the Ministry of Health and Ministry of Environment, Water, and Agriculture do not provide any additional information in this regard [3,4]. The WHO Saudi Arabia country profile page does not provide information that shows that the country has, in the past year, undergone an exercise to identify a list of gaps and best practices through either an after-action review (post-emergency) [5].

[1] WHO Strategic Partnership Portal. "After Action Review". [https://extranet.who.int/sph/after-action-review]. Accessed 22 November 2020.
[2] World Health Organisation (WHO). "Simulation Exercise". [https://extranet.who.int/sph/simulation-exercise].Accessed 22nd November 2020.
[3] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 18 November 2020.
[4] Saudi Arabia Ministry of Environment, Water and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 18th November 2020.
[5] World Health Organisation (WHO). "Saudi Arabia Country Profile". [https://www.who.int/countries/sau/]. Accessed 18 November 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

Publically available evidence shows that Saudi Arabia has Emergency Operations Centres (EOCs) in place.

According to Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, Saudi Arabia's EOCs operate at the national, subnational, and local levels and comply with the World Health Organization's (WHO) Framework for Public Health EOC standards [1]. Moreover, the Ministry of Health is in charge of operating EOCs in various parts of the country and equips them with advanced technological systems that the JEE considers to be "state-of-the-art" [1, 2, 3].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 10 November 2020.
[2] Saudi Arabia Ministry of Health website. 25th September 2015. "MOH: Mina's EOC Helped Save Lives of Tens of Stampede Victims". [https://www.moh.gov.sa/en/Hajj/News/Pages/News-2015-09-25-009.aspx]. Accessed 10th November 2020.
[3] Saudi Arabia Ministry of Health website. 8th April 2015. "Health Emergency Room is Equipped to Deal with Crises and Disaster". [https://www.moh.gov.sa/Ministry/MediaCenter/News/Pages/NEWS-2008-12-9-002.aspx]. Accessed 10 November 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 insufficient evidence that Saudi Arabia's Emergency Operations Center (EOC) is required to conduct a drill for a public health emergency scenario at least once per year, nor is there evidence that they conduct a drill at least once per year.

According to Saudi Arabia's Joint External Evaluation (JEE) report, published in March 2017, "The system is tested at least twice a year to test EOC activation." However, it does not appear to specifically mention drills [1]. Moreover, the website of the Ministry of Health provides no further information in this regard [2].

[1] World Health Organization. March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 10 November 2020.
[2] Ministry of Health Website. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 6 December 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 insufficient public evidence to show that within the last year Saudi Arabia's Emergency Operations Center (EOC) has conducted a coordinated emergency response exercise activated within 120 minutes of the identification of the public health emergency.

According to Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, EOC staff are trained to activate a response within two hours, and the active response system for communicable diseases and epidemics has demonstrated its ability to execute a coordinated response within 120 minutes [1]. However, the JEE does not mention when the latest exercise was conducted, and no further information is available on the websites of the Ministry of Health and Ministry of Interior [2, 3]. An online review yielded no further information related to activating the EOC within 120 minutes in light of COVID-19.

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 14 November 2020.
[2] Saudi Arabia Ministry of Health website. "Ministry News". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/default.aspx]. Accessed 14 November 2020.
[3] Saudi Arabia Ministry of Interior. [https://www.moi.gov.sa/wps/portal/Home/Home]. Accessed 14 November 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 insufficient publicly available evidence that public health and national security authorities in Saudi Arabia have carried out an exercise to respond to a potential deliberate biological event.

While Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, notes that a response system is in place, it recommends enhancing guidelines, standard operating procedures (SOPs), and joint training and exercises, and does not mention that an exercise has taken place yet [1]. A review of the websites of the Ministry of Health, Ministry of Interior and Ministry of the National Guard did not yield any evidence to suggest such an exercise has been carried out [2, 3, 4].

There is also insufficient publicly available evidence of 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. Furthermore, there is some evidence of general guidelines for the coordination of security and health officials being in place, but there is no evidence that this is specific to a biological event.

According to Saudi Arabia's JEE, the Civil Defence Act of 1986 currently provides the legal framework for public health and security authorities to coordinate a joint response to public health and other emergencies, although the Act does not specifically mention biological events [1, 5]. While the Civil Defence Act does not contain standard operating procedures, the Civil Defence Act, together with a Royal Decree, facilitate the cooperation and linkage of the health and security sectors under the Ministry of Interior and Ministry of the National Guard [1]. According to the JEE, national biosafety and biosecurity legislations and guidelines are yet to be finalized, enacted, and implemented [1].

A review of the websites of the Ministry of Health, Ministry of Interior, and Ministry of the National Guard did not suggest any other publicly available evidence of any further guidelines, SOPs, or procedures in place [2, 3, 4].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 14 November 2020.
[2] Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 14 November 2020.
[3] Saudi Arabia Ministry of Interior Website. "Rules, Regulations, Guidelines". [https://www.moi.gov.sa/wps/portal/]. Accessed 14 November 2020.
[4] Saudi Arabia Ministry of the National Guard. "General Guidelines".[https://www.sang.gov.sa/Pages/Default.aspx]. Accessed 14 November 2020.

[5] Saudi Arabia Ministry of Interior website. 1986. "Civil Defence Act". [https://www.moi.gov.sa/wps/wcm/connect.pdf]. Accessed 14 November 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 the Kingdom of Saudi Arabia's (KSA) public health emergency response plan outlines how messages will reach populations and sectors with different communications needs (e.g., different languages, location within country, media reach), outside of the Hajj season.

While the contents of the health emergency response plan are not publicly available, a review of publications and other releases from the Ministry of Health (MoH) website have not yielded supporting evidence of the existence of public communications strategy to different groups except in the context of the Hajj pilgrimage. According to Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, a risk communications unit was established within the Global Centre for Mass Gathering Medicine (GCMGM) to respond to emergencies during the Hajj, and a broader working group in MoH, activated in the event of an emergency, were both formally established [1].

As of 2015, Hajj-specific communication strategies and standard operating procedures (SOPs) were developed, implemented, and tested [1]. The MoH distributes health awareness information in different languages to countries with Muslim populations, diseases common during the Hajj season and food poisoning, showing how to prevent them. Programs are submitted to the Ministry of Foreign Affairs, which in turn circulates them to KSA embassies and consulates in pilgrims' countries [2]. During Hajj, the MOH utilizes different awareness tools (displays, animated billboards at health facilities' entryways, TVs, tapes in various languages, prints, newsletters, posters, etc.) on health requirements and guidelines [2, 3]. Beyond health emergencies during Hajj, the JEE notes that while media plans and SOPs for national health risk communication have been drafted, these have not yet been endorsed by MoH leadership [1]. Furthermore, there is evidence that activities were undertaken by the MoH to survey public perception and understanding of diseases such as MERS, to enable MoH to make more informed decisions on choosing the appropriate channels for raising awareness [4].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 14th November 2020.
[2] Saudi Arabia Ministry of Health Website. 2015. "Media Report on Ministry of Health's Preparations for Hajj Season 2015". [https://www.moh.gov.sa/en/Ministry/MediaCenter/Publications/Pages/Publications-2015-08-24-001.aspx]. Accessed 14 November 2020.
[3] Saudi Arabia Ministry of Health Website. August 2016. "Media Report on Ministry of Health's Preparations for Hajj Season 2016". [https://www.moh.gov.sa/en/Ministry/MediaCenter/Publications/Pages/Publications-2016-08-31-001.aspx]. Accessed 14 November 2020.
[4] Saudi Arabia Ministry of Health Website. 5 April 2016. "Weekly Monitor MERS-CoV, Vol 2

[14] ". [https://www.moh.gov.sa/en/CCC/Documents/Volume-2-Issue-14-Tuesday-April-5-2016.pdf]. Accessed 14 November 2020.

3.5.1 Risk communication planning

3.5.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Saudi Arabia has in place a risk communication plan that applies across the entire country and that is specifically intended for use during a public health emergency. According to Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, Saudi Arabia organized a joint Risk Communication Capacity Assessment with the Ministry of Health (MoH) and the World Health Organization's (WHO) Regional Office for the Eastern Mediterranean in March 2015, where detailed recommendations to formalize a risk communication system for public health emergencies were put forth [1, 2]. As a result of this workshop, a risk communications unit within the Global Centre for Mass Gathering Medicine (GCMGM) was established to respond to health emergencies during the Hajj [2]. For example, during the 2016 Hajj, the MoH worked to improve public health preparedness and response measures by strengthening national emergency risk communication capacity, particularly in terms of monitoring and evaluating social media, improving internal coordination, expanding health messages in several languages across social media channels and introducing Hajj-specific communication strategies and standard operating procedures (SOPs) [2]. In addition, a larger working group within the Ministry of Health was established with strong links to Emergency Operation Centers (EOCs) across different cities in Saudi Arabia. Efforts are underway for the MoH to standardize risk communication within the EOCs. The MoH has also scaled up public communication efforts with a core team, led by the Director General of Media and Public Relations, who reports directly to the Vice Minister of Health. Moreover, health information is regularly disseminated to strictly controlled media (TV, radio, newspapers). Further, media monitoring and enhanced call centre capacities in data analysis, dynamic listening, and rumour management are in place [2]. The JEE also mentions that the "main stakeholders have been identified and the MoH is in the process of developing a multi-hazard risk communication plan that includes clear roles and responsibilities for MoH, other ministries, and external partners"; however, an online search did not yeild any results related to the development of such a plan [2].

