Denmark

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

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

1.1 ANTIMICROBIAL RESISTANCE (AMR)

1.1.1 AMR surveillance, detection, and reporting

1.1.1a

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

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

Current Year Score: 2

There is publicly available evidence that Denmark has a national AMR plan for surveillance, detection and reporting of priority AMR pathogens. The Ministry of Health together with the Ministry of Environment and Food of Denmark published a strategy in 2017 titled "One Health Strategy Against Antibiotic Resistance", which outlines the government's framework to combat antibiotic resistance among both humans and animals. [1] As outlined in the strategy, "surveillance of antibiotic resistance and consumption has been a high priority in Denmark for many years, and has since 1995 been systematised through the establishment of the DANMAP programme (Danish Integrated Antimicrobial Resistance Monitoring and Research Programme)". [1] Similarly, the strategy also stipulates that dissemination of knowledge of AMR is essential for its effectiveness and accordingly Denmark established the National Antibiotic Council in 2010 for the purpose of reducing antibiotic resistance and consumption in humans and animals. The Antibiotic Council discusses relevant issues in this field and implements policy measures. [1] Alongside the national strategy, governmental agencies have developed action plans to carry out the strategy's aims. [2] Related to antibiotic resistance, the Danish Food Veterinary and Food Administration has stipulated an action plan including a total of 29 initiatives targeted at reducing the use of antibiotics in agriculture, spreading awareness of the effects of antibiotic resistance, increasing international collaboration and advocating prevention measures among food producers.

[1] Ministry of Health. 2017. "One Health Strategy Against Antibiotic Resistance".
[https://sum.dk/Media/0/D/One%20health%20strategy%20mod%20antibiotikaresistens%20engelsk.pdf]. Accessed 25 February 2021.
[2] Danish Food Veterinary and Food Administration. 2017. "Danish Food Veterinary and Food Administration's Action Plan against Antiobiotic Resistance (Fødevarestyrelsens handlingsplan mod antibiotikaresistens)".
[https://www.foedevarestyrelsen.dk/SiteCollectionDocuments/Kommunikation%20og%20Kunderaadgivning/Om%20F%C3%B8devarestyrelsen/Handlingsplan.pdf]. Accessed 1 December 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 of a national laboratory system exists in Denmark, with designated sentinel sites, which tests for all 7+1 priority AMR pathogens. The State Serum Institute (Statens Serum Institut, SSI) is under the auspices of the Danish Ministry

of Health and coordinates this network to ensure preparedness against infectious diseases. [1] The laboratory system consists of electronic data collection from diagnostic laboratories and blood banks, with the capacity to test for priority AMR pathogens. Reports are automatically forwarded to SSI via a digital system, the Danish Microbiology Database (MiBa), allowing for automatized real-time surveillance. [2, 3] Priority AMR pathogens which are obligatory to report via this automated network of selected laboratories and blood banks include E. coli, S. aureus, S. pneumoniae, Salmonella spp., Shigella spp, N. gonorrhea. [1] Moreover, K. pneumonia and Mycobacterium tuberculosis, can also be diagnosed via the laboratory system using the passive analog network of reporting from health workers who call in by phone or report via e-mail, rather than via automated electronic reporting. [4,5]

[1] State Serum Institute. 2011. "Laboratory-based surveillance (Laboratoriebaseret overvågning)". [https://www.ssi.dk/sygdomme-beredskab-og-forskning/anmeldelse-af-sygdomme/laboratoriebaseret-overvaagning]. Accessed 3 December 2020.
[2] Danish Microbiology Database. 2016. "MiBa, the Danish Microbiology Database". [https://miba.ssi.dk/Service/English.aspx]. Accessed 3 December 2020.
[3] Danish Microbiology Database. 2018 "MiBa in surveillance (MiBa i overvågningen)". [https://miba.ssi.dk/mikrobiologidatabase/miba-i-overvaagningen]. Accessed 3 December 2020.
[4] State Serum Institute. 2017. "Urinary Tract Infections (Urinvejsinfektioner)". [https://www.ssi.dk/Service/Sygdomsleksikon/U/Urinvejsinfektioner.aspx]. Accessed 3 December 2020.
[5] State Serum Institute. 2017. "Tuberculosis (Tuberkulose)". [https://www.ssi.dk/service/sygdomsleksikon/t/tuberkulose.aspx]. Accessed 3 December 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 public evidence that the Danish government conducts detection and surveillance activities for anti-microbial residues or AMR organisms in the natural environment on a regular basis. Surveillance activities for antimicrobial residues and AMR organisms in Denmark focus mainly on detecting occurrences within the food production sector and health sector. [1, 2, 3] The Danish Environmental Protection Agency (Miljøstyrelsen) do, however, conduct point source surveillance of different pollutants, including medical residues such as antibiotics, analgesics, and hormone-like substances, at selected wastewater treatment plants and rainwater outlets. [4 A few publicly available studies traces residuals of antibiotics and other medicines in the aquatic environment. [5,6]

[1] The Danish Veterinary and Food Administration (Fødevarestyrelsen). 2019. "Survaillance of AMR (Overvågning af antibiotikaresistens)". [https://www.foedevarestyrelsen.dk/Leksikon/Sider/Hvad-goer-Foedevarestyrelsen-for-at-forbrugerne-ikke-faar-ESBL-bakterier.aspx]. Accessed 3 December 2020.
[2] Danish Integrated Antimicrobial Resistance Monitoring and Research Programme (DANMAP). "Data for action: The Danish approach to surveillance of the use of antimicrobial agents and the occurrence of antimicrobial resistance in bacteria from food animals, food and humans in Denmark". [https://www.danmap.org/-/media/arkiv/projekt-sites/danmap/divdownloads/data_for_action.pdf?la=en]. Accessed 3 December 2020.
[3] Ministry of Health. 2017. "One Health Strategy Against Antibiotic Resistance". [https://sum.dk/Media/0/D/One%20health%20strategy%20mod%20antibiotikaresistens%20engelsk.pdf]. Accessed 25 February 2021.
[4] The Danish Environmental Protection Agency (Miljøstyrelsen). "Point Sources (Punktkilder)". [https://mst.dk/natur-

vand/overvaagning-af-vand-og-natur/punktkilder/]. "Accessed 3 December 2020.

[5] Ministry of Environment. 2001. "Investigation of the Prevalence of Antibiotics and Cobber in Relation to Marine Aquaculture in Three Counties (Undersøgelse af forekomst af antibiotika og kobber i forbindelse med marin akvakultur i tre amter]. [https://mst.dk/service/publikationer/publikationsarkiv/2001/jun/undersoegelse-af-forekomst-af-antibiotika-og-kobber-i-forbindelse-med-marin-akvakultur-i-tre-amter/]. Accessed 3 December 2020.

[6] DCE - Nationalt Center for Miljø Og Energi. 2015. "Medicines, veterinary and humane (Lægemidler, veterinære og humane)". Ch. 24 in DCE - Nationalt Center for Miljø Og Energi, Miljøfremmede stoffer og metaller i vandmiljøet, NOVANA. Tilstand og udvikling 2004-2012, Scientific report no 142, University of Aarhus. [https://dce2.au.dk/pub/SR142.pdf]. Accessed 3 December 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: 2

There is public evidence that all use of antibiotics for humans require a prescription in Denmark, and there is insufficient evidence of gaps in enforcement. [1] As prescribed in "Order of prescriptions and dose dispensing of drugs (Bekendtgørelse om receptor og dosisdispensering af lægemidler)" it is the Danish Medicines Agency that defines which types of drugs require prescriptions. [2] The Agency requires prescription for all medicines - including antibiotics - that contain active ingredients for treatment against a disease. Excepted from this rule is a list of milder drugs. The list is updated on a daily basis. [3] The prescription requirements seem generally well enforced, though they are being challenged by illegal import especially though internet retailers. Denmark participates in Operation Pangea, an international initiative against online sale of counterfeit and illicit health products, coordinated by INTERPOL. The Danish effort to counter illegal sale of medical drugs are carried out in cooperation between the Danish Customs Agency, the Danish Medicines Agency, the Danish Veterinary and Food Administration, the Danish Tax Agency, and the Police. [4] The Danish Medicines Agency runs a whistleblowing sheme, through which one may anonymously eport suspected illegal conditions in relation to medication. [5] The Danish Parliament (Folketinget) have continuously tightened regulations as well as granted greater executive powers to enforcement agencies in order to combat illicit sale of prescribed drugs.

[1] Ministry of Health. 2017. "One Health Strategy Against Antibiotic Resistance". [https://sum.dk/Media/0/D/One%20health%20strategy%20mod%20antibiotikaresistens%20engelsk.pdf]. Accessed 25 February 2021.
[2] Ministry of Health. 2017. "Bekendtgørelse om recepter og dosisdispensering af lægemidler (The Order of Prescriptions and Dose Dispensing of Drugs)". [https://www.retsinformation.dk/Forms/R0710.aspx?id=193759#id2d77cfa1-6873-4068-a3b0-e6a4b6f3bf81]. Accessed 3 December 2020.
[3] Danish Medicines Agency (Lægemiddelstyrelsen). September 2019. "Over the Counter Drugs (Håndkøbsmedicin)". [https://laegemiddelstyrelsen.dk/da/apoteker/haandkoebsmedicin/]. Accessed 3 December 2020.
[4] Danish Medicines Agency (Lægemiddelstyrelsen). March 2019. "Global action against illicit drugs and medical equipment (Global aktion mod ulovlig medicin og medicinsk udstyr). [https://laegemiddelstyrelsen.dk/da/nyheder/2020/global-aktion-mod-ulovlig-medicin-og-medicinsk-udstyr/]. Accessed 3 December 2020.
[5] Danish Customs Agency (Lægemiddelstyrelsen). "Report suspected illegal conditions regarding medication (Anmeld mistanke om ulovlige forhold vedrørende medicin)". [https://laegemiddelstyrelsen.dk/da/godkendelse/anmeld-mistanke-om-ulovlige-forhold/]. Accessed 3 December 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: 2

There is public evidence that all use of antibiotics for animals requires a prescription in Denmark, and there is no evidence of gaps in enforcement. [1] As established in "Order of prescriptions and dose dispensing of drugs" (Bekendtgørelse om receptor og dosisdispensering af lægemidler), it is the Danish Medicines Agency that defines which types of drugs require prescriptions; including drugs for animal use. [2] The Agency requires prescriptions for all medicines - including antibiotics - that contain active ingredients for treatment against a disease. Excepted is a number of milder drugs listed at the agency's website. [3] According to article 3 in "Order of prescriptions and dose dispensing of drugs" medicines for food-producing animals can also be exempt if they conform to a number of specific criteria, including but not limited to, providing evidence that the medicine in question poses no risk of developing antibiotic resistance in humans or animals. [2] The use of antibiotics as growth promoters is prohibited. [4, 5] The Danish Medicines Agency issues authorizations and controls and monitors the use of veterinary medicines to ensure that medicines for animals remain safe, available and effective. [6] Pharmacies and other companies selling prescribed drugs means for animals are required to report their sales to the national VetStat database. The same goes for veterinarians' use of such drugs. [7] VetStat, which has been operational since 2000, publishes monthly statistics on the use of antibiotics in Danish pig and cattle herds. [8] In 2010 a "yellow card initiative" were implemented whereby individual farms, based on micro-data from VetStat, can be put under special surveillance or ultimately be forced to reduce consumption of antibiotics if their use exceeds fixed thresholds. [9, 10] The Danish Veterinary and Food Administration finds little evidence of extensive illegal import of antibiotics to surmount the "yellow card initiative", though means to counter such import has been taken. [11]

[1] Ministry of Health. 2017. "One Health Strategy Against Antibiotic Resistance". [https://sum.dk/Media/0/D/One%20health%20strategy%20mod%20antibiotikaresistens%20engelsk.pdf]. Accessed 25 February 2021.

[2] Ministry of Health. 2017. "Bekendtgørelse om recepter og dosisdispensering af lægemidler (The Order of Prescriptions and Dose Dispensing of Drugs)". [https://www.retsinformation.dk/eli/lta/2017/1108]. Accessed 4 December 2020.

[3] Danish Medicines Agency (Lægemiddelstyrelsen). 3. September 2019. "Håndkøbsmedicin (Over the Counter Drugs)". [https://laegemiddelstyrelsen.dk/da/apoteker/haandkoebsmedicin/]. Accessed 4 December 2020.

[4] Miljø- og Fødevareministeriet. "Instructions on feed and feed companies (Vejledning om foder og fodervirksomheder)" VEJ nr 9514 af 15/07/2020. [https://www.retsinformation.dk/eli/retsinfo/2020/9514]. Accessed 4 December 2020.

[5] Aarestrup, Frank M. et al. 2009, "10 years after cessation of the use of antibiotic growth promoters (10 år efter ophør med anvendelse af antibiotiske vækstfremmere)". Dansk Veterinærtidsskrift 18:93: 8-13. [http://infolink2003.elbo.dk/DVT/dokumenter/doc/12984.pdf]. Accessed 4 December 2020.

[6] Danish Medicines Agency (Lægemiddelstyrelsen). 19 June 2019"Veterinary medicines". [https://laegemiddelstyrelsen.dk/en/special/veterinary-medicines/]. Accessed 4 December 2020.

[7] The Danish Veterinary and Food Administration (Fødevarestyrelsen). 3 September 2020 "VetStat" [https://www.foedevarestyrelsen.dk/Leksikon/Sider/VetStat.aspx]. Accessed 4 December 2020.