[1] World Health Organization (WHO) Regional Office for the Eastern Mediterranean. 2015. "High-level Workshop in Emergency Risk Communication Convened in Saudi Arabia". 2015. [http://www.emro.who.int/surveillance-forecasting-response/surveillance-events/emergency-risk-communication-workshop.html]. Accessed 14 November 2020.
[2] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 14 November 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: 1

There is evidence that Saudi Arabia has a designated a specific position within the government to serve as the primary spokesperson to the public during a public health emergency. The Joint External Evaluation (JEE) of the International Health Regulations (IHR) Core Capacities of the Kingdom of Saudi Arabia Mission Report, conducted in April 2017, states that "Official spokespersons are designated at the subnational and directorate levels and can engage with the media on local public health issues" [1]. Moreover, the website of the Ministry of Health provides no relevant information in this regard [2].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 10 November 2020. Ministry of Health Website. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 6 December 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: 1

There is evidence that the public health system in Saudi Arabia has actively shared messages via online media platforms (e.g., social media, websites) to inform the public about ongoing public health concerns and/or dispel rumors, misinformation, or disinformation. However, information is majorly shared during active emergencies. For example, on March 2, 2020 , the Ministry of Health's (MoH) Facebook and Twitter pages posted a clarification regarding what was circulated about the video of the first COVID19 case being isolated [1]. The MoH's Facebook and Twitter pages also share the COVID-19 updates in Saudi Arabia [2]. Furthermore, as published on the Minsitry of Health Media Center, the Acting Minister of Health "has announced today a new package of measures to address the coronavirus (MERS-CoV), including tight infection control guidelines and a new MERS-CoV command centre. The new measures include 1) issuing new stringent guidelines for infection control based on a new case definition; 2) tasking a constellation of experts with oversight of rapid response policies across the Kingdom; 3) putting into action a system to review the current capability and capacity within healthcare facilities in the Kingdom; 4) conducting comprehensive reviews of the number of the corona cases recorded at all hospitals and health centers throughout the Kingdom since the onset of the MERS-CoV" [3].

[1] Ministry of Health Facebook page. 2 March 2020. [https://esla.facebook.com/SaudiMOH/posts/2960246150711214/]. Accessed 22 November 2020.
[2] Ministry of Health Twitter page. 2 March 2020. [https://twitter.com/spokesman_moh/status/1234567314504404998]. Accessed 22 November 2020.
[3] Ministry of Health Facebook page. 22 November 2020. [https://www.facebook.com/SaudiMOH/photos/a.195136303888893/3669325159803306/?type=3&theater]. Accessed 22 November 2020.
[4] Ministry of Health Twitter page. 20 November 2020. [https://twitter.com/SaudiMOH/status/1329765183787393025/photo/1]. Accessed 22 November 2020.

[3] Minsitry of Health Website "Ministry of Health Announces Package of Measures to Address Coronavirus (MERS-CoV)". 13 May 2014. [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2014-05-13-003.aspx]. Accessed 7 December 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) have shared misinformation or disinformation on infectious diseases in the past two years [1, 2, 3].

[1] Alriyadh newspaper. [https://www.alriyadh.com/]. Accessed 20 November 2020.
[2] Alsharq Alawsat newspaper. [https://english.aawsat.com/]. Accessed 20 November 2020.
[3] Arab News Newspaper. [https://www.arabnews.com/]. Accessed 20 November 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: 95.72

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: 120.52

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: 2.0

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: 0

2019

Gallup; Economist Impact calculation

3.7 TRADE AND TRAVEL RESTRICTIONS

3.7.1 Trade restrictions

3.7.1a

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

Yes = 0 , No = 1

Current Year Score: 0

Publicly available evidence reveals that Saudi Arabia 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.

As per the International Trade Center, Saudi Arabia has baned exports ofmedical supply products, masks as well as medicines, pharmaceutical and medical devices [1]. The World Trade Organization also confirms that there is a "temporary export ban on COVID-19 detection and prevention products (e.g., personal protective equipment, face masks, diagnostic tests) medical equipment, and pharmaceutical products, due to the COVID-19 pandemic" [2].

In addition, according to a news article published in March 2020 on the Alarabiya news website and entitled "Saudi Arabia stops all exports of coronavirus detection and prevention products," it can be stated that Saudi Arabia announced "halting all exports of medical and laboratory products and equipment used to detect or prevent coronavirus infection via its land, sea and air ports. The list of products and equipment is provided by the Ministry of Health and includes medical garments, protective full-body suits, protective eyeglasses, and medical face masks. The export ban applies to commercial quantities

and amounts carried with individual travelers, the customs authority said in a tweet" [3].

[1] International Trade Center. "COVID-19 Temporary Trade Measures". [https://www.macmap.org/covid19]. Accessed 22 November 2020.
[2] World Trade Organization. "COVID-19 and Trade—Kingdom of Saudi Arabia". [https://www.wto.org/english/tratop_e/covid19_e/covid_details_by_country_e.htm?country=SAU]. Accessed 22 November 2020.
[3] Alarabiya news Website. "Saudi Arabia Stops all Exports of Coronavirus Detection and Prevention Products." [https://english.alarabiya.net/en/News/gulf/2020/03/02/Saudi-Arabia-stops-all-exports-of-coronavirus-detection-and-prevention-products]. Accessed 22 November 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 publicly available evidence of 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. As per the International Trade Center, Food and Textiles are not among the banned goods [1] Additionally, according to a news article published on food navigator in March 2020 and titles "COVID-2019: Egypt and Jordan suspend import of Chinese food products, Saudi and UAE remain calm", it is stated that "Saudi Arabia says Food is safe" the article also adds that according the Chinese Embassy spokesperson in Saudi Arabiam it is stated that "given the costume ispections conducted by both export and import countries, there is no scientific evidence so far that inidcated products imported from Chine could carry the new corona virus. it is believed that chinese products are safe for use" [2] the Ministry of Health, the Ministry of Environment, Water and Agriculture and the Ministry of foriegn Affairs websites provide no relevant information [3,4,5]

[1] International Trade Center. "COVID-19 Temporary Trade Measures". [https://www.macmap.org/covid19]. Accessed 22 November 2020.
[2] Food Navigator "COVID-2019: Egypt and Jordan Suspend Import of Chinese Food Products, Saudi and UAE Remain Calm". [https://www.foodnavigator-asia.com/Article/2020/03/04/COVID-2019-Egypt-and-Jordan-suspend-import-of-Chinese-food-products-Saudi-and-UAE-remain-calm]. Accessed 22 November 2020.
[3] Ministry of Health. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 7 December 2020.
[4] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/ar/Pages/default.aspx]. Accessed 7 December 2020.
[5] Ministry of Foreign Affairs. [https://www.mofa.gov.sa/sites/mofaen/Minister/Pages/Default.aspx]. Accessed 7 December 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 publicly available evidence that Saudi Arabia has implemented a ban on travelers arriving from a specific country or countries due to the COVID-19 pandemic. According to the National News Website, Saudi Arabia announced a temporary ban over religious visits to protect pilgrims' safety. The announcement was made by The Ministry of Foreign Affairs [1]. Moreover, according to Al Arabiya newspaper, Saudi Arabia has suspended travel to 14 countries [2].

[1] The National News Websites. "Coronavirus: Saudi Arabia temporarily bans religious visits to protect pilgrims' safety" February 2020 [https://www.thenationalnews.com/world/mena/coronavirus-saudi-arabia-temporarily-bans-religious-visits-to-protect-pilgrims-safety-1.985103]. Accessed 22nd of November 2020.
[2] "Saudi Arabia Suspends Travel to 14 Countries over Coronavirus, Including Turkey" March 2020 [https://english.alarabiya.net/en/News/gulf/2020/03/09/Saudi-Arabia-extends-travel-ban-on-citizens-residents-to-more-countries]. Accessed 22 November 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: 261.17

2018

WHO; national sources

4.1.1b

Nurses and midwives per 100,000 people

Input number

Current Year Score: 547.63

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 publicly available evidence that indicates that the Kingdom of Saudi Arabia (KSA) has a unified, documented 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. There mainly exist only independent initiatives. According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, KSA's public workforce strategies include national and international training, training for special situations like the Hajj workforce strategy, and for certain outbreaks like MERS and avian influenza [1]. However, a key shortcoming of KSA's public health workforce is the excessive reliance on an expatriate population, which leads to a high turnover rate and instability in the healthcare system. The JEE reports that out of the 83,000 nurses and 55,000 physicians in KSA, only 22,000 are Saudi nationals. Recognizing this critical shortcoming, efforts have been made by the government to teach and train Saudis for health professional jobs. Since 1958, a number of medical, nursing, and health schools have been opened around the nation to meet this goal. Apart from private colleges and institutes, there are 73 colleges for medicine, health, and nursing as well as four health institutes in Saudi Arabia [1]. In addition, according to a study published in the Canadian Journal of Hospital Pharmacy in 2016, the Ministry of Health's budget allocation for training and scholarships has increased and many employees are offered the opportunity to pursue their studies abroad [2]. While these efforts may be successful in increasing the overall capabilities of the existing Saudi employees, it does not address the issue of a shortage of employees overall and high turnover rates, and it is likely that more medical colleges and training programs will need to be established around the country. Some measures have been undertaken to overcome this, including the introduction of a "unified pay scale" to improve retention of healthcare workers in public hospitals and to reduce attrition rates; a host of initiatives have been introduced under the Saudi Vision 2030 national strategy launched in 2016 [2]. According to two reports published by law firms Shearman and Sterling and Al Tamimi in 2016, Vision 2030 emphasizes increasing the employment of Saudi nationals in the healthcare sector and has introduced several initiatives geared toward the development of the healthcare workforce development [3, 4]. This includes the National Project for the Planning and Development of Health Graduate Programs, which aims to increase the quantity and quality of training programs offered nationally; initiatives to enhance the skills of emergency medical providers; introducing the special disease accreditation program; and expanding the coverage of specialized service centres by enhancing the training and skills of health professionals [5]. Furthermore, in line with Vision 2030, the healthcare sector has announced plans to add approximately 100,000 jobs for Saudis in the healthcare sector by 2030 [6].

[1] World Health Organization. March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 8 November 2020.
[2] Al-jedai, A., Qaisi, S., Al-meman. A. May - June 2016. "Pharmacy Practice and the Health Care System in Saudi Arabia". The Canadian Journal of Hospital Pharmacy 69
[3]. [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4924944/]. Accessed 8th November 2020.
[3] Shearman and Sterling. September 2016. "Healthcare in the Kingdom of Saudi Arabia—An Overview". [http://www.ic.gov.sa/media/1253/report-1-healthcare-in-the-kingdom-of-saudi-arabia-an-overview.pdf]. Accessed 8 November 2020.
[4] Al Tamimi & Co. 2016. "Vision 2030 and the Opportunities it Represents in Healthcare in Saudi Arabia". [http://www.tamimi.com/law-update-articles/vision-2030-and-the-opportunities-it-represents-in-healthcare-in-saudi-arabia/]. Accessed 8 November 2020.
[5] Saudi Arabia Vision 2030. "Saudi Vision 2030". [https://vision2030.gov.sa/download/file/fid/417]. Accessed 8 November

2020.
[6] Arab Health. 2017. "Restructuring Saudi Healthcare Sector a Boost for the Industry". [https://www.arabhealthonline.com/magazine/en/latest-issue/3/restructuring-saudi-healthcare-sector-a-boost-for-the-industry.html]. Accessed 8 November 2020.