[8] The Danish Veterinary and Food Administration (Fødevarestyrelsen). Monthly statistics on use of antibiotics from 2005-present. [https://www.foedevarestyrelsen.dk/_layouts/15/Netcompany.FVS0001/Pages/DownloadFile.aspx?File=/SiteCollectionDocuments/Dyrevelfaerd%2520og%2520veterinaermedicin/Veterin%25C3%25A6rmedicin/VetStat/Forbrug_total_hjemmeside_september_2020.xlsx].

[9] The Danish Veterinary and Food Administration (Fødevarestyrelsen). 18 May 2017. "The Yellow Card Initiative on Antibiotics". [https://www.foedevarestyrelsen.dk/english/Animal/AnimalHealth/Pages/The-Yellow-Card-Initiative-on-

Antibiotics.aspx]. Accessed 4 December 2020.

[10] The Danish Veterinary and Food Administration (Fødevarestyrelsen). 2017. "Special provisions for the reduction of the consumption of antibiotics in pig holdings (the yellow card initiative)".
[https://www.foedevarestyrelsen.dk/english/SiteCollectionDocuments/Dyrevelfaerd%20og%20veterinaermedicin/Veterin%C3%A6rmedicin/Yellow%20Card,%20English%20version,%20180517.pdf]. Accessed 4 December 2020.

[11] The Danish Veterinary and Food Administration (Fødevarestyrelsen). May 2016. "Strengthened efforts against illegal importation of antibiotics for production animals (Styrket indsats modulovlig indførsel af antibiotika til produktionsdyr).
[https://mfvm.dk/fileadmin/user_upload/MFVM/Publikationer/Rapport_om_styrket_indsats_mod_ulovlig_indfoersel_af_antibiotika_til_produktionsdyr.pdf]. Accessed 4 December 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

There is publicly available evidence of a national law on zoonotic diseases in Denmark. Policy on zoonotic diseases in Denmark is guided by the "EU Directive on the monitoring of zoonoses and zoonotic agents", which provides for the establishment of a monitoring system for certain zoonoses, at both the level of Member States and the Community level. [1] In Denmark, "Order of Animal Keeping" stipulates that the Ministry of Environment and Food must issue a policy to limit the spread of zoonoses. [2] The implementing agency of the EU Directive and the Danish Law is the Danish Veterinary and Food Administration (Fødevarestyrelsen), which has expanded on EU strategy and carries out extensive surveillance and control programs, including in relation to its risk for human health. [3] There is no single policy document guiding these efforts, but rather a collection of individual regulations for a wide range of different types of zoonoses. These include anthrax, rabies, salmonella and MRSA. A list is publicly available at the agencies website portal. [4]

[1] EU Commission. 2003. "Directive on the Monitoring of Zoonoses and Zoonotic Agents" [https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32003L0099&from=EN]. Accessed 4 December 2020.
[2] Danish legal information system (Retsinformation). 2018. "Order on Animal Keeping (Bekendtgørelse af lov om hold af dyr)". LBK nr 38 af 15/01/2020. [https://www.retsinformation.dk/eli/lta/2020/38]. Accessed 4 December 2020.
[3] Danish Food Veterinary and Food Administration (Fødevarestyrelsen). 12 May 2020. "Zoonoses (Zoonoser)".
[https://www.foedevarestyrelsen.dk/Leksikon/Sider/Zoonoser.aspx]. Accessed 4 December 2020.
[4] Danish Food Veterinary and Food Administration (Fødevarestyrelsen). 2018. "Dyresygdomme - lovstof (Animal diseases - Law Material". [https://www.foedevarestyrelsen.dk/Selvbetjening/lovstof/Sider/Dyresygdomme-lovstof.aspx]. Accessed 4 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 evidence of various laws and regulations governing risk identification and reduction for zoonotic disease spill-over events from animals to humans.

Zoonotic disease identification and forecasting is governed by EU and national laws and regulation. [1] The Veterinary and Food Administration (Fødevarestyrelsen) holds the overall responsibility nationally for the veterinarian preparedness and thus also for the control of zoonoses. At the international level, European Centre for Disease Prevention and Control surveys the development. At the national level, research and continuous surveying of zoonotic diseases - as part of veterinary public service agreement (den veterinære myndighedsaftale) - is carried out by research institutions based on tender contracts. From 2020, surveillance and analysis of domestic animal diseases, including a number of zoonotic diseases, has been taken over by Danish Veterinarian Consortium (Dansk Veterinær Konsortium, DK-VET), which consists of the State Serum Institute (Statens Serum Institut) and the University of Copenhagen. [2] The surveillance of aquatic diseases is carried out by DTU Aqua at the Danish Technical University. [3] The diseases tested for is determined by the Danish Veterinary and Food Administration on a yearly basis. [4] The present surveillance program can be found at DK-VET's homepage. [5] Reports on zoonoses in Denmark are published every year, which summarize information on the prevalence of zoonotic infections in animals and humans as well as in food, and the sources and pathways of infection. They also outline existing risk reduction strategies, such as, for example, rigorous surveillance of pigs and cattle. [6] Special monitoring and control programs for salmonella in poultry, pigs and cattle are implemented in collaboration with the industry. [7]

[1] Veterinary and Food Administration "Animal Diseases - Legal matters (Dyresygdomme - lovstof)" [https://www.foedevarestyrelsen.dk/Selvbetjening/lovstof/Sider/Dyresygdomme-lovstof.aspx?Dokumenttype=Undefined&NyhedsType=]. Accessed 7 December 2020.
[2] Danish Veterinary Consortium (DK-Vet). "About the Danish Veterinary Consortium". [https://dkvet.dk/english/about/]. Accessed 7 December 2020.
[3] National Institute of Aquatic Resources (Institute Institut for Akvatiske Ressourcer, DTU Aqua). Diagnosis of diseases in fish and seafood (Diagnostik af sygdomme hos fisk og skaldyr). [https://www.aqua.dtu.dk/raadgivning/diagnostik]. Accessed 7 December 2020.
[4] State Serum Institute (Statens Serum Institut). "Surveillance (Overvågning). (https://www.vetssi.dk/overvaagning). Accessed 7 December 2020.
[5] State Serum Institute (Statens Serum Institut). "Surveillance Programmes (Overvågningsprogrammer)" [https://www.vetssi.dk/overvaagning/overvaagningsprogrammer]. Accessed 7 December 2020.
[6] National Food Institute (DTU Fødevareinstituttet, DTU Food). https://www.food.dtu.dk/Publikationer/Sygdomsfremkaldende-mikroorganismer/Zoonoser-aarlige-rapporter. Accessed 7 December 2020.
[7] National Food Institute (DTUFødevareinstituttet, DTU Food). 30 April 2019. "Zoonose surveillance "Zoonoseovervågning"). [https://www.food.dtu.dk/temaer/sygdomsfremkaldende-mikroorganismer/zoonoseovervaagning]. Accessed 15 March 2021.

1.2.1c

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

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence of a national law that accounts for the surveillance and control of multiple zoonotic pathogens of public health concern in Denmark. Zoonotic pathogens were, as part of veterinary public service agreement (den veterinære myndighedsaftale), until the end of 2019 monitored and controlled through a collaboration between the National

Food Institute at Technical University of Denmark (DTU), the Danish Veterinary and Food Administration (Fødevarestyrelsen), and the State Serum Institute (Statens Serum Institut, SSI). [1] From 2020 surveillance and analysis of domestic animals diseases, including a number of zoonotic disease, has been taken over by Danish Veterinarian Consortium (Dansk Veterinær Konsortium, DK-VET), which consists of the State Serum Institute (Statens Serum Institut) and the University of Copenhagen. [2] The surveillance of aquatic disceases are carried out by DTU Aqua at the Danish Technical University. [3] The diseases tested for is determined by the Danish Veterinary and Food Administration on a yearly basis. [4] The present surveillance programme can be found at DK-VET's homepage. [5] Reports summarising the trends and sources of zoonotic infections in humans and animals, as well as the occurrence of zoonotic agents in food and feeding stuffs in Denmark are published on a yearly basis. [6] National response plans and prevention guidelines for both Campylobacter, Salmonellosis and Anthrax can be found at either the Danish Veterinary and Food Administration's web site [7,8] or at the Danish legal information system (Retsinformation) [9]. Policy on zoonotic diseases in Denmark is guided by the "EU Directive on the monitoring of zoonoses and zoonotic agents", which provides for the establishment of a monitoring system for certain zoonoses both at the level of Member States and at the Community level. [10] In Denmark, "The Order of Animal Keeping" stipulates that the Ministry of Environment and Food must issue a policy to limit the spread of zoonoses. [11] The implementing agency of the EU Directive and the Danish Law is the Danish Veterinary and Food Administration, which has expanded on the EU strategy and carries out extensive surveillance and control programmes, including in relation to its risk to human health. [12] There is no single policy document guiding these efforts, but rather a collection of individual regulations for a wide range of different types of zoonoses, including anthrax, rabies, salmonella and MRSA, which is publicly available on the agencies website portal. [13]

[1] National Food Institute. 2020. "Annual Report on Zoonoses in Denmark 2019". [https://www.food.dtu.dk/-/media/Institutter/Foedevareinstituttet/Publikationer/Pub-2020/RAPPORT-Annual-Report-2019-FINAL.ashx?la=da&hash=FFCDF0E91D5DC4C0009E957835E30FC60F598F7B].Accessed 7 December 2020.
[2] Danish Veterinary Consortium (DK-Vet). "About the Danish Veterinary Consortium". [https://dkvet.dk/english/about/]. Accessed 7 December 2020.
[3] National Institute of Aquatic Resources (Institute Institut for Akvatiske Ressourcer, DTU Aqua). Diagnosis of diseases in fish and seafood (Diagnostik af sygdomme hos fisk og skaldyr). [https://www.aqua.dtu.dk/raadgivning/diagnostik]. Accessed 7 December 2020.
[4] State Serum Institute (Statens Serum Institut). "Surveillance (Overvågning). (https://www.vetssi.dk/overvaagning). Accessed 7 December 2020.
[5] State Serum Institute (Statens Serum Institut). "Surveillance Programmes (Overvågningsprogrammer)" [https://www.vetssi.dk/overvaagning/overvaagningsprogrammer]. Accessed 7 December 2020.
[6] National Food Institute (DTU Fødevareinstituttet, DTU Food). https://www.food.dtu.dk/Publikationer/Sygdomsfremkaldende-mikroorganismer/Zoonoser-aarlige-rapporter. Accessed 7 December 2020.
[7] Danish Veterinary and Food Administration. 5 November 2019. "Campylobacter Prevention and Response". [https://www.foedevarestyrelsen.dk/Leksikon/Sider/Forebyggelse-og-bek%C3%A6mpelse-af-campylobacter.aspx]. Accessed 7 December 2020.
[8] Danish Veterinary and Food Administration (Fødevarestyrelsen). 17 December 2019. "Salmonella". [https://www.foedevarestyrelsen.dk/Leksikon/Sider/Salmonella.aspx] Accessed 7 December 2020.
[9] Danish legal information system (Retsinformation). 2019. "Order on Anthrax (Bekendtgørelse om miltbrand)". [https://www.retsinformation.dk/eli/lta/2019/1490]. Accessed 9 December 2020.
[10] EU Commission. 2003. "Directive on the Monitoring of Zoonoses and Zoonotic Agents" https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32003L0099&from=EN. Accessed 9 December 2020.
[11] Retsinformation. 2018. "Bekendtgørelse af lov om hold af dyr (Order of Animal Keeping)". https://www.retsinformation.dk/Forms/r0710.aspx?id=197060. Accessed 9 December 2020.
[12] Danish Food Veterinary and Food Administration. 2018. "Zoonoser (Zoonoses)". https://www.foedevarestyrelsen.dk/Leksikon/Sider/Zoonoser.aspx. Accessed 9 December 2020.

[13] Danish Food Veterinary and Food Administration. 2018. "Dyresygdomme - lovstof (Animal diseases - Law Material".https://www.foedevarestyrelsen.dk/Selvbetjening/lovstof/Sider/Dyresygdomme-lovstof.aspx. Accessed 9 December 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: 1

There is evidence of a unit dedicated to zoonotic disease that functions across ministries in Denmark.

The overall responsibility for the veterinary preparedness (Det Veterinære Beredskab), which includes surveillance and control of zoonotic diseases, rests with the Veterinary and Food Administration (Fødevarestyrelsen) under the Danish Ministry of Environment and Food. [1, 2] Operational tasks (veterinary public sector consultancy services) such as research, consultancy services, diagnosis and laboratory analysis are outsourced to a consortium - the Danish Veterinary Consortium (DK-Vet) - formed by the State Serum Institute (Statens Serum Institut), under the auspices of the Danish Ministry of Health, and the Department of Veterinary Sciences (IVH) at the University of Copenhagen. The DK-Vet took over the final tasks from the previous contractor, the Danish Zoonose Center, est. 2004, which was a consortium consisting of the State Serum Institute and the National Food Institute at the Technical University of Denmark (DTU) as of 1 January 2020. [3] The DK-Vet follows a holistic "One Health" approach, integrating concerns for human and animal health and the environment, and fosters actively collaboration between veterinarians, medical doctors, biologists, and industry thereby following all links from farm to fork. [4]

[1] Veterinary and Food Administration (Fødevarestyrelsen). 30 July 2020 " About the veterinary preparedness (Om det veterinære beredskab)".
[https://www.foedevarestyrelsen.dk/OmFoedevarestyrelsen/Organisation/Sider/Om_det_veterinaere_beredskab.aspx]. Accesses 8 December 2020.
[2] European Commission - DG Health and Food Safety. January 2018. "Denmark - Country Profile; Organisation of Official Controls". Ref. Ares(2018)475546 - 26/01/2018.
[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjI9POgnr7tAhVLAhAIHUj0AygQFjAAe gQIBBAC&url=http%3A%2F%2Fec.europa.eu%2Ffood%2Faudits-
analysis%2Fact_getProfile.cfm%3Fpdf_id%3D487&usg=AOvVaw2Xs2bCWRs4S4GSVNxzqpe5]. Accesses 8 December 2020.
[3] Danish Veterinary Consortium. 1 July 2020 "About the Danish Veterinary Consortium". [https://www.vetssi.dk/om-veterinaar-diagnostik/about-veterinary-diagnostics]. Accesses 8 December 2020.
[4] State Serum Institute (Statens Serum Institut). 6 February 2020. "Statens Serum Institut is now a One-Health institute". EPI-NEWS no. 4 - 2020. [https://en.ssi.dk/news/epi-news/2020/no-4---2020]. Accesses 8 December 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

There is publicly available evidence that a national mechanism exists in Denmark. Reporting requirement for a number of listed - serious and less serious reportable - animal diseases are governed by the Animal Health Act (Lov om hold af dyr) [1, 2]. If an owner of livestocks suspects that his or her livestock is infected by one of a listed number of diseases, [3] he or she is obliged instantly to contact a veterinarian. For the most serious diseases (list 1) any suspicion of contamination is to be reported immediately to the Danish Veterinary and Food Administration, whereas reporting is mandatory for diseases listed at list 2 only upon confirmation. Failure to comply with the reporting requirement may be punished by fines or, in grave cases, by prison in up to two years. [1]

[1] Danish legal information system (Retsinformation). "Animal Health Act (Bekendtgørelse af lov om hold af dyr)". LBK nr 38 af 15/01/2020 [https://www.retsinformation.dk/eli/lta/2020/38]. Accessed 8 December 2020.
[2] Danish Veterinary and Food Administration (Fødevarestyrelsen). 29 August 2019. "Animal Disease Preparedness". [https://www.foedevarestyrelsen.dk/english/Animal/AnimalHealth/Animal%20diseases/Monitoring_control_animal_diseases /Animal_disease_preparedness/Pages/default.aspx]. Accessed 8 December 2020.
[3] Danish legal information system (Retsinformation). "Executive Order on lists of infectious diseases to the Animal Health Act and the obligation to report the diseases (Bekendtgørelse om lister over smitsomme sygdomme til lov om hold af dyr og anmeldepligt af sygdommene. BEK nr 1171 af 17/07/2020. [https://www.retsinformation.dk/eli/lta/2020/1171]. Accessed 8 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 of laws or guidelines that safeguard the confidentiality of information specifically generated through surveillance activities for animals (for owners) in Denmark. The Danish Veterinary and Food Administration require livestock owners to report on a list of high-risk diseases but provides no information on safeguarding the confidentiality of the data provided. [1] The General Data Protection Law (Databeskyttelsesloven) in Denmark, which is the implementing act of the EU GDPR regulation, does provide extensive data protection, including anonymising owner identification in the collection of personal data. However, this does not specifically mention the area of surveillance activities for livestock. [2] Neither the website of the Ministry of Environment and Food of Denmark or the Ministry of Health provides evidence of laws or guidelines safeguarding the confidentially of information specifically generated through surveillance activities for animals (for owners). [3, 4]

[1] Veterinary and Food Administration (Fødevarestyrelsen). 29 August 2019. "Animal Disease Preparedness". [https://www.foedevarestyrelsen.dk/english/Animal/AnimalHealth/Animal%20diseases/Monitoring_control_animal_diseases /Animal_disease_preparedness/Pages/default.aspx]. Accessed 8 December 2020.
[2] Danish legal information system (Retsinformation). "The General Data Protection Law (Databeskyttelsesloven)".[https://www.retsinformation.dk/eli/lta/2018/502]. Accessed 17th September 2018. Accessed 8 December 2020.
[3] Ministry of Environment and Food of Denmark. 2018. "The Ministry". [https://en.mfvm.dk/the-ministry/]. Accessed 8 December 2020.
[4] Ministry of Health. 2018. "Ministry of Health". [https://www.sum.dk/English.aspx]. Accessed 8 December 2020.

1.2.2c

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

Yes = 1 , No = 0
>**Current Year Score: 1**

There is publicly available evidence of surveillance of zoonotic diseases in wildlife in Denmark. As contractor for the Danish Veterinary and Food Administration, the Danish Veterinary Consortium (Dansk Veterinær Konsortium, DK-Vet) surveil a number of pathogens, including zoonotic, in the natural environment. These include active and passive surveillance of avian influenza, ornithosis, and avian chlamydiosis among birds, active and passive surveillance of West Nile Fever (WNF) among birds and mosquitoes, as well as vector surveillance of different bloodsucking mosquitos. midges, ticks and horseflies. [1, 2]

[1] Danish Veterinary Consortium (Dansk Veterinær Konsortium, DK-Vet). 19 November 2020. "Surveillance Programs (Overvågningsprogrammer)". [https://www.vetssi.dk/overvaagning/overvaagningsprogrammer]. Accessed 9 December 2020.
[2] State Serum Institute (Statens Serum Institut). 25 September 2020. "One Health". [https://en.ssi.dk/surveillance-and-preparedness/one-health]. Accessed 9 December 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: 37.47**

2018

OIE WAHIS database

1.2.4b
Number of veterinary para-professionals per 100,000 people
Input number
>**Current Year Score: -**

No data available

OIE WAHIS database

1.2.5 Private sector and zoonotic

1.2.5a

Does the national plan on zoonotic disease or other legislation, regulations, or plans include mechanisms for working with the private sector in controlling or responding to zoonoses?
Yes = 1 , No = 0

Current Year Score: 0

There is not enough evidence of inclusion of the private sector in controlling and responding to zoonoses. In Denmark, controlling zoonoses rely on a "One Health" approach in which public authorities, research institutions, industry and citizen are included. It is the Danish Veterinary and Food Administration that holds the overall responsibility for monitoring and controlling animal diseases, including zoonoses, as well as keeping the veterinarian preparedness plans updated. Private actors, however, play a crucial role, especially in implementation and ongoing control of diseases at the street level. While the Danish Veterinary and Food Administration conducts unannounced on-site inspections [1], all food establishments have to perform continuous own-checks to comply with rules and regulations on food safety [2]. Farmers, slaughterhouses, feed companies, and meat import companies are, e.g., required by law to test for salmonella. [3, 4]. A farmer is obliged to contact his or her private veterinarian immediately upon suspicion that his or her herd or flock has been contaminated by one of the diseases listed at list 1 and 2 in the Animal Health Act. The lists include zoonoses such as brucellosis, leptospira spp., echinococcus multilocularis, and swine flu [5, 6]. Likewise, the farm's veterinarian, operating as a private practitioner, is required to report such suspicion to the Danish Veterinary and Food Administration, who then takes over [5]. From 2010 it has been mandatory for owners of large herds of cattle and pigs and for owners of mink farm to sign a veterinary advisory service contract (VASC) with a privately practicing veterinarian. The VASC establishes though frequent on-site visits a long-term relationship between the farmer and the veterinarian. [7] Veterinarian are also required by law to report all use of medicines used for treating production animals. [8] The farmer's confederation, Danish Agriculture & Food Council (Landbrug & Fødevarer), through its subsidiary, SEGES, runs its own national certification and surveillance programs, including the Specific Pathogen Free (SPF) certification for pigs. [9] In the "Order on salmonella in cattle, etc" SEGES is set as the administrator of the control program on Salmonella Dublin. [10] The Veterinary contingency plan in case of outbreaks of serious livestock diseases from 2019 lists a number of private companies that the Danish Veterinary and Food Administration have contracted with to provide assistance during emergency outbreaks. [11]

[1] Danish Veterinary and Food Administration (Fødevarestyrelsen). 21 August 2020. "Inspection of Food Establishments". [https://www.foedevarestyrelsen.dk/english/Inspection/Inspection_of_food_establishments/Pages/default.aspx]. Accessed 10 December 2020.
[2] Danish Veterinary and Food Administration (Fødevarestyrelsen). 4 December 2019. "Own-checks in Food Establishments". https://www.foedevarestyrelsen.dk/english/Inspection/Own_checks_in_food_establishments/Pages/default.aspx. Accessed 10 December 2020.
[3] Danish Veterinary and Food Administration (Fødevarestyrelsen). 2011. "Guidance on self-monitoring of salmonella and campylobacter in fresh meat (Vejledning om egenkontrol med salmonella og campylobacter i fersk kød)".[https://www.foedevarestyrelsen.dk/SiteCollectionDocuments/25_PDF_word_filer%20til%20download/04kontor/Vejledning%20om%20egenkontrol_finale%20_4_.pdf]. Accessed 10 December 2020.
[4] Danish legal information system (Retsinformation). " 2020. "Executive Order on feed and feed companies (Bekendtgørelse om foder og fodervirksomheder)". BEK nr 731 af 29/05/2020, [https://www.retsinformation.dk/eli/lta/2020/731]. Accessed 10 December 2020.
[5] Danish legal information system (Retsinformation). "Animal Health Act (Bekendtgørelse af lov om hold af dyr)". LBK nr 38

af 15/01/2020 [https://www.retsinformation.dk/eli/lta/2020/38]. Accessed 8 December 2020.

[6] Danish legal information system (Retsinformation). "Executive Order on lists of infectious diseases to the Animal Health Act and the obligation to report the diseases (Bekendtgørelse om lister over smitsomme sygdomme til lov om hold af dyr og anmeldepligt af sygdommene. BEK nr 1171 af 17/07/2020. [https://www.retsinformation.dk/eli/lta/2020/1171]. Accessed 8 December 2020.

[7] Danish Veterinary and Food Administration (Fødevarestyrelsen). 2020. Animal Health in Denmark 2019. https://www.foedevarestyrelsen.dk/Publikationer/Alle%20publikationer/Animal_Health_in_Denmark_2019.pdf. Accessed 9 December 2020.

[8] Danish legal information system (Retsinformation, 2020. "Promulgation of the Veterinary Act (Bekendtgørelse af lov om dyrlæger)". [https://www.retsinformation.dk/eli/lta/2020/1523]. Accessed 10 December 2020.

[9] SEGES. 10. marts 2017. "A unique health system (Et enestående sundhedssystem)". https://svineproduktion.dk/Services/SPF] and the DANISH Transport Standard [https://svineproduktion.dk/-/media/PDF/Engelske-site/Transportstandard/Danish_Transportstandard_UK.ashx]. Accessed 10 December 2020.

[10] Danish legal information system (Retsinformation). 2020. "Order on salmonella in cattle, etc. (Bekendtgørelse om salmonella hos kvæg m.m.)" [https://www.retsinformation.dk/eli/lta/2020/1791]. Accessed 10 December 2020. |11] Danish Veterinary and Food Administration. 2019. Veterinary contingency plan in case of outbreaks of serious livestock diseases "Veterinær beredskabsplan ved udbrud af alvorlige husdyrsygdomme". [https://www.foedevarestyrelsen.dk/SiteCollectionDocuments/Dyresundhed/Sygdoms-gruppen/Veterin%C3%A6r%20beredskabsplan%20ved%20udbrud%20af%20husdyrsygdomme%20januar%202019%20-%20uden%20anneks.pdf]. Accesses 10 December 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: 1

There is indirect publicly available evidence of a record, updated within the past 5 years, of the facilities in which especially dangerous pathogens and toxins are stored or processed, including details on inventories and inventory management systems of those facilities. The Centre for Biosecurity and Biopreparedness (CBB) is the national authority within the area of biosecurity. The center is part of the State Serum Institute (SSI) and is under the auspice of the Ministry of Health. Only companies or institutions that have been licensed by the CBB are allowed to hold, produce, use, store and transport biological dual use components. Such permissions can be granted only after proper information has been provided concerning the organization, the purpose of storage/processing, the responsible security personnel, and a risk assessment and security plan. [1] License holders are, according to Article 18 in the Executive Order no. 981 of 15 October 2009, required to keep the inventory lists updated (at a minimum once a quarter). The inventory lists should be stored for at least five years. Inventory lists should be submitted to CBB at least one a year, and changes to inventory through purchase, sale, transfer or disposal is to be reported to CBB within 14 working days. [2] Based on these requirements, it can be assumed that there exist a continously upated database covering all stored dangerous pathogens and toxins in Denmark at the CBB.

[1] Centre for Biosecurity and Biopreparedness (CBB). May 18 2020. "How to Apply". [https://www.biosecurity.dk/526/]. Accessed 11 December 2020.

[2] Danish legal information system (Retsinformation). "Executive Order on the protection of certain biological substances, means of delivery and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret material". BEK nr 981 af 15/10/2009. [https://www.retsinformation.dk/eli/lta/2009/981]. Accessed 11 December 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: 1

There is evidence that Denmark has in place national legislation which addresses requirements such as physical containment, operation practices and failure reporting systems in which especially dangerous pathogens and toxins are stored or processed. According to the 2008 Law of Securing of Biological Material and other substances, the Centre for Biosecurity and Biopreparedness (CBB), as a unit under the auspices of the Ministry of Health, is authorized to control all organizations who store or process dangerous pathogens and toxins for the purpose of preventing deliberate, malicious misuse and release of such materials. [1] These pathogens and toxins are specified in the Executive Order on the protection of certain biological substances, means of delivery and related material, and involves for example, Ebola, Dengue fever and Chikungunya virus. The Minister of Health may add additional pathogens and toxins to the list, if they are considered to pose a biosecurity risk. [2] On its website, CBB describes the detailed requirements for physical containment, operation practice and failure reporting systems. [3] For example, most toxins must be kept in special safes built for securing dangerous pathogens. Finally, Denmark reports to the United Nations Office at Geneva (UNOG) every year for the "Confidence Building Measure Return", which is a reporting mechanism set by the Biological Weapons Convention. [4].