4.1.2 Facilities capacity

4.1.2a

Hospital beds per 100,000 people

Input number

Current Year Score: 224.0

2017

WHO/World Bank; national sources

4.1.2b

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

Yes = 1 , No = 0

Current Year Score: 1

There is publicly available evidence that indicates that the Kingdom of Saudi Arabia (KSA) has the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit and/or patient isolation room/unit located within the country.

According to a news article published on March 3, 2020 on the Sauid Press Agency, in an attempt to prevent the transmission of COVID-19 infection, "The Ministry of Health has confirmed the readiness of more than 1,400 isolation rooms in hospitals in the Kingdom, which are used for advanced cases of people with severe symptoms"; the article adds, "the hospitals of the Ministry of Health currently have 1,449 negative pressure isolation rooms that conform to specifications and operate effectively distributed across all hospitals in the governorates and health regions, and work is currently underway to develop 713 air isolation rooms expected to be completed in early 2021" [1].

It is important to also mention that according to an academic study published in the Journal of Emerging Infectious Diseases in 2016, prior to the MERS-CoV outbreak in 2012, hospitals were not adequately equipped with isolation rooms and patients were initially isolated in standard patient rooms with inadequate infection control systems. However, since the MERS outbreak single-patient negative-pressure isolation rooms were introduced in a new hospital building, where patients began to be more adequately treated and isolated [2].

Solutions included the deployment of temporary patient isolation facilities provided by Los Angeles- based Mintie Technologies, Inc (MTI), consisting of mobile isolation systems designed to convert standard rooms to Airborne Infectious Isolation rooms using a collapsible mobile ante room and negative air machines [3]. This is in accordance with the 2013 guidelines published by the Command and Control Centre of the Ministry of Health (MoH) for the treatment of patients with MERS CoV within the country, which states that critically ill patients need to be placed in Airborne Infection Isolation rooms (Negative Pressure Rooms) [4]. The MoH guidelines include protocols for standard precautions, transmission-based

precautions and droplet isolation precautions (for airborne infections). Infection control procedures related to specific diseases are also provided (e.g. Hepatitis A, Rabies, SARS) [4]. As of 2016, MoH had completed the construction and furnishing of a total of 232 quarantine rooms in preparation for the Hajj [5].

According to Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, adequate isolation rooms are also available at the country's points of entry with pre-arrangements in place with facilities to assess and quarantine suspect travellers [6]. The MoH has also published guidelines in 2015 for home isolation, which includes guidelines for infected patients as well as their caretakers [7].

[1] Saudi Press Agency. 2020. "Health Ministry: More than 1,400 Rooms Ready for Respiratory Isolation and Preventing Infection Transmission". [https://www.spa.gov.sa/viewfullstory.php?lang=en&newsid=2042172]. Accessed 8 November 2020.
[2] Hastings , D., and Tokars, J. May 2016. "Outbreak of Middle East Respiratory Syndrome at Tertiary Care Hospital, Jeddah, Saudi Arabia, 2014". Emerging Infectious Diseases, 22
[5]. [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4861521/]. Accessed 8 November 2020.
[3] Mintie website. "Mintie Technologies Assists to Contain MERS Virus Threat in Saudi Arabia". [http://www.mintie.com/assets/pdf/mers/virus/release-2.pdf]. Accessed 8 November 2020.
[4] Saudi Arabia National Guard Health Affairs. 2013. "Infection Prevention and Control Manual—2nd Edition". [https://www.moh.gov.sa/CCC/Documents/GCC/Infection/control/manual/202013/revisedOPT.pdf]. Accessed 8th November 2020.
[5] Saudi Arabia Ministry of Health. 31 August 2016. "Media Report on Ministry of Health's Services during Hajj Season". [https://www.moh.gov.sa/en/Ministry/MediaCenter/Publications/Pages/Publications-2016-08-31-001.aspx]. Accessed 8th November 2020
[6] World Health Organization. March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 8th November 2020.
[7] Saudi Arabia Ministry of Health. June 2015. "Guidelines for Home Isolation Related to MERS Corona Virus Infections". [https://www.moh.gov.sa/CCC/Documents/Home%20Isolation.pdf]. Accessed 8 November 2020.

4.1.2c

Does the country meet one of the following criteria?
- Is there evidence that the country has demonstrated capacity to expand isolation capacity in response to an infectious disease outbreak in the past two years?
- Is there evidence that the country has developed, updated or tested a plan to expand isolation capacity in response to an infectious disease outbreak in the past two years?
Yes = 1, No = 0

Current Year Score: 1

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

According to a 2020 article on the Ministry of Health's (MOH) website, Saudi Arabia already has over 1,400 respiratory isolation rooms prepared to receive patients with severe symptoms. It is stated that isolation rooms are of great importance in maintaining the health of patients and healthy people and preventing the transmission of infection to them from patients with serious infectious diseases. These isolation rooms are equipped with an air-conditioning system designed to prevent the transmission of diseases from one patient to another or to workers at the hospitals. In such cases, the air pressure inside the

room is less than that outside. Moreover, work is currently underway to develop 713 air isolation rooms, which are expected to be completed in early 2021 to boost the MOH's capabilities in isolating patients. It is worth mentioning that no publicly available update was found concerning finalizng the preparation of the new rooms [1].

[1] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2020-03-03-007.aspx]. Accessed on 22 May 2021.

4.2 SUPPLY CHAIN FOR HEALTH SYSTEM AND HEALTHCARE WORKERS

4.2.1 Routine health care and laboratory system supply

4.2.1a

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

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

Current Year Score: 1

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

The Saudi Arabian Ministry of Health (MoH) has a Contracts and Procurement General Department that handles the procurement of all medical needs. However, the Contracts and Procurement Department has a web page, but public access to it is restricted [1, 2]. The MoH's Medical Supply and Equipment Division is tasked with identifying the demand and need for medical supplies, including reagents, solutions, and laboratory supplies for the country's regional laboratories. The Medical Supply and Equipment Division works in close coordination with the Contracts and Procurement General Department [3]. Individual entities submit their requests to MoH via an e-tendering and procurement system [4]. Moreover, the MoH website lists the regulations of governement tenders and procurement law which explains in detail the procurement protocol. However, there is no sufficient evidence on the websites of the Ministries of Health and Agriculture that these can be used this to acquire laboratory items and medical equipment [5]. While it is unclear whether the MoH handles the procurement for animal laboratories, no further information was provided on the website of the Ministry of Environment, Water, and Agriculture [6].

[1] Saudi Arabia Ministry of Health. "Contracts and Procurement Department". [https://www.moh.gov.sa/_layouts/15/moh/ssologin.aspx?ReturnUrl=/depten/Purchasing/_layouts/Authenticate.aspx/Source/depten/Purchasing/Pages/Objectives/Easpx&Source/depten/Purchasing/Pages/Objectives/Easpx]. Accessed 13 November 2020.
[2] Saudi Arabia Ministry of Health. "Contracts and Procurement Department". [https://www.moh.gov.sa/Directorates/Tabuk/About/Departments/Pages/Procurement.aspx.]. Accessed 13 November 2020.
[3] Saudi Arabia Ministry of Health. "Medical Supply and Equipment Division". [https://www.moh.gov.sa/depten/PCC/Description/Pages/Equipment.aspx]. Accessed 13 November 2020.
[4] Saudi Arabia Ministry of Health. 11 December 2013. "MoH Sets an e-Tendering and Procurement System to Work". [https://www.moh.gov.sa/en/Ministry/MediaCenter/News/Pages/News-2013-12-11-001.aspx]. Accessed 13 November 2020.

[5] Ministry of Health. "Government Tenders and Procurement Law". [https://www.moh.gov.sa/en/Ministry/Rules/Pages/default.aspx]. Accessed 13 November 2020.
[6] Saudi Arabia Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx]. Accessed 13 November 2020.

4.2.2 Stockpiling for emergencies

4.2.2a

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

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

Current Year Score: 2

There is evidence that Saudi Arabia has a stockpile of medical supplies (e.g., MCMs, medicines, vaccines, medical equipment, PPE) for national use during a public health emergency.

The Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, giving Saudi Arabia's system a score of 5, which according to the scoring criteria indicates that "National profiles on risks and resources developed and reviewed at least on annual basis and stockpiles (critical stock levels) for responding to priority biological, chemical and radiological events and other emergencies are accessible." However, there is no explicit reference that these include medical supplies [1].

However, when preparing for the annual Hajj pilgrimage, the Ministry of Health coordinates the stockpiling of medical countermeasures (MCMs) in preparation for a potential health emergency, including vaccines, virus labs, and blood banks. Moreover, Saudi has signed a strategic partnership agreement with the United Arab Emirates in June 2018, which includes a sub-agreement on developing a unified medical stock plan [2].

An online review of the Ministries of Health, Saudi Food, and Drug Authority provided no relevant information on the country stockpile of medical supplies for national use during a public health emergency [3,4]. A Medical Supplies General Department exists within the MoH, but public access to the department's webpage is restricted [5].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 16 November 2020.
[2] Khaleej Times. 7 June 2018. "UAE, Saudi Announce Strategic Partnership in 44 Projects". [https://www.khaleejtimes.com/region/saudi-arabia/uae-saudi-announce-strategic-partnership-in-44-projects]. Accessed 16 November 2020.
[3] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/en/Pages/Default.aspx] Accessed 16 November 2020.
[4] Saudi Food and Drug Authority. [https://old.sfda.gov.sa/en/pages/default.aspx]. Accessed 16 November 2020.
[5] Saudi Arabia Ministry of Health. Medical Supply General Department. [https://www.moh.gov.sa/_layouts/15/moh/ssologin.aspx?ReturnUrl=fdeptenSupplyf_layouts/f15/Authenticate.aspx/Source/depten/Supply&Source/depten/Supply]. Accessed 16 November 2020.