[1] Danish legal information system (Retsinformation). 2008. "Act on the safeguarding of certain biological substances, means of delivery and related material (Lov om sikring af visse biologiske stoffer, fremføringsmidler og relateret materiale)". Law no. 474 of 17/06/2008. [https://www.retsinformation.dk/Forms/R0710.aspx?id=120343]. Accessed 11 December 2020.

[2] Danish legal information system (Retsinformation). 2009. "Executive Order on the protection of certain biological substances, means of delivery and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret material"). [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970]. Accessed 11 December 2020.

[3] Centre for Biosecurity and Biopreparedness. 13 May 2020. "Types of permissions (Tilladelsestyper)". [https://www.biosikring.dk/570/]. Accessed 11 December 2020.

[4] UNOG. 2020. "Confidence Building Measure Forms - Denmark". [https://bwc-ecbm.unog.ch/denmark/bwccbm2018denmark]. Accessed 11 December 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: 1

There is evidence of an established agency responsible for the enforcement of biosecurity legislation and regulations in Denmark. [1] According to the 2009 "Executive Order on the protection of certain biological substances, means of delivery and related material", the Centre for Biosecurity and Biopreparedness (CBB) is authorized to control all organizations that

store or process dangerous pathogens and toxins. [1] The CBB is an agency under the auspices of the Ministry of Health, implementing and enforcing the national legislation covering the area of biosecurity. As part of its mandate, CBB carries out control of organizations storing dangerous pathogens and toxins by use of notified and unnotified visits. It also contributes to the international efforts, under the framework of the UN's Biological Weapons Convention, to limit the spread of biological weapons globally. [2,3] Furthermore, Denmark reports to the United Nations Office at Geneva (UNOG) every year for the "Confidence Building Measure Return", which is a reporting mechanism set by the Biological Weapons Convention. [4] The 2020 report for Denmark confirms that CBB is the national point of contact for matters related to enforcement of biosecurity legislation and regulations.

[1] Danish legal information system (Retsinformation). 2009. "Executive Order on the protection of certain biological substances, means of delivery and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret material"). [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970]. Accessed 11 December 2020.
[2] Centre for Biosecurity and Biopreparedness. 6 November 2019. "Tilsyn (Oversight)". [https://www.biosikring.dk/123/]. Accessed 11 December 2020.
[3] Centre for Biosecurity and Biopreparedness. 6 May 2020. "Background (Baggrund)". [https://www.biosikring.dk/126/]. Accessed 11 December 2020.
[4] UNOG. UNOG. 202. "Confidence Building Measure Forms - Denmark". [https://bwc-ecbm.unog.ch/denmark/bwccbm2018denmark]. Accessed 11 December 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 available evidence that shows that Denmark has taken to action to consolidate its inventories of especially dangerous pathogens and toxins into a minimum number of facilities. Neither the Ministry of Defense, the Ministry of Health nor the Ministry of Environment and Food has details on any action taken. [1, 2, 3] Nor is there any information of this sort given in Denmark's reports to the United Nations Office at Geneva (UNOG) for the "Confidence Building Measure Return" [4] or in VERTIC BWC legislation database. [5]

[1] Danish Ministry of Defense (Forsvarsministeriet). 2020. [http://www.fmn.dk/eng/Pages/frontpage.aspx]. Accessed 19 December 2020.
[2] Ministry of Health (Sundhedsministeriet). 2020. [https://sum.dk/]. Accessed 19 December 2020.
[3] Ministry of Environment and Food. 2020. [https://en.mfvm.dk/the-ministry/]. Accessed 19 December 2020.
[4] UNOG. 2020. "Confidence Building Measure Forms - Denmark". [https://bwc-ecbm.unog.ch/system/files/form-pdf/bwc_cbm_2020_denmark.pdf]. Accessed 19 December 2020.
[5] VERTIC. 2020. "BWC legislation database". [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/d/]. Accessed 3 March 2021.

1.3.1e

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

Yes = 1 , No = 0

Current Year Score: 1

There is public evidence that Denmark has in-country capacity to conduct Polymerase Chain Reaction (PCR)-based diagnostic testing for Ebola. Statens Serum Institut (SSI) provides a guidebook for health professionals on how to deal with various diseases, including Ebola, which specifies that PCR diagnosing is used. [1] Veterinary Diagnostics (Veterinær Diagnostik), which is a joint venture between the State Serum Institute and the University of Copenhagen offers tests for Bacillus anthracis in livestock using either MALDI-TOF or PCR. [2]

[1] State Serum Institute. 16 January 2020. " Ebola virus (RNA) (R-nr. 2038)". [https://www.ssi.dk/produkter-og-ydelser/diagnostik/diagnostiskhaandbog/e/2038]. Accessed 19 December 2020.
[2] Veterinær Diagnostik. 17 November 2020. "Bacillus anthracis (anthrax) microscopy and cultivation (R-No. 9091) (Bacillus anthracis (miltbrand) mikroskopi og dyrkning (R-nr. 9091))". [https://www.vetssi.dk/analyseoversigt/b/9091]. Accessed 19 December 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: 1

There is evidence that Denmark requires biosecurity training, using a standardized approach, with a common curriculum, for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological materials with pandemic potential. According to the Executive Order on Securing Biological Materials and Related Material, the Centre for Biosecurity and Biopreparedness (CBB) is authorized to control all organizations that store or process dangerous pathogens and toxins, and to prevent the deliberate, malicious misuse and release of such substances. Responsible security personnel in such organizations are required to have participated in a standardized biosecurity training course offered by CBB. [1] The training course is free of charge. The course includes training on the daily administration of biosecurity, teaching the overall framework for Danish biosecurity, as well as a theoretical introduction to the history of biosecurity attacks with examples of the dangerous potential of different pathogens. [2]

[1] Danish legal information system (Retsinformation). 2009. "Executive Order on securing biological materials and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret materiale)". BEK nr 981 af 15/10/2009. [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970#B1]. Accessed 19 December 2020.
[2] Centre for Biosecurity and Biopreparedness. 6 May 2020. "Danish biosecurity course". [https://www.biosecurity.dk/398/. Accessed 19 December 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: 2

There is evidence that licensing conditions in Denmark specify that security and other personnel with access to especially dangerous pathogens, toxins, or biological materials with pandemic potential are subject to background checks, and psychological or mental fitness checks. In Denmark, the Centre for Biosecurity and Biopreparedness (CBB) keeps a record of the personnel of all entities (public and private) which store or process especially dangerous pathogens and toxins. [1] CBB has the authority to grant licenses to organizations to store or process such material, and conduct a background check on responsible security personnel by receiving their crime record. [2] In cases, where the material used is directly related to weapon production or testing, CBB may require security clearance. [3] Security clearances in Denmark are conducted by the Danish Security and Intelligence Service and may require psychological assessment as well as investigations into personnel's use of drugs (although no drug test is required). [4]

[1] Centre for Biosecurity and Biopreparedness. 6 May 2020. "Background (Baggrund)". https://www.biosikring.dk/126/. Accessed 19 December 2020.
[2] Centre for Biosecurity and Biopreparedness. 6 November 2019. "Course for Responsible Security Personnel (Biosikringskursus)". https://www.biosikring.dk/135/. Accessed 19 December 2020.
[3] Danish legal information system (Retsinformation). 2009. "Executive Order on securing biological materials and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret materiale)". BEK nr 981 af 15/10/2009. [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970#B1]. Accessed 19 December 2020.
[4] Danish Security and Intelligence Service. 2018. "Security Clearances (Sikkerhedsundersøgelser)". https://www.pet.dk/Forebyggende%20Afdeling/Sikkerhedsundersogelser.aspx. Accessed 19 December 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: 1

There is publicly available information that Denmark has regulations on the safe and secure transport of infectious substances (Category A and B). The 2009 "Executive Order on securing biological materials and related material" governs the area of safe and secure transport of infectious substances in Denmark under its articles 15-16. [1] This includes, for example, Category A and B substances such as Crimean-Congo fever, Dengue fever and the Ebola virus. The Executive Order follows the regulations stipulated in the European Agreement concerning the International Carriage of Dangerous Goods by Road. [2] Denmark's reports to the United Nations Office at Geneva (UNOG) for the "Confidence Building Measure Return", which is a reporting mechanism set by the Biological Weapons Convention, provides no further details on transportation security . [3]

[1] Danish legal information system (Retsinformation). 2009. "Executive Order on securing biological materials and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret materiale)". BEK nr 981 af 15/10/2009. [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970#B1]. Accessed 19 December 2020.
[2] United Nations. 2017. "European Agreement concerning the International Carriage of Dangerous Goods by Road". [https://www.unece.org/trans/danger/publi/adr/adr2017/17contentse0.html]. Accessed 19 December 2020.
[3] UNOG. 2020. "Confidence Building Measure Forms - Denmark". [https://bwc-ecbm.unog.ch/system/files/form-

pdf/bwc_cbm_2020_denmark.pdf]. Accessed 19 December 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: 1

There is evidence of national legislation in place in Denmark to oversee cross-border transfer and end-user screening of especially dangerous pathogens, toxins, and pathogens with pandemic potential. The Danish Business Authority implements the regulation, which covers cross-border transfer and end-user screening of especially dangerous pathogens, toxins and pathogens with pandemic potential. [1] The national legislation is based on EU Council Regulation, which provides a list of items that must be controlled if exported. The list includes, for instance, Chikungunya and Ebola virus. For the items listed in the EU control list, exporters must apply for export authorization from the Danish Business Authority. [2] In addition to the listed items, other items with suspected dual-use potential may also be subject to export authorization from the Danish Business Authority through the so-called catch-all provision [3]. Whether a particular item is subject to export authorization depends on the function and potential end-user of the item. It is the responsibility of the exporter to screen customers and to substantiate that the products will be used for peaceful ends at the end-user [4]. Further, End-user screening is mandated by the EU's Regulation No 428/2009 Setting up a Community Regime for the Control of Exports, Transfer, Brokering and Transit of Dual-Use Items. Regulations issued by the European Council are legally binding legislative acts in all EU member states, including Denmark. [5]

[1] The Danish Business Authority. "Controls". [https://danishbusinessauthority.dk/controls]. Accessed 20 December 2020.
[2] The Danish Business Authority. "EU legislation on Export Controls". [https://danishbusinessauthority.dk/eu-legislation-on-export-controls]. Accessed 20 December 2020.
[3] The Danish Business Authority. "Catch-all". [https://danishbusinessauthority.dk/catch-all]. Accessed 20 December 2020.
[4] The Danish Business Authority. "Exporter's Responsibilities" [https://danishbusinessauthority.dk/exporters-responsibilities]. Accessed 20 December 2020.
[5] European Council. Council Regulation (EC) No 428/2009 of 5 May 2009. "Setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items." [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02009R0428-20191231]. Accessed 5 August 2020.

1.4 BIOSAFETY

1.4.1 Whole-of-government biosafety systems

1.4.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is insufficient evidence that Denmark has national legislation on biosafety. According to the 2009 Executive Order on securing biological materials and related material, the Centre for Biosecurity and Biopreparedness is authorized to control all organizations who store or process dangerous pathogens and toxins. [1] However, no evidence is found in the law that

pertains to workplace protection for people working with dangerous biological substances. Neither the Ministry of Defense, the Ministry of Health nor the Ministry of Environment and Food has details on any action taken. [2, 3, 4] Nor is there any information of this sort given in Denmark's reports to the United Nations Office at Geneva (UNOG) for the "Confidence Building Measure Return" [5] or in VERTIC BWC legislation database. [6]

[1] Danish legal information system (Retsinformation). 2009. "Executive Order on securing biological materials and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret materiale)". BEK nr 981 af 15/10/2009. [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970#B1]. Accessed 19 December 2020.
[2] Danish Ministry of Defense (Forsvarsministeriet). 2020. [http://www.fmn.dk/eng/Pages/frontpage.aspx]. Accessed 19 December 2020.
[3] Ministry of Health (Sundhedsministeriet). 2020. [https://sum.dk/]. Accessed 19 December 2020.
[4] Ministry of Environment and Food. 2020. [https://en.mfvm.dk/the-ministry/]. Accessed 19 December 2020.
[5] UNOG. 2020. "Confidence Building Measure Forms - Denmark". [https://bwc-ecbm.unog.ch/system/files/form-pdf/bwc_cbm_2020_denmark.pdf]. Accessed 19 December 2020.
[6] VERTIC. 2020. "BWC legislation database". [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/d/]. Accessed 3 March 2021.

1.4.1b

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

Yes = 1 , No = 0

> Current Year Score: 1

There is evidence of an established agency responsible for the enforcement of biosafety legislation and regulations in Denmark. According to the 2009 " Executive Order on securing biological materials and related material ", the Centre for Biosecurity and Biopreparedness (CBB) is authorized to control all organizations who store or process dangerous pathogens and toxins. [1] The CBB is an agency under the auspices of the Ministry of Health, implementing and enforcing the national legislation. The CBB enforces the national requirements for physical containment, operation practices and failure reporting system, both in relation to biosecurity (preventing the deliberate, malicious misuse and release of dangerous pathogens and toxins) and in relation to biosafety (preventing accidental, unintentional misuse and release).

[1] Danish legal information system (Retsinformation). 2009. "Executive Order on securing biological materials and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret materiale)". BEK nr 981 af 15/10/2009. [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970#B1]. Accessed 19 December 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: 1

There is evidence that Denmark requires biosafety training, using a standardized approach with a common curriculum and training for personnel working in facilities housing or working with especially dangerous pathogens, toxins, or biological

materials with pandemic potential. According to the 2009 Executive Order on securing biological materials and related material, the Centre for Biosecurity and Biopreparedness (CBB) is authorized to control all organizations who store or process dangerous pathogens and toxins, and as part of this process requires that responsible personnel completes a standardized biosafety training course. [1] The CBB conducts the mandatory training courses, which is free of charge for participants who will have biosafety responsibilities in their organization. [2] The course includes training in the daily administration of biosecurity and biosafety, teaching in the overall framework for Danish biosecurity as well as a theoretical introduction to the history of biosecurity attacks with examples of the danger potential of different pathogens. The biosafety elements of the course include training in storage requirements, how to register and administer substances kept, and how to educate other staff (training-of-trainers) in proper conduct with dangerous biological materials. Accordingly, the CBB carries out the courses with regards to both biosecurity concerns (preventing the deliberate, malicious misuse and release of dangerous pathogens and toxins) as well as with regards to biosafety (preventing accidental, unintentional misuse and release of dangerous pathogens and toxins).

[1] Danish legal information system (Retsinformation). 2009. "Executive Order on securing biological materials and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret materiale)". BEK nr 981 af 15/10/2009. [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970#B1]. Accessed 19 December 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 Danish authorities have conducted an assessment to determine whether ongoing research is occurring on especially dangerous pathogens and/or other dual-use research. While there is no evidence of the completion of a specific assessment on dual-use research in the country, the Danish Business Authority implements the national regulation covering the cross-border transfer of especially dangerous pathogens, toxins and pathogens with pandemic potential and other dual-use research, including the cross-border transfer of knowledge and research. [1] Accordingly, the Danish Business Authority requires all research, which involves items defined in the list of EU Council Regulation, to report to the Danish Business Authority if such knowledge is disseminated across Danish borders. [2,3] Based on this the Danish Technical University has developed guidelines on reporting to their academic staff on how to apply for the "export" of such dual-use research. [2] For research that takes place inside Denmark, without ever being disseminated abroad, thereby crossing the national border, there is no evidence that an assessment has been made on the websites of the Ministry of Higher Education and Science, Ministry of Defense, the Ministry of Environment and Food and the Ministry of Transport, Building and Housing. [4,5,6,7] Denmark's reports to the United Nations Office at Geneva (UNOG) for the "Confidence Building Measure Return", which is a reporting mechanism set by the Biological Weapons Convention, also provides no evidence of a completed assessment to determine whether ongoing research is occurring on especially dangerous pathogens, toxins, pathogens with pandemic potential, and/or other dual use research. [8]

[1] The Danish Business Authority. 2020. "Catch-all tjekliste og bestemmelser (Catch-All Checklists and Regulations)" https://eksportkontrol.erhvervsstyrelsen.dk/catch-all-tjekliste. Accessed 24 February 2020.

[2] The Danish Business Authority. 2020. "EU Legislation on Export Controls" https://danishbusinessauthority.dk/eu-legislation-on-export-controls. Accessed 24 February 2020.

[3] Danish Technical University (DTU). 2017. "DTU vejledning vedr. dual-use (DTU Guidelines Relating to Dual-Use)". http://www.dtu.dk/-/media/DTUdk/Om_DTU/Organisation/Raad_organer_og_afdelinger/Akademisk-raad/2017/AR61/AR-864-Vejledning-vedr-dual-use-i-forskningsprojekter-paa-DTU.ashx?la=da. Accessed 24 February 2020.

[4] Ministry of Higher Education and Science. 2020. "Ministry of Higher Education and Science". https://ufm.dk/en/the-ministry/organisation/the-ministry. Accessed 24 February 2020.

[5] Danish Ministry of Defense. 2020. "Danish Ministry of Defense". http://www.fmn.dk/eng/Pages/frontpage.aspx. Accessed 24 February 2020.

[6] Ministry of Environment and Food. 2020. "The Ministry". https://en.mfvm.dk/the-ministry/. Accessed 21st October 2018.

[7] Ministry of Transport, Building and Housing. 2020. "Ministry of Transport, Building and Housing". https://www.trm.dk/en. Accessed 24 February 2020.

[8] UNOG. 2020. "Confidence Building Measure Forms - Denmark". [https://bwc-ecbm.unog.ch/system/files/form-pdf/bwc_cbm_2020_denmark.pdf] Accessed 24 February 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: 1

There is evidence of a national policy requiring oversight of dual-use research, such as research with especially dangerous pathogens, toxins, and/or pathogens with pandemic potential. The Executive Order on the protection of certain biological substances requires that facilities must apply for permits to handle sensitive biological substances, including certain pathogens, zoonoses and toxins. Paragraph 3 of Article 5 of the order states that the permit must include details on purpose and required scope of the permit. The order further states that each facility must appoint a security manager who is responsible for training and compliance with biosecurity measures. Paragraph 3 of Article 12 states that the security manager must maintain a record of people with access to the pathogens which is to be made available to the Centre for Biosecurity and Biopreparedness upon request. [1] Additionally, the Danish Business Authority also requires all research, which involves items defined in the list of EU Council Regulation, to report to the Danish Business Authority if such knowledge is disseminated across Danish borders. [2,3,4] Based on this the Danish Technical University has developed guidelines on reporting to their academic staff on how to apply for the "export" of such dual-use research. [4] There is no additional publicly available information on the websites of the Ministry of Higher Education and Science, Ministry of Defense, the Ministry of Environment and Food, the Ministry of Transport, Building and Housing or the in VERTIC BWC legislation database. [5,6,7,8,9] Denmark's reports to the United Nations Office at Geneva (UNOG) for the "Confidence Building Measure Return", which is a reporting mechanism set by the Biological Weapons Convention, also provides no evidence of a national policy requiring oversight of dual use research. [10]

[1] Danish legal information system (Retsinformation). 2009. "Executive Order on the protection of certain biological substances, means of delivery and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret material")". [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970]. Accessed 11 December 2020.

[2] The Danish Business Authority. "EU legislation on Export Controls" https://danishbusinessauthority.dk/eu-legislation-on-export-controls. Accessed 27 December 2020.

[3] Danish Technical University (DTU). 2017. "DTU Guidelines relating to Dual-Use (DTU vejledning vedr. dual-use)". [http://www.dtu.dk/-/media/DTUdk/Om_DTU/Organisation/Raad_organer_og_afdelinger/Akademisk-raad/2017/AR61/AR-864-Vejledning-vedr-dual-use-i-forskningsprojekter-paa-DTU.ashx?la=da]. Accessed 27 December 2020.

[4] The Danish Business Authority. "Catch-All Checklists and Regulations (Catch-all tjekliste og bestemmelser)". [https://eksportkontrol.erhvervsstyrelsen.dk/catch-all-tjekliste]. Accessed 27 December 2020.

[5] Ministry of Higher Education and Science. "Ministry of Higher Education and Science". [https://ufm.dk/en/the-ministry/organisation/the-ministry]. Accessed 27 December 2020.

[6] Danish Ministry of Defense. "Danish Ministry of Defense". [http://www.fmn.dk/eng/Pages/frontpage.aspx]. Accessed 27 December 2020.

[7] Ministry of Food, Agriculture and Fisheries of Denmark. [https://en.mfvm.dk/the-ministry/]. Accessed 27 December 2020.

[8] Ministry of Transport and Housing. [https://www.trm.dk/en]. Accessed 27 December 2020.

[9] VERTIC. 2020. "BWC legislation database". [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/d/]. Accessed 3 March 2021.

[10] UNOG. 5 May 2020. "Confidence Building Measure Forms – Denmark". [https://bwc-ecbm.unog.ch/denmark/bwccbm2020denmark]. Accessed 27 December 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: 1

There is evidence of a national policy requiring oversight of dual-use research, such as research with especially dangerous pathogens, toxins, and/or pathogens with pandemic potential. The Centre for Biosecurity and Biopreparedness is responsible for oversight of dual use research. The Executive Order on the protection of certain biological substances requires that facilities must apply for permits to handle sensitive biological substances, including certain pathogens, zoonoses and toxins. Paragraph 3 of Article 5 of the order states that the permit must include details on purpose and required scope of the permit. The order further states that each facility must appoint a security manager who is responsible for training and compliance with biosecurity measures. Paragraph 3 of Article 12 states that the security manager must maintain a record of people with access to the pathogens which is to be made available to the Centre for Biosecurity and Biopreparedness upon request. [1] As a complement, the Danish Business Authority implements the national regulation covering the cross-border transfer of especially dangerous pathogens, toxins and pathogens with pandemic potential, including the cross-border transfer of knowledge and dual-use research. [2] Accordingly, the Danish Business Authority requires all research, which involves items defined in the list of EU Council Regulation, to report to the Danish Business Authority if such knowledge is disseminated across Danish borders. [3,4]There is no additional publicly available information on the websites of the Ministry of Higher Education and Science, Ministry of Defense, the Ministry of Environment and Food, the Ministry of Transport, Building and Housing or the in VERTIC BWC legislation database. [5,6,7,8,9] Denmark's reports to the United Nations Office at Geneva (UNOG) for the "Confidence Building Measure Return", which is a reporting mechanism set by the Biological Weapons Convention, also provides no evidence of an agency responsible for oversight of research with especially dangerous pathogens, pathogens with pandemic potential, and/or other dual-use research. [10]

[1] Danish legal information system (Retsinformation). 2009. "Executive Order on the protection of certain biological substances, means of delivery and related material (Bekendtgørelse om sikring af visse biologiske stoffer, fremføringsmidler og relateret material")". [https://www.retsinformation.dk/Forms/R0710.aspx?id=125970]. Accessed 11 December 2020.

[2] The Danish Business Authority. "Catch-All Checklists and Regulations (Catch-all tjekliste og bestemmelser)". [https://eksportkontrol.erhvervsstyrelsen.dk/catch-all-tjekliste]. Accessed 27 December 2020.

[3] The Danish Business Authority. "EU legislation on Export Controls" https://danishbusinessauthority.dk/eu-legislation-on-export-controls. Accessed 27 December 2020.

[4] Danish Technical University (DTU). 2017. "DTU Guidelines relating to Dual-Use (DTU vejledning vedr. dual-use)".

[http://www.dtu.dk/-/media/DTUdk/Om_DTU/Organisation/Raad_organer_og_afdelinger/Akademisk-raad/2017/AR61/AR-864-Vejledning-vedr-dual-use-i-forskningsprojekter-paa-DTU.ashx?la=da]. Accessed 27 December 2020.

[5] Ministry of Higher Education and Science. "Ministry of Higher Education and Science". [https://ufm.dk/en/the-ministry/organisation/the-ministry]. Accessed 27 December 2020.

[6] Danish Ministry of Defense. "Danish Ministry of Defense". [http://www.fmn.dk/eng/Pages/frontpage.aspx]. Accessed 27 December 2020.

[7] Ministry of Food, Agriculture and Fisheries of Denmark. [https://en.mfvm.dk/the-ministry/]. Accessed 27 December 2020.

[8] Ministry of Transport and Housing. [https://www.trm.dk/en]. Accessed 27 December 2020.

[9] VERTIC. 2020. "BWC legislation database". [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/d/]. Accessed 3 March 2021.

[10] UNOG. 5 May 2020. "Confidence Building Measure Forms – Denmark". [https://bwc-ecbm.unog.ch/denmark/bwccbm2020denmark]. Accessed 27 December 2020.

1.5.2 Screening guidance for providers of genetic material

1.5.2a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence of legislation in Denmark requiring screening of synthesized DNA before it is sold. The Danish Working Environment Authority is required to conduct screening and classification of all laboratories and other facilities working with gene modification of DNA, i.e., GMOs. However, there is no details in government sources on the process of screening synthesized DNA. [1,2] The screening conducted applies to all types of work with gene-modification of DNA, both dangerous and non-dangerous pathogens, including tests, research, storage and development of GMOs. Moreover, the area of buying and selling DNA-data is governed by the Danish Health Law and the Data Protection Law, where data on all types of DNA is considered personal data, and accordingly the "right to be forgotten" and "right for limited sharing" applies. [3,4] Denmark's reports to the United Nations Office at Geneva (UNOG) for the "Confidence Building Measure Return", which is a reporting mechanism set by the Biological Weapons Convention, provides no further evidence of screening of synthesized DNA in the country. [5]

[1] Danish Working Environment Authority (Arbejdstilsynet). 2019. "Classification of Laboratories, Facilities to Production etc. (Klassifikation af laboratorier, anlæg til produktion mv.)". [https://arbejdstilsynet.dk/da/regler/at-vejledninger/k/c-0-4-klassifikation-af-laboratorier]. Accessed 27 December 2020.

[2] VERTIC. 2020. "BWC legislation database". [https://www.vertic.org/programmes/biological-weapons-and-materials/bwc-legislation-database/d/]. Accessed 3 March 2021.

[3] Danish legal information system (Retsinformation). 2019. "The Health Law (Sundhedsloven)". LBK nr 903 af 26/08/2019. [https://www.retsinformation.dk/eli/lta/2019/903]. Accessed 27 December 2020.

[4] Danish legal information system (Retsinformation). "Data Protection Law (Databeskyttelsesloven)". LOV nr 502 af 23/05/2018. [https://www.retsinformation.dk/Forms/R0710.aspx?id=201319]. Accessed 27 December 2020.

[5] UNOG. 5 May 2020. "Confidence Building Measure Forms - Denmark". [https://bwc-ecbm.unog.ch/denmark/bwccbm2020denmark]. Accessed 27 December 2020.