4.2.2b

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

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

Current Year Score: 0

There is insufficient publicly available evidence that Saudi Arabia has a stockpile of laboratory supplies (e.g., reagents, media) for national use during a public health emergency. Although Saudi Arabia has recently signed a strategic partnership agreement with the United Arab Emirates (UAE)in June 2018, which includes a sub-agreement on developing a unified medical stock plan and the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, giving Saudi Arabia's system a score of 5, which according to the scoring criteria indicates that "National profiles on risks and resources developed and reviewed at least an annual basis and stockpiles (critical stock levels) for responding to priority biological, chemical, and radiological events and other emergencies are accessible" but there is no explicit reference that this is a stockpile of laboratory supplies (e.g., reagents, media) [1, 2]. An online review of the Ministry of Health, Sauid Food, and Drug Authority provided no relevant information on the country stockpile of laboratory supplies for national use during a public health emergency [3,4].

[1] Khaleej Times website. 7 June 2018. "UAE, Saudi Announce Strategic Partnership in 44 Projects". [https://www.khaleejtimes.com/region/saudi-arabia/uae-saudi-announce-strategic-partnership-in-44-projects]. Accessed 16 November 2020.
[2] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 16 November 2020.
[3] Ministry of Health [https://www.moh.gov.sa/en/Pages/Default.aspx]. Accessed 16 November 2020.
[4] Sauid Food and Drug Authority. [https://old.sfda.gov.sa/en/pages/default.aspx]. Accessed 16 November 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 Saudi Arabia conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency.

The Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, does not provide any evidence on an annual review of the national stockpile [1]. The websites of the Ministries of Health and security do not provide any evidence on an annual review of the stockpile [2,3].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed on 22 May 2021.
[2] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed on 22 May 2021.
[3] Saudi Arabia Ministry of Defense. [https://www.my.gov.sa/wps/portal/snp/main]. Accessed on 22 May 2021.

4.2.3 Manufacturing and procurement for emergencies

4.2.3a

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

Current Year Score: 0

There is no publicly suffcient evidence of a plan/agreement to procure or to leverage domestic manufacturing capacity to produce medical supplies (e.g., medical countermeasures (MCMs), medicines, vaccines, equipment, personal protective equipment (PPE)) for national use during a public health emergency.

According to the brand website of the Invest Saudi, which is overseen by the Ministry of Investment (MISA), there is a call for manufacturing of PPE. In addition, a news article published on Alarabiya news website states, "In response, Saudi Arabia has upped its production of masks, producing 2 million each day from nine factories, according to al-Mufarrij, as quoted in Saudi Gazette. There are currently 25 million face masks available in the Kingdom, said al-Mufarrij. Saudi Arabia's current population is an estimated 33.7 million people" [1,2]. However, there is no evidence that the call for investment or surge increase in production have happened due to a pre-exisiting plan.

Furthermore, a report published on the Oxford Business Group and titled "Saudi Arabia increases domestic pharmaceuticals production" states that "Under the Kingdom's long-term development plan, Vision 2030, and its shorter-term goals, set out in the National Transformation Program (NTP), which runs through 2020, a major shift towards locally produced drugs and medicines is set to take place" and that the Ministry of Commerce and Industry is tasked to "develop six attractive and financially viable pharmaceuticals subsectors. The development of pharmaceuticals is listed as a strategic objective, aiming to boost the proportion of local manufacturing in the sector to 40% by 2020" [3]. However, there is insufficient evidence that these plans include specific considerations to leverage domestic production capabilities during public health emergencies.

The Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, has given Saudi Arabia's system a score of 5 which, according to the scoring criteria, indicates that KSA participates in a regional or international partnership or has a for`

The websites of the Ministry of Health and Ministry of Defense, to which access is denied, provide no evidence that there is a plan/mechanism to procure medical supplies for national use during a public health emergency [5,6].

[1] Invest Saudi Brand Website. "Manufacturing Of Personal Protective Equipment (PPE)". [https://investsaudi.sa/en/sectors-opportunities/industrial-manufacturing/manufacturing-of-personal-protective-equipment-ppe/]. Accessed 30th April 2021.
[2] Alarabiya News Website. "Coronavirus: Saudi Arabia Producing 2 Million Face Masks Daily, 25 Million Available". [https://english.alarabiya.net/en/coronavirus/2020/06/10/Coronavirus-Saudi-Arabia-producing-2-million-face-masks-daily-25-million-available]. Accessed 30 April 2021.
[3] Oxford Business Group. "Saudi Arabia Increases Domestic Pharmaceuticals Production". [https://oxfordbusinessgroup.com/analysis/looking-inwards-pharmaceuticals-industry-has-ramped-domestic-production-recent-years]. Accessed 30 April 2021.
[4] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12-16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-

2017.25.report-eng.pdf?sequence=1]. Accessed 30 April 2021.
[5] Ministry of Health. [https://www.moh.gov.sa/]. Accessed 30 April 2021.
[6] Ministry of Defence. [https://www.mod.gov.sa/en/Pages/default.aspx]. Accessed 30 April 2021.

4.2.3b

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

Current Year Score: 0

There is no publicly availabe evidence of a plan/mechanism to procure laboratory supplies (e.g., reagents, media) for national use during a public health emergency or to leverage domestic manufacturing capacity to produce laboratory supplies (e.g., reagents, media) for national use during a public health emergency.

According to a news article entitled "Saudi Arabia signs $265m deal with China to expand testing" published on the national news website in April 2020, it is stated that a strategic agreement was signed with a Chinese Company to enable the testing of 9 million people for COVID-19 in the Kingdom of Saudi Arabia (KSA). "China will provide Saudi Arabia with nine million Covid-19 test kits under a $264 million (Dh969m) deal signed on Sunday [1]. Although the source also adds that the agreement will set up six regional Laboratories to face the pandemic, there is no explicit mention to labroatory supplies (e.g., reagents, media): "The agreement will also lead to setting up of six regional laboratories, including a mobile lab, across the country, each with the capacity to conduct 10,000 tests per day. Also included in the contract is comprehensive community testing and the genetic mapping of a number of samples in the Kingdom as well as analysis of immunity mapping for one million samples. Saudi Arabia has also purchased testing kits from several other companies in the US, Switzerland and South Korea, amounting to 14.5 million tests, which covers about 40 per cent of the country's population." [1].

An online review of the websites of the Ministry of Health and the Minsitry of Defense (which was not accessible during research) did not provide any information on a plan/agreement to leverage domestic manufacturing capacity to produce laboratory supplies (e.g., reagents, media) for national use during a public health emergency.

[1] "Saudi Arabia Signs $265m Deal with China to Expand Testing". [https://www.thenationalnews.com/world/mena/saudi-arabia-signs-265m-deal-with-china-to-expand-testing-1.1011415]. Accessed 22nd November 2020.
[2] Ministry of Health. [https://www.moh.gov.sa/]. Accessed 22nd November 2020.
[3] Ministry of Defence. [https://www.mod.gov.sa/en/Pages/default.aspx]. Accessed 22 November 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 Saudi Arabia has a plan in place for dispensing medical countermeasures for national use during a public health emergency. The Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, mentions that a nationwide vaccine delivery system is in place and has been tested through nationwide vaccine campaigns (measles-mumps-rubella, influenza, subnational polio campaign) [1]. However, no details of a dispensation plan are provided. A review of the website of the Ministry of Health does not proivde any relevant evidence [2].

[1] World Health Organization. March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 14th November 2020
[2] Ministry of Health. [https://www.moh.gov.sa/en]. Accessed 7 December 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 insufficient public evidence to suggest that Saudi Arabia has a public plan in place to receive health personnel from other countries to respond to a public health emergency.

According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, Saudi Arabia has engaged in a number of regional partnerships (GCC, Arab League) covering medical countermeasures and has plans and procedures in place for both sending and receiving personnel during public health emergencies, however these agreements and plans were not publicly available online [1]. The JEE scores Saudi Arabia 5 out of 5 on this measure, which according to the scoring criteria indicates that the country participates in a regional or international partnership or has formal agreement with another country or international organization in place outlining procedures for sending and receiving health personnel [2]. Moreover, the JEE notes that Saudi Arabia's existing deployment systems have been tested on an annual basis in response to the MERS CoV emergency and during the Hajj seasons, however there is no publicly available evidence of this [1].

Saudi Arabia also recently made a commitment with the United Arab Emirates (UAE) to exchange experiences and medical staff during health emergencies; however there is no public evidence to suggest that the plan has come into effect yet [3].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 8 November 2020.
[2] World Health Organization (WHO). 2016. "Joint External Evaluation Tool ". 2016. [http://apps.who.int/iris/bitstream/10665/204368/1/9789241510172_eng.pdf]. Accessed 8 November 2020.
[3] Khaleej Times. 7 June 2018. "UAE, Saudi Announce Strategic Partnership in 44 Projects". [https://www.khaleejtimes.com/region/saudi-arabia/uae-saudi-announce-strategic-partnership-in-44-projects]. Accessed 8 November 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: 3

2020

World Policy Analysis Center

4.4.1b

Access to skilled birth attendants (% of population)

Input number

Current Year Score: 98

2013

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: 476.51

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 public evidence that the government of Saudi Arabia has issued legislation, a policy or a public statement committing to provide prioritized health care services to healthcare workers who become sick as a result of responding to a public health emergency.

The Ministry of Health (MoH) has reported cases where healthcare workers have become sick as a result of responding to a health emergency [1]. However, a review of health policies by the MoH did not provide evidence of the existence of such legislation [2]. In response to the COVID-19 and MERS-CoV outbreaks, the MoH published several preventative guidelines for healthcare workers who are in contact with patients with highly communicable diseases, the "COVID19 Coronavirus disease Guidelines" published in May 2020 and the "Infection Prevention and Control Precautions When Caring for Patients with Suspected, Probable or Confirmed Middle East Respiratory" guidelines published in May 2014 [3, 4].

[1] Saudi Arabia Ministry of Health. 31 May 2016. "Weekly Monitor: MERS-CoV". [https://www.moh.gov.sa/en/CCC/Documents/Volume-2-Issue-22-Tuesday-May-31-2016.pdf]. Accessed 8 November 2020.
[2] Saudi Arabia Ministry of Health. "Regulations". https://www.moh.gov.sa/en/Ministry/Rules/Pages/default.aspx. Accessed 8 November 2020.
[3] Saudi Arabia Ministry of Health. "COVID-19 Coronavirus Disease Guidelines". [https://www.moh.gov.sa/Ministry/MediaCenter/Publications/Documents/Coronavirus-Disease-2019-Guidelines-v1.2.pdf]. Accessed 8 November 2020.
[4] May 2014. "Infection Prevention and Control Precautions When Caring for Patients with Suspected, Probable, or Confirmed Middle East Respiratory". [https://www.moh.gov.sa/CCC/Documents/MoH/InfectioncontrolguidelinesonMERSCoV/Version/May/2013/203014.pdf]. Accessed 8 November 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 insufficient publicly available evidence to suggest that Saudi Arabia has a system in place for public health officials and healthcare workers to communication during a public health emergency.