1.6 IMMUNIZATION

1.6.1 Vaccination rates

1.6.1a

Immunization rate (measles/MCV2)

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

Current Year Score: 1

2019

World Health Organization

1.6.1b

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

Yes = 1 , No = 0

Current Year Score: 1

2020

OIE WAHIS database

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

2.1 LABORATORY SYSTEMS STRENGTH AND QUALITY

2.1.1 Laboratory testing for detection of priority diseases

2.1.1a

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

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

Current Year Score: 2

There is evidence that Denmark's national laboratory system has the capacity to conduct diagnostic tests for 6 of the 10 WHO-defined core tests, but the 4 country-specific tests are undefined. The State Serum Institute (Statens Serum Institut, SSI), under the auspices of the Danish Ministry of Health, coordinates the national laboratory system to ensure preparedness against infectious diseases. The influenza laboratory at the State Serum Institute is the National Influenza Center for the

WHO, which conducts tests that include real-time polymerase chain reaction (PCR) tests. [1] Similarly, the National WHO Poliovirus Laboratorium at SSI conducts tests for polio through a range of methods including the use of virus culture. [2] With regards to HIV, the Laboratory for Serology at SSI applies serological tests as well as a range of other test methods. [3] Tuberculosis is tested for by the International Reference Laboratory of Mycobacteriology through microscopy. [4] Several laboratories in Denmark, that are all required to report to SSI, have the capacity to conduct rapid diagnostic testing for malaria as well as PCR. [5] Finally, typhoid is diagnosed with the help of bacterial culture. [6] For lists of different laboratory services within bacteriology, biological assays, GMP Certified Real-time PCR, mycology, parasitology, and virology offered by the State Serum Institute's laboratories, see [7].

[1] State Serum Institute. 13 February 2020. "National Influenza Center for WHO (Det Nationalt Influenza Center for WHO)" [https://www.ssi.dk/sygdomme-beredskab-og-forskning/sygdomsovervaagning/i/influenza-nationalt-center-for-who]. Accessed 28 December 2020.
[2] State Serum Institute. 13 February 2020. "The National WHO Reference Laboratory for Poliovirus". [https://en.ssi.dk/surveillance-and-preparedness/national-reference-laboratories/poliovirus]. Accessed 28 December 2020.
[3] State Serum Institute. 24 February 2020. "Laboratory for Serology". [https://en.ssi.dk/surveillance-and-preparedness/national-reference-laboratories/serology]. Accessed 28 December 2020.
[4] State Serum Institute. "International Reference Laboratory of Mycobacteriology". [https://en.ssi.dk/about-us/contact/departments/i/international-reference-laboratory-of-mycobacteriology]. Accessed 28 December 2020.
[5] State Serum Institute. 2017. "Malaria". https://www.ssi.dk/Service/Sygdomsleksikon/M/Malaria.aspx. Accessed 28 December 2020.
[6] State Serum Institute. 2017. "Typhoid (Tyfus)". https://www.ssi.dk/Service/Sygdomsleksikon/T/Tyfus.aspx. Accessed 28 December 2020.
[7] State Serum Institute. 4 December 2019. "Laboratory Services - human". [https://en.ssi.dk/products-and-services/laboratory-services/virology]. Accessed 28 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: 0

There is no evidence of national plans for conducting testing during a public health emergency which include considerations for testing for novel pathogens and defining goals for testing. The Danish Health Authority (Sundhedsstyrelsen) has published a number of preparedness plans; the latest from 2013 [1, 2]. The 2013 plan focuses on pandemics caused by influenza type A, but states explicitly that the plans can be accommodated and used in relation to other epidemics that puts the health sector under stress. In February 2020, the Danish Health Authority announced that a new pandemic plan with a broader focus would be published during that year. [3] However, as of 4 May 2021, there is no evidence that the new plan has been published. The 2013 pandemic plan describes in Part I, tasks and actions at the national level, including definition of risk groups and acquisition of vaccines and antiviral drugs, [1] whereas Part II deals with the decentralized preparedness. [2] These plans do not include considerations for testing for novel pathogens, scaling capacity, and defining goals for testing.

[1] Danish Health Authority (Sundhedsstyrelsen). 21 January 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)". [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-

fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC]. Accessed 2 January 2021.

[2] Danish Health Authority (Sundhedsstyrelsen). 21 January 2013. "Preparedness for pandemic influenza, Part II: Guidelines for regions and municipalities (Beredskab for pandemisk influenza, del II: Vejledning til regioner og kommuner). [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-2,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=3C71CA640F768CFF503A68265200C220826B20CB]. Accessed 2 January 2021.

[3] Danish Health Authority (Sundhedsstyrelsen). 6 February 2020. "Preparedness for pandemics (Beredskab for epidemier)". [https://www.sst.dk/da/viden/beredskab/beredskab-for-epidemier]. Accessed 4 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: 1

There is evidence that the national laboratory that serves as a reference facility in Denmark is accredited. The State Serum Institute (Statens Serum Institut, SSI) is the national laboratory serving as a reference facility for Denmark, and it serves as the reference laboratory for influenza, polio, HIV, TB and malaria, however not with regards to typhoid. [1] There is evidence that several of its laboratories are accredited in accordance with ISO 17025 'General Requirements for the Competence of Calibration and Testing Laboratories'. [2] The National WHO Poliovirus Laboratory, [3] the National Influenza Centre [4] and the National WHO Reference laboratory for Morbilli- and Rubellavirus [5] have all received WHO accreditation. Tthe State Serum Institute also provides a list of accredited tests [6].

[1] State Serum Institute. 6 May 2020. "National Reference Laboratories". [https://en.ssi.dk/surveillance-and-preparedness/national-reference-laboratories]. Accessed 2 January 2021.
[2] State Serum Institute. 4 December 2019. "Laboratory Services" [https://en.ssi.dk/products-and-services/laboratory-services]. Accessed 2 January 2021.
[3] State Serum Institute. 15 February 2020. "The National WHO Reference Laboratory for Poliovirus" [https://en.ssi.dk/surveillance-and-preparedness/national-reference-laboratories/poliovirus]. Accessed 2 January 2021.
[4] State Serum Institute. 13 February 2020. "The National WHO Influenza Center (Det Nationale Influenza Center for WHO)" [https://www.ssi.dk/sygdomme-beredskab-og-forskning/sygdomsovervaagning/i/influenza-nationalt-center-for-who]. Accessed 2 January 2021.
[5] State Serum Institute. 11 February 2020. "National WHO Reference laboratory for Morbilli- and Rubellavirus". [https://en.ssi.dk/surveillance-and-preparedness/national-reference-laboratories/morbilli--og-rubellavirus]. Accessed 2 January 2021.
[6] State Serum Institute. 1 July 2020. "Quality assurance of analysis (Kvalitetssikring af analyser)". [https://www.ssi.dk/produkter-og-ydelser/diagnostik/kvalitetssikring-af-analyser]. Accessed 2 January 2021.

2.1.2b

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that the national reference laboratories in Denmark at the State Serum Institute undergoes external quality assurance reviews. Several of its laboratories are accredited qualify for the ISO 17025 'General Requirements for the Competence of Calibration and Testing Laboratories'. [1, 2]. The National WHO Poliovirus Laboratory, [3] the National Influenza Centre [4] and the National WHO Reference laboratory for Morbilli- and Rubellavirus [5] have all received WHO accreditation, and undergo a yearly accreditation panel test.

[1] State Serum Institute. 1 July 2020. "Quality assutance of analysis (Kvalitetssikring af analyser)". [https://www.ssi.dk/produkter-og-ydelser/diagnostik/kvalitetssikring-af-analyser]. Accessed 2 January 2021.
[2] The Danish Accreditation Fund (DANAK). 8 July 2019. "Decision on accreditation under reg. no. 397 (Afgørelse af akkreditering under reg. nr. 397") [https://www.ssi.dk/-/media/arkiv/dk/produkter-og-ydelser/diagnostik/kvalitetssikring-af-analyser/afgoerelse-med-dokumenter.pdf?la=da]. Accessed 2 January 2021.
[3] State Serum Institute. 15 February 2020. "The National WHO Reference Laboratory for Poliovirus" [https://en.ssi.dk/surveillance-and-preparedness/national-reference-laboratories/poliovirus]. Accessed 2 January 2021.
[4] State Serum Institute. 13 February 2020. "The National WHO Influenza Center (Det Nationale Influenza Center for WHO)" [https://www.ssi.dk/sygdomme-beredskab-og-forskning/sygdomsovervaagning/i/influenza-nationalt-center-for-who]. Accessed 2 January 2021.
[5] State Serum Institute. 11 February 2020. "National WHO Reference laboratory for Morbilli- and Rubellavirus". [https://en.ssi.dk/surveillance-and-preparedness/national-reference-laboratories/morbilli--og-rubellavirus]. Accessed 2 January 2021.

2.2 LABORATORY SUPPLY CHAINS

2.2.1 Specimen referral and transport system

2.2.1a

Is there a nationwide specimen transport system?
Yes = 1 , No = 0
Current Year Score: 1

Denmark has a nationwide specimen transport system. Specimen transport to the State Serum Institute (SSI) takes place by car, which every night drives through all regions of Denmark. There is one central designated pick-up site in each region. Each region has an internal transport scheme, which picks up samples from hospitals, practices and clinics and deliver them to a central SSI pick-up site. The car arrives at the State Serum Institute by 5 am. Before 18 June 2018, specimen transport was carried out either by the postal service company, PostNord, or by private couriers. [1]

[1] State Serum Institute. 19 October 2020. " Sending samples (Forsendelse af prøver)". [https://www.ssi.dk/produkter-og-ydelser/diagnostik/forsendelse-af-proever]. Accessed 2 January 2021.

2.2.2 Laboratory cooperation and coordination

2.2.2a

Is there a plan in place to rapidly authorize or license laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak?
Yes = 2 , Yes, but there is evidence of gaps in implementation = 1 , No = 0
Current Year Score: 0

Denmark has no publicly available plan in place to allow for a rapid authorization of laboratories to supplement the capacity of the national public health laboratory system to scale-up testing during an outbreak. DANAK - the Danish Accreditation Fund - is the national Danish accreditation authority, [1] which upon application grants accreditations to public as well as private laboratories according to the DS/EN ISO 15189 standard, which is based on ISO/IEC 17025 and ISO 9001. [2] DANAK also offers accreditation of laboratories for flexible scope. [3] There is, however, no information available on DANAK's homepage regarding the possibility for rapid authorization of laboratories during a public health crisis. Nor is there any information at the homepages of the Danish Ministry of Health [4] or at the Ministry of Food, Agriculture and Fisheries. [5] While no possibility for rapid accreditation exists in the Danish system, the Danish public health system has, however, cooperated with private laboratories during the COVID-19 pandemic. [6] When a Clinical Microbiologic Department (Klinisk Mikrobologisk Afdeling, KMA) on a hospital opts to rely on external laboratory facilities, it is the responsibility of KMA to ensure the quality of analysis and data. [7]

[1] Danish Legal Information Service. 2009. "Executive Order on Accreditation of Companies (Bekendtgørelse om akkreditering af virksomheder)". BEK no 913 of 25/09/2009. https://www.retsinformation.dk/eli/lta/2009/913]. Accessed 9 February 2021.
[2] DANAK. "Accreditation for medical examination". [http://english.danak.dk/danaks-main-fields-of-accreditation/medical-examination]. Accessed 9 February 2021.
[3] DANAK. 29 May 2015. "DANAK-ACCREDITATION REGULATION - Accreditation of laboratories for flexible scope". [http://www2.danak.dk/akkreditering/AB/engelske/AB10.pdf]. Accessed 9 February 2021.
[4] Danish Ministry of Health (Sundhedsministeriet). [https://sum.dk/english]. Accessed 4 March 2021.
[5] Ministry of Food, Agriculture and Fisheries (Ministeriet for Fødevarer, Landbrug og Fiskeri). 2021. [https://en.fvm.dk/] Accessed 4 March 2021.
[6] The Danish Parliament's Health and Elderly Committee (Folketingets Sundheds- og Ældreudvalg). 31 August 2020. "Answer to question 1207 (Svar spørgsmål 1207".
[https://www.ft.dk/samling/20191/almdel/suu/spm/1207/svar/1685143/2236863/index.htm]. Accessed 9 February 2021.
[7] Danish Health Authority. 21 October 2020. "Guidelines for handling COVID-19 in healthcare system (Retningslinjer for håndtering af COVID-19 i sundhedsvæsenet)". [https://www.sst.dk/-/media/Udgivelser/2020/Corona/Retningslinjer/Retningslinjer-for-haandtering-af-COVID-19.ashx]. Accessed 9 February 2021.

2.3 REAL-TIME SURVEILLANCE AND REPORTING

2.3.1 Indicator and event-based surveillance and reporting systems

2.3.1a

Is there evidence that the country is conducting ongoing event-based surveillance and analysis for infectious disease?
Yes, there is evidence of ongoing event-based surveillance and evidence that the data is being analyzed on a daily basis = 2, Yes, there is evidence of ongoing event-based surveillance, but no evidence that the data are being analyzed on a daily basis = 1, No = 0

Current Year Score: 1

There is evidence of an event-based surveillance unit (EBS) within the national emergency operations center in Denmark, but no evidence that the data is being analysed on a daily basis. the State Serum Institute (Statens Serum Institut, SSI) is the national surveillance agency on infectious diseases and biological threats, and SSI runs a 24-hour hotline for medical staff. [1]. This may be used to report and receive advice regarding suspicions of infectious diseases and allows the SSI, and hence the Danish Emergency Management Agency, to assess for potential outbreaks outside of its regular data collection, although none of the two agencies are actively surveying for event-based information and there is no evidence that data is being

analysed on a daily basis. Similarly, the Centre for Biosecurity and Biopreparedness has a 24-hour hotline which all citizens may use for reporting theft, misuse or outbreaks of biological material. [2] As such, though evidence points to routine collection of reports, stories, rumors, and other information about health events that could be a serious risk to public health, there is no evidence that these are being analyzed daily. [1, 2]

[1] State Serum Institute. 2018. "Kontakt (Contacts)". https://www.ssi.dk/Service/Kontakt.aspx. Accessed June 7, 2021.
[2] State Serum Institute. 2018. "Center for Biosikring og Bioberedskab (Center for Biosecurity and Biopreparedness". https://www.ssi.dk/Smitteberedskab/Biosikring%20og%20beredskab.aspx. Accessed June 7, 2021.

2.3.1b

Is there publicly available evidence that the country reported a potential public health emergency of international concern (PHEIC) to the WHO within the last two years?
Yes = 1 , No = 0

Current Year Score: 0

There is no public evidence that Denmark has reported a potential public health emergency of international concern (PHEIC) to the World Health Organization (WHO) within the last two years.

The WHO Disease Outbreak News (DON) webpage, the WHO country webpage for Denmark and the website of the Danish Ministry of Health do not have any mention of such cases from the previous two years. [1,2,3]

In relation to COVID-19, a DON report was released concerning Denmark, but only on 6 November 2020 (with an update on 3 December 2020), concerning 12 cases detected in Northern Jutland of a new mink-associated variant strain of SARS-CoV-2. [4,5] According to the report, preliminary findings indicated that the new variant strain – referred to as cluster 5 variant – might be moderately less sensitive to neutralizing antibodies, thereby potentially making upcoming vaccines less efficient. The WHO stated that "The preliminary findings by Denmark are globally relevant" and that "WHO recognises the importance of sharing epidemiological, virological and full genome sequence information with other countries and research teams, including through open-source platforms." [4]. On 4 November 2020, the Danish government ordered all minks to be put down, and on 21 December, a ban on mink farming until 31 December 2021 was passed by the Danish parliament (Folketinget). [6] In both the initial DON report from 6 November 2020 and in the update from 3 December 2020, the WHO advised against implementing any travel or trade restrictions for Denmark. [4,5] The latter update states that the cluster 5 variant is believed no longer to be in circulation among humans. [5].

[1] World Health Organisation (WHO). "Disease Outbreak News (DONs)". https://www.who.int/emergencies/disease-outbreak-news. Accessed 5 May 2021.
[2] World Health Organisation (WHO). "Denmark". https://www.euro.who.int/en/countries/denmark. Accessed 5 May 2021.
[3] The Danish Ministry of Health. https://sum.dk/. Accessed 5 May 2021.
[4] World Health Organization (WHO). 6 November 2020. Disease Outbreak News. "SARS-CoV-2 mink-associated variant strain - Denmark". https://www.who.int/csr/don/06-november-2020-mink-associated-sars-cov2-denmark/en/. Accessed 5 May 2021.
[5] World Health Organization (WHO). 3 December 2020. Disease Outbreak News: Update. "SARS-CoV-2 mink-associated variant strain - Denmark". https://www.who.int/csr/don/03-december-2020-mink-associated-sars-cov2-denmark/en/. Accessed 5 May 2021.
[6] The Office of the Folketing Hansard (Folketingstidende). "L 77 Proposal for a law on the culling of and temporary ban on keeping mink) (L 77 Forslag til lov om aflivning af og midlertidigt forbud mod hold af mink)".

https://www.folketingstidende.dk/samling/20201/lovforslag/L77/index.htm. Accessed 5 May 2021.

2.3.2 Interoperable, interconnected, electronic real-time reporting systems

2.3.2a

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

Yes = 1 , No = 0

> Current Year Score: 1

There is evidence that the Danish government operates an electronic reporting surveillance system. There are two electronic surveillance systems in place in Denmark, both operated by the State Serum Institute (SSI). Together they form the Danish digital infection preparedness system. The Danish microbiological database (Den danske mikrobiologidatabase, MiBa), introduced in 2010, is an automatically updated database covering real-time microbiological test results from various diagnostic laboratories. MiBa is linked to IT systems at the national, regional, and local level, and constitutes the backbone in the Danish surveillance of inflectional diseases and microorganisms. [1] The Hospital Acquired Infections Database (HAIBA) combines data from MiBa, the National Patient Register (Landspatientregisteret), and the Danish Civil Registration System (CPR register) to surveil five types of hospital acquired infections. These include bacteriaemia (bacteria in the blood), urinary tract infection, intestinal infection with clostridium difficile, deep infection after planned total hip alloplasty (artificial hip), and deep infection after planned knee alloplasty (artificial knee). [2] The two data bases allow for automatic filtering and analysis of data using complex algorithms. Through the MiBAlert, the MiBA system is able to flag individual patients infected with antibiotic resistant bacteria thus allowing for personalized treatment. [1] The Danish infection preparedness system has been electronic since 2012. [3]

[1] State Serum Institute. 28 November 2018, "MiBa". [https://miba.ssi.dk/mikrobiologidatabase]. Accessed 6 January 2021.
[2] State Serum Institute. 5 October 2020 "HAIBA". [https://miba.ssi.dk/haiba]. Accessed 6 January 2021.
[3] State Serum Institute. 29 November 2018. "About MiBa and HAIBA (Om MiBa og HAIBA). [https://miba.ssi.dk/om-miba-og-haiba]. Accessed 6 January 2021

2.3.2b

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

Yes = 1 , No = 0

> Current Year Score: 1

There is evidence of an electronic reporting surveillance system that collect ongoing or real-time laboratory data. There are two electronic surveillance systems in place in Denmark, both operated by the State Serum Institute (SSI). Together they form the Danish digital infection preparedness system. The Danish microbiological database (Den danske mikrobiologidatabase, MiBa), introduced in 2010, is an automatically updated database covering real-time microbiological test results from various diagnostic laboratories. MiBa is linked to IT systems at the national, regional, and local level, and constitutes the backbone in the Danish surveillance of inflectional diseases and microorganisms. [1] The Hospital Acquired Infections Database (HAIBA) combines data from MiBa, the National Patient Register (Landspatientregisteret), and the Danish Civil Registration System (CPR register). [2] The two data bases allow for automatic filtering and analysis of data using complex algorithms. Through the MiBAlert, the MiBA system is able to flag individual patients infected with antibiotic resistant bacteria thus allowing for personalized treatment. [1] The Danish infection preparedness system has been electronic since 2012. [3].

[1] State Serum Institute. 28 November 2018, "MiBa". [https://miba.ssi.dk/mikrobiologidatabase]. Accessed 6 January 2021.

[2] State Serum Institute. 5 October 2020 "HAIBA". [https://miba.ssi.dk/haiba]. Accessed 6 January 2021.

[3] State Serum Institute. 29 November 2018. "About MiBa and HAIBA (Om MiBa og HAIBA). [https://miba.ssi.dk/om-miba-og-haiba]. Accessed 6 January 2021

2.4 SURVEILLANCE DATA ACCESSIBILITY AND TRANSPARENCY

2.4.1 Coverage and use of electronic health records

2.4.1a

Are electronic health records commonly in use?

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

Current Year Score: 2

Electronic health records are commonly in use in Denmark. Electronic health records are an integrated part of the comprehensive unified Danish eHealth Portal (sundhed.dk) run by Danish Regions (Danske Regioner), the Ministry of Health (Sundheds- og Ældreministeriet), and Local Government Denmark (Kommunernes Landsforening). The platform is used globally within the Danish health care system. Every Danish citizen has a personal page at sundhed.dk through which he or she might access his or her personal health records, book appointment with personal general practitioner, renew drug prescriptions, monitor personal drug compliance, find information on shortest waiting lists for operations, register as organ donor, and more. [1]. The first version of the Danish eHealth Portal (sundhed.dk) went online in late 2003. [2] The portal is visited by approximately 1.8 million citizens a month. [3]

[1] Danish eHealth Portal (sundhed.dk). 13 June 2016. "Background" [https://www.sundhed.dk/borger/service/om-sundheddk/ehealth-in-denmark/background/]. Accessed January 7 2021

[2] Danish eHealth Portal (sundhed.dk). 23 September 2016. "The history of the Danish eHealth Portal (Historien om sundhed.dk)". https://www.sundhed.dk/borger/service/om-sundheddk/om-organisationen/historien-om-sundheddk/] Accessed January 7 2021

[3] Healthcare Denmark. 1 June 2020. "Danish e-health portal sets a new record with high visitor numbers" [https://www.healthcaredenmark.dk/news/danish-e-health-portal-sets-a-new-record-with-high-visitor-numbers.aspx] Accessed January 7 2021

2.4.1b

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that the national public health system has access to electronic health records of individual in Denmark. The Danish health system is public and universal with free and equal access for all citizens. [1] All health facilities (hospitals, clinics, and doctors) have electronic online access to the clinical information about their patient's medical history through the Danish eHealth Portal (sundhed.dk). [2]

[1] Healthcare Denmark. "Population health and prevention". [https://www.healthcaredenmark.dk/the-case-of-denmark/population-health-and-prevention/]. Accessed January 7 2021

[2] Danish eHealth Portal (sundhed.dk). 13 June 2016. "Background" [https://www.sundhed.dk/borger/service/om-sundheddk/ehealth-in-denmark/background/]. Accessed January 7 2021

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 to show that data standards exist in Denmark to ensure data is comparable across the Danish health sector. MedCom, a non-profit organization established, owned, and financed by the Danish Ministry of Health, Danish Regions and Local Government Denmark, is responsible for ensuring common data standards to facilitate information sharing across the various parts of the health system, including information shared through the Danish eHealth Portal (sundhed.dk) and the Health Data Network Sundhedsdatanet (SDN). [1, 2, 3]. The standards and classifications used by MedCom rely on a Danish adaptation of HL7 standards. [1] MedCom's management system for test and certification of Health Care IT vendors' implementation of MedCom interoperable standards is ISO9001:2015 certified. [4]

[1] MedCom. August 2016. "MedCom in Brief". [https://www.medcom.dk/media/7077/medcom-in-brief.pdf]. Accessed 7 January 2021.
[2] MedCom. 10 December 2020. "MedCom and sundhed.dk: two sides of the same coin (MedCom og sundhed.dk: to sider af samme sag)" [https://www.medcom.dk/media/1390/medcom-og-sundheddk-to-sider-af-samme-sag.pdf]. Accessed 7 January 2021.
[3] MedCom. 17 December 2019. "The Danish Health Data Network (SDN)". [https://www.medcom.dk/medcom-in-english/national-activities/system-management/the-danish-health-data-network-sdn]. Accessed 7 January 2021
[4] MedCom. 30 Januar 2020. "Standards, test, certification and modernization". [https://www.medcom.dk/medcom-in-english/national-activities/standards-test-certification-and-modernisation]. Accessed 7 January 2021

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

2.4.2a

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence of established mechanisms at the relevant Danish ministries responsible for animal, human, and wildlife surveillance to share data. The Danish Veterinary and Food Administration (Fødevarestyrelsen) have the overall responsibility for zoonosis control in Denmark. Surveillance of zoonotic pathogens are carried out by the Danish Veterinary Consortium, which took over the veterinary public service agreement (den veterinære myndighedsaftale) from the Danish Zoonosis Centre at the beginning of 2020. [1] In total, 41 infectious diseases are clinically notifiable in Denmark [2]. The surveillance of zoonotic pathogens is based on a One Health approach integrating the Ministry of Food, Agriculture and Fisheries and its subsidiary, the Danish Veterinary and Food Administration, the Ministry of Health, including the Danish Health Authority (Sundhedsstyrelsen), State Serum Institute (SSI), general practitioners and hospitals, and Clinical Microbiology, the Ministry of Higher Education and Science and research institutions, as well as representatives from industry and non-governmental organizations. Notifiable zoonotic diseases detected by physicians are reported to the Danish Patient Safety Authority

(Styrelsen for Patientsikkerhed) and the State Serum Institute (SSI), and the results from subsequent diagnostic analysis from one of the clinical microbiology laboratories are transmitted to the Danish Microbiologic Data Base (Den danske mikrobiologidatabase, MiBa). [2, 3] Since 1994 a cross-agency Annual Report on Zoonoses in Denmark has been published. [4] On behalf of the Danish Veterinary and Food Administration (Fødevarestyrelsen), the Department of Veterinary and Animal Sciences at the University of Copenhagen surveils and reports on the prevalence of various mosquitos. midges, ticks, and horseflies in Denmark. [5]

[1] Danish Veterinary Consortium "About the Danish Veterinary Consortium" [https://www.vetssi.dk/om-veterinaar-diagnostik/about-veterinary-diagnostics]. Accessed 8 January 2021.
[2] National Food Institute, Technical University of Denmark. 2019. "Annual Report on Zoonoses in Denmark 2019". [https://www.food.dtu.dk/-/media/Institutter/Foedevareinstituttet/Publikationer/Pub-2020/RAPPORT-Annual-Report-2019-FINAL.ashx?la=da&hash=FFCDF0E91D5DC4C0009E957835E30FC60F598F7B]. Accessed 8 January 2021.
[3] State Serum Institute. 21 October 2016. "MiBa, the Danish Microbiology Database" [https://miba.ssi.dk/service/english]. Accessed 8 January 2021.
[4] DTU Food. 2020. "Zoonoses - yearly reports (Zoonoser - årlige rapporter)". [https://www.food.dtu.dk/publikationer/sygdomsfremkaldende-mikroorganismer/zoonoser-aarlige-rapporter]. Accessed 4 March 2021.
[5] Department of Veterinary and Animal Sciences, University of Copenhagen. 19 October 2020 "Myggetal" https://www.myggetal.dk/]. Accessed January 8 2021.