The Ministry of Health's (MoH) Surveillance and Data Management Unit's organizational structure shows that there is a

Communication and Cooperation Unit within the MoH; however, no further information is provided in this regard [1]. According to the Joint External Evaluation (JEE) of Saudi Arabia, published in March 2017, internal and partner communication and coordination (including with healthcare workers) exists, but is scored as a 3 out of 5, which indicates functionality in a limited capacity. The JEE report states that there is a risk communications unit for Hajj-specific emergencies and a broader risk communications working group within the MoH that is activated during an emergency, with strong links to Emergency Operation Centres (EOCs) in Riyadh, Jeddah, and Makkah. The JEE notes the strength of the broader group's coordination capacity, but does mention that risk communications at the subnational and directorate levels are still weak and do not provide a two-way information loop for information sharing and decision-making [2, 3].

In addition, the MoH is also reported to be in the process of developing a multi-hazard risk communications plan that includes clear roles and responsibilities for all stakeholders, seeking to strengthen internal and partner communication during disease outbreaks [2].

[1] Saudi Arabia Ministry of Health. "Surveillance and Data Management Unit". [https://www.moh.gov.sa/en/Ministry/Structure/AssistantAgencies/PreventiveHealth/SDMU/Pages/Organizational_Structure.asp]. Accessed 12 November 2020.
[2] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1. Accessed 1 February 2019.
[3] World Health Organization (WHO). 2016. "Joint External Evaluation Tool ". 2016. [http://apps.who.int/iris/bitstream/10665/204368/1/9789241510172_eng.pdf]. Accessed 12 November 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 insufficient publicly available evidence to suggest that Saudi Arabia has a system in place for public health officials and healthcare workers to communication during a public health emergency.

The Ministry of Health's (MoH) Surveillance and Data Management Unit's organizational structure shows that there is a Communication and Cooperation Unit within the MoH; however, no further information is provided [1].

According to Saudi Arabia's Joint External Evaluation (JEE) assessment, published in March 2017, internal and partner communication and coordination (including with healthcare workers) exists, but is scored a 3 out of 5, which indicates functionality in a limited capacity [2, 3]. The JEE report also includes a recommendation for formalizing a national coordination mechanism that includes relevant ministries, civil society, and the private sector with standardized roles and responsibilities, thereby suggesting that this is not yet in place [2].

According to an academic study published in the Journal of Hospital and Medical Management in 2017, in 2015, Saudi Arabia established the Emergency Committee Health Central Directorate of Health Affairs. During emergency situations the committee coordinates with both government and private agencies to ensure adequate deployment of resources and response measures. For example, it ensures the timely provision and transfer of the necessary amount of blood and plasma for blood banks and that every healthcare facility has evacuation plans in place and protocols to coordinate their activities with other healthcare entities, suggesting communication mechanisms with private hospitals are in place; however, it is

unclear how formalized these systems are [4].

In addition, during a simulation exercise performed for the JEE in the Dammam region, the Eastern Province Civil Defence, and the subnational response decontamination unit demonstrated their ability to effectively coordinate with civilian hospitals (many of which were likely privately owned), to promptly resolve public health emergencies [4].

[1] Saudi Arabia Ministry of Health website. "Surveillance and Data Management Unit". [https://www.moh.gov.sa/en/Ministry/Structure/AssistantAgencies/PreventiveHealth/SDMU/Pages/Organizational_Structure.asp]. Accessed 30th April 2021.
[2] World Health Organization. March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". [http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 30 April 2021.
[3] World Health Organization (WHO). 2016. "Joint External Evaluation Tool". 2016. [http://apps.who.int/iris/bitstream/10665/204368/1/9789241510172_eng.pdf]. Accessed 30 April 202.1
[4] Alraga, S. August 2017. "An Investigation into Disaster Health Management in Saudi Arabia". Journal of Hospital and Medical Management 2 (2:18). [https://hospital-medical-management.imedpub.com/an-investigation-into-disaster-health-management-in-saudi-arabia.php?aid=20683]. Accessed 30 April 2021.

4.6 INFECTION CONTROL PRACTICES AND AVAILABILITY OF EQUIPMENT

4.6.1 Healthcare associated infection (HCAI) prevention and control programs

4.6.1a

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that the national public health system is monitoring and tracking the number of healthcare associated infections (HCAI) that take place in healthcare facilities.

According to Saudi Arabia's Joint External Evaluation (JEE), published in March 2017, as part of the HCAI prevention and control programs, there is a national plan for HCAI that is updated on an annual basis and operational in 270 hospitals [1]. In addition, according to the Ministry of Health (MoH), systematic infection control auditing is performed in all hospitals in the Kingdom every three months, and follows a scheduled annual timetable [1, 2]. According to an academic study published in the Journal of Epidemiology and Global Health in March of 2018, HCAI monitoring does take place in MoH hospitals [3].

[1] World Health Organization (WHO). March 2017. "Joint External Evaluation of IHR Core Capacities of the Kingdom of Saudi Arabia, Mission Report: 12–16 March 2017". http://apps.who.int/iris/bitstream/handle/10665/258695/WHO-WHE-CPI-2017.25.report-eng.pdf?sequence=1]. Accessed 10 November 2020.
[2] Saudi Arabia Ministry of Health website. 2 February 2016. "Weekly Monitor: MERS-CoV". [https://www.moh.gov.sa/en/CCC/Documents/Volume-2-Issue-5-Tuesday-February2-2016.pdf]. Accessed 10 November 2020.
[3] Eiman Gaid; Abdullah Assiri; Scott McNabb and Weam Banjar. 2018. "Device-associated Nosocomial Infection in General Hospitals, Kingdom of Saudi Arabia, 2013–2016". [https://www.sciencedirect.com/science/article/pii/S2210600617302265].

Accessed 10 November 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

In Saudi Arabia, there is a national requirement for ethical review before beginning a clinical trial. According to the National Institute of Health , in Saudi Arabia the National Committee of Biomedical Ethics, local ethics committees ("LECs") or institutional review boards ("IRBs") need to perform the review prior to any research conducting on "living creatures" (humans, animals, plants) [1].

The LECs and IRBs must all be registered with the Monitoring Office of the National Committee of Biomedical Ethics. It is the National Committees job to ensure that all the local committees comply with the Declaration of Helsinki, all statutory rules and relevant national protocols, as well as Shariah law according to the National Institute of Health and the Saudi Food and Drug Authority's 2008 guidelines on clinical trials [1, 2]. The approval of the ethics committee is also required before any trial can begin. The normal process takes four to six weeks, and there is an expedited review process [1]. A comprehensive guide on the process and regulations implemented by the committee can be found in a publication called "Implementing Regulations of the Law of Ethics Research on Living Creatures" published by the Bioethics Committee in 2016 [3]. A study of clinical trials in Saudi Arabia published in the journal of Contemporary Clinical Trials Communications in 2017 attributes slower clinical trial activity in the country to several challenges, including long ethical review processes [4].

[1] National Institute of Health. "Clinical Trials Country by Country: Ethics Committee Information—Saudi Arabia". [https://www.nihcollaboratory.org/sites/CbyC/Lists/ETHICS%20COMMITTEE%20INFORMATION/DispForm.aspx?ID=36&ContentTypeId=0x01000F9988E277B3584D96CBED4023CCC88A]. Accessed 14 November 2020.
[2] Saudi Food and Drug Authority. 2008. "Clinical Trials: Requirements, Guidelines—Version 1.2 (draft)". [https://www.sfda.gov.sa/en/drug/resources/Guides/ClinicalTrialsRequirmentsGuidelines_12.pdf]. Accessed 14 November 2020.
[3] Saudi Arabia National Committee of Bioethics (NCBE). 2014. "Implementing Regulations of the Law of Ethics of Research on Living Creatures—Second Edition". [https://www.iau.edu.sa/sites/default/files/resources/implementing_regulations_0.pdf]. Accessed 14 November 2020.
[4] Ali, Sheraz; Mesfer Alghamdi, Jasser Alzhrani, Edward De Vol. September 2017. "Magnitude and Characteristics of Clinical Trials in the Kingdom of Saudi Arabia: A Cross-Sectional Analysis". Contemporary Clinical Trials Communications, 7. [https://doi.org/10.1016/j.conctc.2017.05.008]. Accessed 14 November 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 publicly available evidence that Saudi Arabia has an expedited process for approving clinical trials for unregistered medical countermeasures to treat ongoing pandemics.

According to Saudi Arabia's National Committee of BioEthics 2014 guidelines on "Implementing Regulations of the Law of Ethics of Research on Living Creatures," there are expedited review processes available for approving research projects, including clinical trials [1]. However, according to Article 5.14, "the expedited review procedure may not be used for approving research if the objectives of such research include ...[the] addition of a new medication, [or the] addition of a new invasive or interventional procedure" [1].

Furthermore, neither the Saudi Food and Drug Authority's (SFDA) "Regulations and Requirements for Conducting Clinical Trials on Drugs" published in 2015, the "Regulatory Framework for Drugs Approvals", published in 2014, or the "Clinical Trials Requirements Guidelines," published in 2013, include any mention of expedited processes in place to approve clinical trials for unregistered medical countermeasures [2, 3, 4].

[1] Saudi Arabia National Committee of Bioethics (NCBE). 2016. "Implementing Regulations of the Law of Ethics of Research on Living Creatures—Second Edition".
[https://www.iau.edu.sa/sites/default/files/resources/implementing_regulations_0.pdf]. Original.
[https://www.nihcollaboratory.org/sites/CbyC/Document%20Library/Implementing-Regulations-of-the-Law-of-Ethics-of-Research-on-Living-Creatures-Second-Edition-Second-Revised-version%20[1].pdf]. Accessed 8 November 2020.
[2] Saudi Food and Drug Authority. 2015. "Regulations and Requirements for Conducting Clinical Trials on Drugs - Version 1.1". [https://www.nihcollaboratory.org/sites/CbyC/Document/Library/Drug-Reg-145.pdf]. Accessed 8 November 2020.
[3] Saudi Food and Drug Authority. 2014. "Regulatory Framework for Drugs Approvals - Version 5.0".
[https://www.sfda.gov.sa/en/drug/drug_reg/Regulations/Regulatory_Framework_for_Drug_Approvals_v_5/200.pdf]. Accessed 8 November 2020.
[4] Saudi Food and Drug Authority. 2013. "Clinical Trials Requirements Guidelines—Version 1.3".
[https://www.nihcollaboratory.org/sites/CbyC/Document/Library/Clinical/Trials/Requirments/Guidelines/202=.pdf]. Accessed 8 November 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 public evidence to suggest that Saudi Arabia has a government agency responsible for approving new medical countermeasures for humans. The Saudi Food and Drug Agency (SFDA) is responsible for approving new medications and medical devices for humans.

The SFDA Drug Sector's mission is "protecting public health by ensuring safety, quality, efficacy and accessibility of human, veterinary drugs and biological products, and safety of cosmetics, through [the] administration of a national regulatory system which is consistent with international best practice" [1]. The Drug Sector's responsibilities include licensing the manufacture, import, export and distribution of medications; assessing the safety, efficacy and quality of medications, and

issuing marketing authorization; monitoring the quality and safety of marketed medications; monitoring adverse reactions to medications and providing independent information on medications to professionals and the general public amongst other roles [2]. The Drug Sector also published a "regulatory framework for drug approvals that provides guidelines for stakeholders on how to obtain licenses and approvals for medical products in the country [3].

While the SFDA is the government agency that would likely be responsible for approving new medical countermeasures in humans, there is no specific mention of countermeasures.

[1] Saudi Food and Drug Authority. "Drug Sector—Vision and Mission". [https://www.sfda.gov.sa/en/medical-mission]. Accessed 14 November 2020.
[2] Saudi Food and Drug Authority. "Drug Sector—About Sector". [https://www.sfda.gov.sa/en/drug/about/Pages/overview.aspx]. Accessed 14 November 2020.
[3] Saudi Food and Drug Authority. 2014. "Regulatory Framework for Drugs Approvals—Version 5.0". [https://sfda.gov.sa/sites/default/files/2020-09/RegulatoryFrameworkV6-1.pdf]. Accessed 14 November 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 publicly available evidence that Saudi Arabia has an expedited process for approving medical countermeasures for human use during public health emergencies .

According to the guidelines published in 2014 by Saudi Arabia's National Committee of BioEthics on "Implementing Regulations of the Law of Ethics of Research on Living Creatures," there are expedited review processes for approving research projects [1]. However, according to Article 5.14, "the expedited review procedure may not be used for approving research if the objectives of such research include ...[the] addition of a new medication, [or the] addition of a new invasive or interventional procedure" [1].

Furthermore, neither the Saudi Food and Drug Authority's (SFDA) "Regulations and Requirements for Conducting Clinical Trials on Drugs" published in 2015, the "Regulatory Framework for Drugs Approvals", published in 2014, or the "Clinical Trials Requirements Guidelines" published in 2013 include any mention of expedited processes in place for approving medical countermeasures during public health emergencies [2, 3, 4].

[1] Saudi Arabia National Committee of Bioethics (NCBE). 2016. "Implementing Regulations of the Law of Ethics of Research on Living Creatures—Second Edition". [https://www.nihcollaboratory.org/sites/CbyC/Document%20Library/Implementing-Regulations-of-the-Law-of-Ethics-of-Research-on-Living-Creatures-Second-Edition-Second-Revised-version20[1].pdf]. Accessed 2 February 2019.
[2] Saudi Food and Drug Authority. 2015. "Regulations and Requirements for Conducting Clinical Trials on Drugs—Version 1.1". [https://www.nihcollaboratory.org/sites/CbyC/Document/Library/Drug-Reg-145.pdf]. Accessed 2 February 2019.
[3] Saudi Food and Drug Authority. 2014. "Regulatory Framework for Drugs Approvals - Version 5.0". [https://www.sfda.gov.sa/en/drug/drug_reg/Regulations/Regulatory_Framework_for_Drug_Approvals_v_5/200.pdf]. Accessed 2 February 2019.
[4] Saudi Food and Drug Authority. 2013. "Clinical Trials Requirements Guidelines—Version 1.3". [https://www.nihcollaboratory.org/sites/CbyC/Document/Library/Clinical/Trials/Requirments/Guidelines/202=.pdf]. Accessed

2 February 2019.

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 publicly available evidence that Saudi Arabia has a publicly available national disaster risk reduction strategy for pandemics.

The Ministry of Health (MoH) does have a National e-Health strategy in place, but details of the strategy are not publicly available [1]. Saudi Arabia also has a government body tasked with managing health emergencies. According to an academic study published in the Journal of Hospital and Medical Management in 2017, the Health Emergency General Department under the MoH was established in 2015 and has reportedly developed a comprehensive Disaster Response and Relief Framework [2].

Saudi Arabia has committed to the World Health Organization's (WHO) Health Emergency Program, which covers Infectious Hazard Management [3]. As a member of the Arab League, Saudi has committed to the "Arab Strategy for Disaster Risk Reduction 2020," which highlights pandemics as secondary risks in the region [4]. In addition to these commitments, Saudi Arabia established the Emergency, Disasters, and Ambulatory Transportation General Department; however, access to the

department's webpage is restricted [5].

[1] Saudi Arabia Ministry of Health. "National e-Health Strategy". [https://www.moh.gov.sa/Ministry/nehs/Pages/default.aspx]. Accessed 11 November 2020.
[2] Alraga, Saeed. August 2017. "An Investigation into Disaster Health Management in Saudi Arabia". Journal of Hospital and Medical Management 2(2:18). [http://hospital-medical-management.imedpub.com/an-investigation-into-disaster-health-management-in-saudi-arabia.php?aid=20683]. Accessed 11 November 2020.
[3] World Health Organization (WHO), Country Office for Saudi Arabia. "WHO Health Emergency Programme". [http://open.who.int/2016-17/country-category/SAU/12]. Accessed 11 November 2020.
[4] Council of Arab Ministers Responsible for the Environment. 2010. "The Arab Strategy for Disaster Risk Reduction 2020". [https://www.unisdr.org/files/18903_17934asdrrfinalenglishjanuary20111.pdf]. Accessed 11 November 2020.
[5] Saudi Arabia Ministry of Health. "Emergency, Disasters, and Ambulatory Transportation General Department". [https://www.moh.gov.sa/_layouts/15/moh/]. Accessed 11 November 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: 2

There is public available evidence that Saudi Arabiahas cross-border agreements, protocols, or memorandums of understanding (MOUs) with neighboring countries, or as part of a regional group, with regard to public health emergencies as well as there is evidence of implemention. The Organization of Islamic Cooperation (OIC), an international organization comprised of 57 states including Saudi Arabia, adopted the "OIC Strategic Health Program of Action (SHPA) 2014–2023" with the aim of strengthening and enhancing collaboration in various health areas, including the prevention and control of diseases and pandemics and emergency health response and interventions [1, 2]. As a member of the Arab League, Saudi Arabia committed in 2010 to "The Arab Strategy for Disaster Risk Reduction 2020," which mentions pandemics as a secondary risk [3]. Furthermore, Saudi Arabia and the UAE plan to undertake a joint strategic project which includes the establishment of a joint reference laboratory and a commitment to exchange experiences even medical staff during health emergencies; however, this plan has not yet been enforced [4]. According to the Gulf Co-operation Council (GCC) website, Saudi Arabia has public health cross-border agreements with the GCC countries. Publicly available evidence also indicates the implmentation of cross-border agrrements [5]. Moreover, in a newspaper article published on Alkhaleej online websites, it is indicated that GCC health undersecretaries have held serveral meetings to discuss the COVID-19 pandemic [6].

[1] Organization of Islamic Cooperation. "History". [https://www.oic-oci.org/page/?p_id=52&p_ref=26&lan=en]. Accessed 21st November 2020.
[2] Organization of Islamic Cooperation. 2013. "OIC Strategic Health Programme of Action 2014–2023 (OIC-SHPA)". [http://www.sesric.org/files/article/480.pdf]. Accessed 21 November 2020.
[3] Council of Arab Ministers Responsible for the Environment. 2010. "The Arab Strategy for Disaster Risk Reduction 2020". [https://www.unisdr.org/files/18903_17934asdrrfinalenglishjanuary20111.pdf]. Accessed 21 November 2020.
[4] Khaleej Times website. 7 June 2018. "UAE, Saudi Announce Strategic Partnership in 44 Projects".

[https://www.khaleejtimes.com/region/saudi-arabia/uae-saudi-announce-strategic-partnership-in-44-projects]. Accessed 21st November 2020.
[5] GCC Council. "Human and Environment Agreements". [http://www.gcc-sg.org/ar-sa/CooperationAndAchievements/Achievements/CooperationinthefieldofHumanandEnvironmentAffairs/Pages/CooperationintheFiledofHealth.aspx]. Accessed 21 November 2020.
[6] Alkhaleej Online. "GCC health undersecretaries demand the enforcement of IPC". [https://alkhaleejonline.net]. Accessed 21 November 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 publicly available evidence that Saudi Arabia has cross-border agreements, protocols, or memorandums of understanding (MOUs) with neighboring countries with regard to animal health emergencies.

Neither the Organization for Islamic Cooperation's "OIC Strategic Health Programme of Action (SHPA) 2014-2023," or the "Arab Strategy for Disaster Risk Reduction 2020," or the Gulf Cooperation Council's (GCC) agreements cover animal health specifically [1, 2, 3]. A review of the websites of the Ministry of Health and the Ministry of Environment, Water, and Agriculture's Directorate of Animal Resources webpage also provides no evidence of the existence of such an agreement [4, 5]. The Ministry of Health has an Emergency, Disasters and Ambulatory Transportation General Department; however, access to the department's webpage is restricted [6].

[1] Organization of Islamic Cooperation. 2013. "OIC Strategic Health Programme of Action 2014-2023 (OIC-SHPA)". [http://www.sesric.org/files/article/480.pdf]. Accessed 21 November 2020.
[2] Council of Arab Ministers Responsible for the Environment. 2010. "The Arab Strategy for Disaster Risk Reduction 2020". [https://www.unisdr.org/files/18903_17934asdrrfinalenglishjanuary20111.pdf]. Accessed 21 November 2020.
[3] Gulf Cooperation Council Secretary General. "Agreements". [http://www.gcc-sg.org/ar-sa/CognitiveSources/Pages/Agreements.aspx]. Accessed 21 November 2020.
[4] Saudi Arabia Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 21 November 2020.
[5] Saudi Arabia Ministry of Environment, Water, and Agriculture. "Directorate of Animal Resources". [https://www.mewa.gov.sa/en/Ministry/Agencies/AgencyLivestock/Pages/default.aspx]. Accessed 21 November 2020.
[6] Saudi Arabia Ministry of Health Website. "Emergency, Disasters, and Ambulatory Transportation General Department". [https://www.moh.gov.sa/_layouts/15/moh/ssologin.aspx?ReturnUrl=%2fdepten%2fEmergency%2f_layouts%2f15%2fAuthenticate.aspx%3fSource%3d%252Fdepten%252FEmergency&Source=%2Fdepten%2FEmergency]. Accessed 21 November 2020.

5.3 INTERNATIONAL COMMITMENTS

5.3.1 Participation in international agreements

5.3.1a

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

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

Current Year Score: 2

2021

Biological Weapons Convention

5.3.1b

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

Yes = 1 , No = 0

Current Year Score: 1

2021

Biological Weapons Convention

5.3.1c

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

Yes = 1 , No = 0

Current Year Score: 1

2021

Biological Weapons Convention

5.3.1d

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

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

Current Year Score: 3

2021

Biological Weapons Convention

5.3.2 Voluntary memberships

5.3.2a

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

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

- Membership in the Australia Group (AG)
- Membership in the Proliferation Security Initiative (PSI)

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

Current Year Score: 1

2021

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

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

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

5.4.1a

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

Yes = 1 , No = 0

Current Year Score: 1

2021

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

5.4.1b

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

Yes = 1 , No = 0

Current Year Score: 0

2021

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

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

5.4.2a

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

Yes = 1 , No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.4.2b

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

Yes = 1 , No = 0

Current Year Score: 0

2021

OIE PVS assessments

5.5 FINANCING

5.5.1 National financing for epidemic preparedness

5.5.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence the Saudi Arabia has allocated national funds to improve capacity to address epidemic threats within the past three years. Objective 11 in Vision 2030 National Transformation alludes to implementation of a national plan for emergency response to public threats in line with international standards, but there are no specifics on funding [1], there is no publicly available evidence that Saudi Arabia has allocated national funds to improve capacity to address epidemic threats within the past three years. The websites of the Ministry of Health and Ministry of Environment, Water, and Agriculture provide no further information in this regard [2,3].

[1] Al Tamimi & Co. January 2017. "Vision 2030 and the Opportunities it Represents in Healthcare in Saudi Arabia". [https://www.tamimi.com/law-update-articles/vision-2030-and-the-opportunities-it-represents-in-healthcare-in-saudi-arabia/]. Accessed 10 November 2020.
[2] Minstry of Health. [https://www.moh.gov.sa/en/Pages/Default.aspx]. Accessed 10 November 2020.
[3] Ministry of Environment, Water, and Agriculture. [https://www.mewa.gov.sa/en/Pages/default.aspx] Accessed 10 November 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: 0

There is no publicly available evidence that there is a publicly identified special emergency public financing mechanism and funds that Saudi Arabia 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). The website of the International Development Association (IDA) states that Saudi Arabia is not among the countries that are eligible for funding [1]. The Pandemic Emergency Financing Facility operational brief that was published in November 2017 states the conditions for receiving emergency funding; Saudi Arabia is not eligible to receive emergency funding as per the conditions [2]. The United Nations (UN) Central Emergency Response Fund 10 Years report published in 2016 states that Saudi Arabia has donated to the fund, but it does not list it as one of the countries that are eligible for emergency funding [3]. The website of the Ministry of Health does not provide information that shows that there is a publicly identified special emergency public financing

mechanism and funds that Saudi Arabia can access in the face of a public health emergency [4].

[1] International Development Association (IDA). "Borrowing Countries". [http://ida.worldbank.org/about/borrowing-countries]. Accessed 8 December 2020.
[2] Pandemic Emergency Financing Facility (PEF). November 2017. "Operational Brief for Eligible Countries". [http://pubdocs.worldbank.org/en/574211510673362977/PEF-Operational-Brief-Nov-2017.pdf]. Accessed 8 December 2020.
[3] United Nations Central Emergency Response Fund. "10 Years Report". [https://reliefweb.int/sites/reliefweb.int/files/resources/CERF10layout_AR_20160518.compressed.pdf]. Accessed 8 December 2020.
[4] Ministry of Health. [https://www.moh.gov.sa/en/Pages/default.aspx]. Accessed 8 December 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

Although there is evidence of donations made to alleviate ongoing health emergencies, there is insufficient evidence of public statements made by senior leaders in favor of building capacity either domestically or abroad to combat epidemic threats. Although there is insufficient evidence of commitments from senior leaders to improve capacity building outside of Saudi Arabia, there is evidence of support for capacity building via policy documents and evidence of humanitarian funding. For example, the World Health Organization's (WHO) Country Cooperation Strategic Agenda (2017–2021) supports Eastern Mediterranean crisis countries (e.g., Iraq, Syria, and Yemen) in addressing health issues including disease outbreaks and humanitarian crisis [1]. While the commitment does not specify what these disease outbreaks are, in the past, it has provided in-kind assistance to pandemic diseases. For example, according to the United Nations Office for the Coordination of Humanitarian Affairs in 2016, Saudi Arabia donated medical supplies to Iraq to combat the spread of the cholera epidemic and meningitis and polio vaccines to the Palestinian people through the Palestinian Ministry of Health [2]. In addition, according to Reuters, in June 2017, the Saudi Arabian crown prince donated $66 million to combat the cholera outbreak in Yemen [3]. As a member of the Organization of Islamic Cooperation (OIC), Saudi Arabia has donated to the groups funds for fighting HIV/AIDS, Malaria and Tuberculosis in member states [4]. Saudi Arabia has also offered a donation of 4000 ampoules of yellow fever vaccine to the WHO and UNICEF through the OIC [4]. Finally, no evidence of either criteria is available via the websites of the Ministry of Health or Ministry of Foreign Affairs [5, 6].

[1] World Health Organization (WHO). "Country Cooperation Strategy: At a Glance, Saudi Arabia", 2016. [http://apps.who.int/iris/bitstream/10665/136842/1/ccsbrief_sau_en.pdf]. Accessed 8 November 2020.
[2] United Nations Office for the Coordination of Humanitarian Affairs, Financial Tracking Service: Saudi Arabia. 2016. [https://fts.unocha.org/countries/196/flows/2016?order=directional_property_2&sort=asc&page=1#search-results]. Accessed 8 November 2020.
[3] Reuters. 23 June 2017. "Saudi Crown Prince Donates $66 Million To Fight Yemen Cholera Epidemic". [https://www.reuters.com/article/us-yemen-cholera-saudi-idUSKBN19E221]. Accessed 8 November 2020.

[4] Organization of Islamic Cooperation. 2013. "OIC Health Report 2013". [http://www.sesric.org/imgs/news/image/943-oic-health-report-en.pdf]. Accessed 8 November 2020.
[5] Ministry of Health. [https://www.moh.gov.sa/en/Pages/default.aspx] Accessed 7 December 2020.
[6] Ministry of Foriegn Affairs. [https://www.mofa.gov.sa/sites/mofaen/Minister/Pages/Default.aspx]. Accessed 7 December 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 publically available evidence that Saudi Arabia has requested and received financing or technical support from donors to improve the country's domestic capacity to address epidemic threats. However, there is insufficient publicly available evidence that it has provided other countries with financing or technical support specifically to increase capacity to address epidemic threats.

A news article from April 2020 indicates that Saudi Arabia has been supporting the fight against COVID19 in Yemen and Palestine: "six new contracts were today signed with specialized companies to provide medical support to Yemen and Palestine to combat the COVID-19 pandemic. The contracts will allow for the urgent provision of medical supplies and preventative equipment to combat the spread of the virus in at-risk communities in both countries." [1]. However, this funding, pertains to emergency response as opposed to improving capacity to address epidemic threats.

Furthermore, publicly available evidence also shows that Saudi Arabia has invested donor finances to improve its own domestic capacity to address epidemic threats over the past three years. According to the Georgetown Global Health Security Tracking dashboard, total funds received from 2014 to 2020 is 8.13M USD (disbursed) and an additional 7.79M USD have been committed. Top funding categories include immunization, health workforce development, and real-time surveillance [2].

A review of the websites of the Ministry of Health, Ministry of Foreign Affairs, and Saudi Arabia's profile on the World Health Organization (WHO) website has not provided any further evidence in this regard [3,4,5].

[1] PR News. "Saudi Arabia to Support Fight Against COVID-19". [https://www.prnewswire.com/news-releases/saudi-arabia-to-support-fight-against-covid-19-in-yemen-and-palestine-301037844.html]. Accessed 7 December 2020.
[2] Georgetown Global Health Security Funding. "Tracking Dashboard". [https://tracking.ghscosting.org/]. Accessed 15 November 2020.
[3] Ministry of Health. [https://www.moh.gov.sa/Pages/Default.aspx]. Accessed 15 November 2020.
[4] Ministry of Foreign Affairs. [https://www.mofa.gov.sa/sites/mofaen/Pages/default.aspx]. Accessed 13 May 2019.
[5] World Health Organization (WHO). "Saudi Arabia". [https://www.who.int/countries/sau/en/]. Accessed 15 November 2020.

5.5.4c

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

Yes = 1 , No = 0

Current Year Score: 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 insufficient evidence of 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.

According to the Joint External Evaluation (JEE) assessment of Saudi Arabia, published in March 2017, Saudi Arabia has been sharing epidemiological data and clinical specimen for testing outside of the country, and isolated viruses for sequencing [1]. There is evidence of samples from contacts of infected patients in Saudi Arabia being tested serologically in the USA. For example, according to statements released by the MoH in 2014, samples suspected to contain strains of the Ebola virus were submitted to the US's Centre for Disease Control and Prevention (CDC) for testing [2, 3]. However, there is no evidence of a plan.

Research published on the MERS-CoV outbreak, including a publication by the European Centre for Disease Prevention and Control and a study published in the Journal of Emerging Infectious Disease in 2016, further indicate that genetic data and isolated specimens have been shared beyond Saudi Arabia [4, 5]. However, there is no evidence of a plan in this regard.

Saudi Arabia is also a member of the Organization of Islamic Cooperation (OIC), which has information sharing agreements in place. During the OIC Islamic Conference of Health Ministers (ICHM) in 2011, there was an agreement to establish a web-based OIC ICHM information-sharing mechanism within the OIC Secretariat, particularly for combating and preventing the spread of non-communicable diseases; however, it is unclear whether genetic data, epidemiological data, or specimens are shared [6, 7].

[1] World Health Organization (WHO). June 2013. "Middle East Respiratory Syndrome Coronavirus Joint Kingdom Of Saudi Arabia/WHO Mission". [http://www.who.int/csr/disease/coronavirus_infections/MERSCov_WHO_KSA_Mission_Jun13u.pdf]. Accessed 9 November 2020.
[2] Saudi Arabia Ministry of Health. 8 September 2014. "News Update: Lab Tests Negative for Ebola Virus".

[https://www.moh.gov.sa/en/CCC/News/Pages/News-2014-08-09-001.aspx]. Accessed 9 November 2020.
[3] Saudi Arabia Ministry of Health website. 8 May 2014. "News: Saudi Arabia Testing Blood Samples of Suspected Ebola Case". [https://www.moh.gov.sa/en/CCC/News/Pages/News-2014-08-05-001.aspx]. Accessed 9 November 2020.
[4] European Centre for Disease Prevention, and Control. "Factsheet About Middle East Respiratory Syndrome Coronavirus (MERS-CoV)". [https://ecdc.europa.eu/en/middle-east-respiratory-syndrome-coronavirus/factsheet]. Accessed 9 November 2020.
[5] Excler, J., Delvecchio, C., Wiley, R., Williams, M., Yoon, I., Modjarrad. K. 15 August 2016. "Toward Developing a Preventive MERS-CoV Vaccine—Report From a Workshop Organized by the Saudi Arabia Ministry of Health and the International Vaccine Institute, Riyadh, Saudi Arabia, November 14-15, 2015". Emerging Infectious Disease 22. [http://dx.doi.org/10.3201/eid2208.160229]. Accessed 9 November 2020.
[6] Organization of Islamic Cooperation. 2011. "Proposal to Establish an Institutional Mechanism to Follow Up and Monitor the Implementation of the Declarations and Resolutions Adopted by the Islamic Conferences of Health Ministers". [http://ww1.oic-oci.org/external_web/health_ministers/3rd/en/docs/ConceptonestablishmentofealthOrgandHealthSecretariatFinalversion.pdf]. Accessed 9 November 2020.
[7] Organization of Islamic Cooperation. September–October 2011. "Report of the Secretary General", 2011. [http://ww1.oic-oci.org/external_web/health_ministers/3rd/en/docs/ICHM%20report%20July%202011.pdf]. Accessed 9 November 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 Saudi Arabia has not shared samples in accordance with the Pandemic Influenza Preparedness (PIP) Framework in the past two years.

According to the World Health Organization (WHO), in March 2018, influenza A (H3N2), and influenza B virus were both detected in Saudi Arabia [1]. However, there is evidence in the past of Saudi Arabian officials in the past wanting to hold back on sharing samples. In 2013, during the MERS-CoV outbreak, sample ownership and sharing became quickly controversial, with Saudi Arabian officials being circumspect about global cooperation [2]. A review of online sources did not yield any further evidence in this regard.

[1] World Health Organization Regional Office for the Eastern Mediterranean. March 2018. "Epidemic and Pandemic-prone Diseases—Influenza Monthly Update, March 2018". [http://www.emro.who.int/pandemic-epidemic-diseases/influenza/influenza-monthly-update-march-2018.html]. Accessed 15th November 2020.
[2] Gostin, Lawrence, Alexandra Phelan, Michael Stoto, John Kraemer, Srinath Reddy, K. January 2016. "Virus Sharing, Genetic Sequencing, and Global Health Security". [https://science.sciencemag.org/content/345/6202/1295.full]. Accessed 15 November 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 publicly available evidence that Saudi Arabia has not shared pandemic pathogen samples during an outbreak over the past two years. The World Health Organization's (WHO) Saudi Arabia country profile page does not provide information that reveals that Saudi Arabia has not shared pandemic pathogen samples during an outbreak in the past two years [1]. Saudi Arabia shares pathogen samples with the WHO and the US Centre for Disease Control and Prevention (CDC). For example, according to statements released by the Ministry of Health in 2014, samples suspected to contain strains of the Ebola virus were submitted to the US CDC for testing, given that national-level diagnostic capacities were not available [2,3]. Furthermore, there is no evidence via media reports that Saudi Arabia has withheld samples, including those of COVID-19, in the past two years.

[1] World Health Organisation (WHO). "Saudi Arabia Country Profile". [https://www.who.int/countries/sau/]. Accessed 10 November 2020.
[2] Saudi Arabia Ministry of Health. 8 September 2014. "News Update: Lab Tests Negative for Ebola Virus". [https://www.moh.gov.sa/en/CCC/News/Pages/News-2014-08-09-001.aspx]. Accessed 10 November 2020.
[3] Saudi Arabia Ministry of Health. 8 May 2014. "News: Saudi Arabia Testing Blood Samples of Suspected Ebola Case". [https://www.moh.gov.sa/en/CCC/News/Pages/News-2014-08-05-001.aspx]. Accessed 10 November 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: 3

2020

Economist Intelligence

6.1.1b

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

Input number

Current Year Score: 1

2020

Economist Intelligence

6.1.1c

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

Input number

Current Year Score: 2

2020

Economist Intelligence

6.1.1d

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

Input number

Current Year Score: 1

2020

Economist Intelligence

6.1.1e

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

Input number

Current Year Score: 53

2020

Transparency International

6.1.1f

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

Input number

Current Year Score: 2

2020

Economist Intelligence

6.1.1g

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

Input number

Current Year Score: 0

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: 2

2021

Economist Intelligence

6.1.4 Illicit activities by non-state actors

6.1.4a

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

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

Current Year Score: 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: 3

2021

Economist Intelligence

6.1.5 Armed conflict

6.1.5a

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

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

Current Year Score: 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: 1

2021

Economist Intelligence

6.2 SOCIO-ECONOMIC RESILIENCE

6.2.1 Literacy

6.2.1a

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

Input number

Current Year Score: 95.33

2017

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

6.2.2 Gender equality

6.2.2a

United Nations Development Programme (UNDP) Gender Inequality Index score

Input number

Current Year Score: 0.78

2018

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

6.2.3 Social inclusion

6.2.3a

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

Input number

Current Year Score: 0.03

2008-2018

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: 0

There is no publicly available evidence that states an exact or approximate share of employment in the informal sector. The Country Profile on the International Labor Organization (ILO), the World Bank, and ILOSTAT's informal database provide no available statistics on the informal employment in Saudi Arabia" [1, 2, 3]. In a paper on informal economy and published in October 2017 on Takamol Holding, it is mentioned that "in 2016, the size of the informal economy was 21.4% of the gross domestic product. The figure is projected to grow further in the upcoming years and is expected to reach 22.9% of GDP by 2021" but nothing is mentioned on the share of employment in the informal economy [4].

[1] The International Labor Organization (ILO). The Country Profile [https://www.ilo.org/ilostatcp/CPDesktop/?list=true&lang=en&country=SAU]. Accessed 12 November 2020.
[2] World Bank. World Development Indicators. [https://data.worldbank.org/country/saudi-arabia]. Accessed 12 November 2020.
[3] The International Labor Organization (ILO). Informality Page. [https://ilostat.ilo.org/topics/informality/]. Accessed 12 November 2020.
[4] Takamol Holding. "Defining Infomral Economy of Saudi Arabia" [https://takamolholding.com/wp-content/uploads/2018/04/Informal-Economy-Small.pdf]. Accessed 7 December 2020.

6.2.3c

Coverage of social insurance programs (% of population)

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

Current Year Score: 2

2016, or latest available

World Bank; Economist Impact calculations

6.2.4 Public confidence in government

6.2.4a

Level of confidence in public institutions

Input number

Current Year Score: 1

2021

Economist Intelligence Democracy Index

6.2.5 Local media and reporting

6.2.5a

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

Input number

Current Year Score: 0

2021

Economist Intelligence Democracy Index

6.2.6 Inequality

6.2.6a

Gini coefficient

Scored 0-1, where 0=best

Current Year Score: 0.46

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: 3

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: 3

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: 3

2021

Economist Intelligence

6.4 ENVIRONMENTAL RISKS

6.4.1 Urbanization

6.4.1a

Urban population (% of total population)

Input number

Current Year Score: 84.06

2019

World Bank

6.4.2 Land use

6.4.2a

Percentage point change in forest area between 2006–2016

Input number

Current Year Score: 0

2008-2018

World Bank; Economist Impact

6.4.3 Natural disaster risk

6.4.3a

What is the risk that the economy will suffer a major disruption owing to a natural disaster?

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

Current Year Score: 2

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: 75.0

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: 558.1

2019

WHO

6.5.1c

Population ages 65 and above (% of total population)

Input number

Current Year Score: 3.41

2019

World Bank

6.5.1d

Prevalence of current tobacco use (% of adults)

Input number

Current Year Score: 16.6

2018

World Bank

6.5.1e

Prevalence of obesity among adults

Input number

Current Year Score: 35.4

2016

WHO

6.5.2 Access to potable water and sanitation

6.5.2a

Percentage of homes with access to at least basic water infrastructure

Input number

Current Year Score: 99

2017

UNICEF; Economist Impact

6.5.2b

Percentage of homes with access to at least basic sanitation facilities

Input number

Current Year Score: 99

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: 2197.76

2018

WHO Global Health Expenditure database

6.5.4 Trust in medical and health advice

6.5.4a

Trust medical and health advice from the government

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

Current Year Score: 1

2018

Wellcome Trust Global Monitor 2018

6.5.4b

Trust medical and health advice from medical workers

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

Current Year Score: 2

2018

Wellcome Trust Global Monitor 2018