2.4.3 Transparency of surveillance data

2.4.3a

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

Current Year Score: 1

Denmark makes de-identified health surveillance data on disease outbreaks publicly available on government websites.

The website of the State Serum Institute (Statens Serum Institut, SSI), the national surveillance unit on infectious diseases, which is under the auspices of the Ministry of Health, has a dedicated page for health surveillance data. [1] The data can be extracted from the website and is updated on a daily basis with the newest data from both individually reported and laboratory-reported diseases. For example, data on the prevalence of Campylobacter from the last 20 years may be easily accessed and downloaded. [2]

[1] State Serum Institute. 2021. "Surveillance in Numbers, Graphs and Maps (Overvågning i tal, grafer og kort)". [https://www.ssi.dk/Smitteberedskab/Sygdomsovervaagning.aspx]. Accessed 8 January 2021.
[2] State Serum Institute. 2020. "Campylobacter, laboratory-based reported diseases (Campylobacter, laboratorieanmeldelsespligtige sygdomme)". [https://statistik.ssi.dk//sygdomsdata#!/?sygdomskode=CAMP&xaxis=Aar&show=Graph&datatype=Laboratory]. Accessed 8 January 2021.

2.4.3b

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

Yes = 1 , No = 0

Current Year Score: 1

Denmark makes de-identified COVID-19 surveillance data available via daily reports on government websites. The State Serum Institute (SSI) under the auspice of the Ministry of Health runs its own COVID-19 portal with information about the status on the COVID-19 pandemic in Denmark as well as abroad. The portal gives access to surveillance data, analyses and prognoses, as well as information and advice related to diagnostics, hygiene, travel, and vaccination. [1]. Detailed daily data is available for download and through the SSI's interactive municipal and regional dashboard. Data is updated every weekday at 2 p.m.. [2]

[1] State Serum Institute. 2021. "SSI's portal with information on covid-19 (SSI's portal med information om covid-19)". [https://covid19.ssi.dk/]. Accessed 8 January 2021.
[2] State Serum Institute. 2021. "SSI's kommunale og regionale dashboard (SSI's kommunale og regionale dashboard)". [http://www.ssi.dk/covid19data]. Accessed 8 January 2021.

2.4.4 Ethical considerations during surveillance

2.4.4a

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

Yes = 1 , No = 0

Current Year Score: 1

There are laws in Denmark that safeguard the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities. The area is governed by the Data Protection Act, which is the piece of Danish legislation implementing the EU's General Data Protection Regulation (GDPR). [1, 2] The GDPR defines that "personal data should be processed in a manner that ensures appropriate security and confidentiality of the personal data, including for preventing unauthorised access to or use of personal data and the equipment used for the processing." Health data is included as personal data according to GDPR: "personal data concerning health should include all data pertaining to the health status of a data subject which reveal information relating to the past, current or future physical or mental health status of the data subject". [2]

[1] Danish legal information system (Retsinformation). 2018. LOV nr 502 af 23/05/2018. "The Data Protection Act (Databeskyttelsesloven)". [https://www.retsinformation.dk/Forms/R0710.aspx?id=201319]. Accessed 8 January 2021.
[2] Official Journal of the European Union. 27 April 2016. "REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)". [https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R0679&from=EN]. Accessed 8 January 2021.

2.4.4b

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

Yes = 1 , No = 0

> **Current Year Score: 1**

There is evidence that the Danish legislation safeguarding the confidentiality of identifiable health information for individuals, such as that generated through health surveillance activities, includes protections from cyber attacks (e.g., ransomware). The area is governed by the Data Protection Act, which is the piece of Danish legislation implementing the EU's General Data Protection Regulation (GDPR). [1, 2] The GDPR defines that "personal data should be processed in a manner that ensures appropriate security and confidentiality of the personal data, including for preventing unauthorised access to or use of personal data and the equipment used for the processing." Health data is included as personal data according to GDPR: "personal data concerning health should include all data pertaining to the health status of a data subject which reveal information relating to the past, current or future physical or mental health status of the data subject". [2] Both Acts demand that the organization holding responsibility of the data takes measures to prevent cyber-attacks. [1, 2] Moreover, in case of a leak or attack, the organization must make a public notification within 72 hours of the breach.

[1] Danish legal information system (Retsinformation). 2018. LOV nr 502 af 23/05/2018. "The Data Protection Act (Databeskyttelsesloven)". [https://www.retsinformation.dk/Forms/R0710.aspx?id=201319]. Accessed 8 January 2021.
[2] EU Commission. 2016. "General Data Protection Regulation (GDPR)". [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2016.119.01.0001.01.ENG]. Accessed 8 January 2021.

2.4.5 International data sharing

2.4.5a

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

Yes, commitments have been made to share data for more than one disease = 2, Yes, commitments have been made to share data only for one disease = 1, No = 0

> **Current Year Score: 2**

Denmark has made commitments to share surveillance data for more than one disease during a public health emergency with other countries in the region.

As a member of the European Union, Denmark is member of the European Centre for Disease Prevention and Control's Early Warning and Response System (EWRS). [1] In addition, Denmark is a member of the World Health Organization's International Health Regulations' (IHR) global warning system, and is thereby required to share information on outbreaks that may constitute a public health emergency of international concern. [2] The State Serum Institute is the Danish National Focal Point for both the EWRS and the IHR. [3] In relation to the discovery of a new variant strain of SARS-CoV-2 – referred to as the cluster 5 variant – the State Serum Institute on 5 November 2020 shared the full gene sequence with the EWRS, the IHR, and the public international database GISAID. [4]

[1] Decision No 1082/2013/EU of the European Parliament and of the Council of 22 October 2013 on Serious Cross-Border Threats to Health and Repealing Decision No 2119/98/EC. Official Journal of the European Union. [https://ec.europa.eu/health/sites/health/files/preparedness_response/docs/decision_serious_crossborder_threats_221020

13_en.pdf]. Accessed 10 January 2021.

[2] World Health Organization (WHO). 2010. "WHO guidance for the use of Annex 2 of the International Health Regulations (2005)". [https://www.who.int/ihr/revised_annex2_guidance.pdf?ua=1)] Accessed 10 January 2021.

[3] State Serum Institute. "(24/7 Hotline "Vagtberedskab". [https://www.ssi.dk/sygdomme-beredskab-og-forskning/vagtberedskab] Accessed 10 January 2021.

[4] State Serum Institute. 10 November 2020. "SSI's sharing of data on "cluster 5" sars-CoV-2 mink variant virus (SSI's deling af data om "cluster 5" sars-CoV-2 minkvariant virus)". [https://www.ssi.dk/aktuelt/nyheder/2020/ssis-deling-af-data-om-cluster-5-sars-cov-2-minkvariant-virus]. Accessed 10 January 2021.

2.5 CASE-BASED INVESTIGATION

2.5.1 Case investigation and contact tracing

2.5.1a

Is there a national system in place to provide support at the sub-national level (e.g. training, metrics standardization and/or financial resources) to conduct contact tracing in the event of a public health emergency?
Yes, there is evidence that the national government supports sub-national systems to prepare for future public health emergencies = 2, Yes, there is evidence that the national government supports sub-national systems, but only in response to active public health emergencies = 1, No = 0

         Current Year Score: 0

There is insufficient evidence that Denmark has a national system in place to provide support at the sub-national level to conduct contact tracing in thae case of a public health emergency.

During the COVID-19 pandemic, three national agencies, all under the auspices of the Ministry of Health, are involved in the Danish contact tracking system: the State Serum Institute (Statens Serum Institut, SSI) monitors the spread of infections and prepares ongoing risk assessments at the national level; the Danish Health Authority (Sundhedsstyrelsen) describes the professional framework for the prevention of outbreaks and prepares an overall program for detection and handling of close contacts to infected persons; and the Danish Patient Safety Authority (Styrelsen for Patientsikkerhed) carries out operational duties in relation to contact tracing. [1]

It is thus the Danish Patient Safety Authority, who contacts, advises and assists in the tracing of close contacts. There is no publicly available plan as to how the capacity of the contact tracing efforts are to be scaled so as to meet demand during a public health emergency. However, during 2020, the tracing capacity has been continuously expanded, with the Danish Patient Safety Authority having built up a significant organization handling the contact tracking in Denmark. [2] There is no evidence of a contact tracing system for other diseases on the website of the Danish Ministry of Health. [3]

[1] Danish Health Authority (Sundhedsstyrelsen). 2020. "COVID-19: Tracking and handling close contacts (COVID-19: Opsporing og håndtering af nære kontakter)". [https://www.sst.dk/-/media/Udgivelser/2020/Corona/Smitteopsporing/COVID-19-Smitteopsporing-af-naere-kontakter.ashx?la=da]. Accessed 10 January 2021.
[2] Danish Patient Safety Authority (Styrelsen for Patientsikkerhed). 30 October 2020. "COVID-19: Minister of Health and the Elderly reinforces infection detection (COVID-19: Sundheds- og ældreministeren forstærker smitteopsporingen)". [https://stps.dk/da/nyheder/2020/covid-19-sundheds-og-aeldreministeren-forstaerker-smitteopsporingen/]. Accessed 5 February 2021.

[3] The Danish Ministry of Health. [https://sum.dk/english] Accessed 18 March 2021.

2.5.1b

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

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

Current Year Score: 0

There is insufficient evidence that Denmark 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.

During the COVID-19 pandemic, the general rights to salary, job security and medical attention are maintained for people in self-isolation. [1] An employer has the right to send employees home in quarantine even if they are not tested positive. The employee, however, retains the right to his or her usual salary. If isolation is ordered by a medical doctor, it will be considered equal to being ill, and the employee will have the right to get sick leave pay. [1] People living in homes where self-isolation is not possible might be offered a voluntary out-of-home quarantine. The stay, which is provided by the local municipality, is free of charge, though a daily fee of DKK 150 (US$ 25) is charged for meals. [2] However, there is no evidence that these or similar measures apply to any diseases other than COVID-19, including on the website of the Danish Ministry of Health. [3]

[1] Det Faglige Hus. 2020. " Vacant, employed or dismissed? We answer your questions about corona / COVID-19 (Ledig, ansat eller opsagt? Vi svarer på dine spørgsmål om corona/COVID-19)". [https://www.detfagligehus.dk/faa-hjaelp/loenmodtager/coronacovid-19/#karantane]. Accessed 10 January 2021.
[2] Danish Health Authority. 2020. "What to do if you are infected with novel coronavirus and have been offered voluntary out-of-home quarantine". [https://www.sst.dk/-/media/Udgivelser/2020/Corona/Isolation/Isolation_A4_UK_tilgaengelig.ashx?la=en&hash=B217FD3F494C8BA25A1A7062CB69573E4C51C127]. Accessed 11 January 2021.

2.5.1c

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

Yes = 1 , No = 0

Current Year Score: 1

Denmark makes de-identified data on contact tracing efforts for COVID-19 available via daily reports at the homepage of the Danish Patient Safety Authority (Styrelsen for patientsikkerhed, STPS). The STPS reports daily figures on the number of Corona-infected citizens that they have contacted, as well as the share of infected persons that have not been reached. Daily data is also being provided for the number of close contacts, who have been contacted per day, either by STPS or by the infected persons' themselves, as well as the number of close contacts that on their own initiative have contacted the STPS corona tracing facility per day. STPS also reports on the infected persons' self-assessed sources of infection. The data is published daily after 9.30 p.m. (CET). [1]

[1] Danish Patient Safety Authority. "Data on contact tracing (Data for smitteopsporing)". [https://stps.dk/da/sundhedsfare-og-beredskab/coronaopsporing/om-coronaopsporing/data-for-smitteopsporing/]. Accessed 26 January 2021.

2.5.2 Point of entry management

2.5.2a

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

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

Current Year Score: 2

Danish law governs the identification and contact tracing of international travelers entering Denmark to prepare for future public health emergencies.

Contact tracing falls under the remit of the Danish Patient Safety Authority (Styrelsen for Patientsikkerhed), which is under the auspices of the Danish Ministry of Health. According to the 2020 Danish Epidemic Act, the Ministry of Health may request passenger lists, if such lists exist, from any means of transport, including aircraft, ships, trains and buses, in case a person on board is infected or may be presumed to be infected with infectious or other communicable diseases covered in the appendixes to the Act. [1] The same applies for the Passenger Name Record (PNR) data for passengers and crew from airlines arriving at Danish airports. In case a passenger or crew member is infected or suspected of being infected with an infectious or other communicable disease, the PNR data will be passed on to the Danish Agency for Patient Safety. [2] The general provisions of the Danish Epidemic Act also apply to international travelers entering Denmark, including possible injunctions for examination, isolation, and hospital treatment. [1]

[1] Danish legal information system (Retsinformation). 2020. "Order on the Act on Measures against Infectious and Other Communicable Diseases (Danish Epidemic Act) (Bekendtgørelse af lov om foranstaltninger mod smitsomme og andre overførbare sygdomme (Epidemiloven)". LBK no 1444 of 01/10/2020. [https://www.retsinformation.dk/eli/lta/2020/1444]. Accessed 2 February 2021.

[2] Danish legal information system (Retsinformation). 2020. "Executive Order on the collection of passenger list information and information on crew members pursuant to the Act on Measures against Communicable and Other Communicable Diseases (Bekendtgørelse om indsamling af passagerlisteoplysninger og oplysninger om besætningsmedlemmer i medfør af lov om foranstaltninger mod smitsomme og andre overførbare sygdomme)". BEK no 1136 of 03/07/2020. [https://www.retsinformation.dk/eli/lta/2020/1136]. Accessed 2 February 2021.

2.6 EPIDEMIOLOGY WORKFORCE

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

2.6.1a

Does the country meet one of the following criteria?

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

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

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

Current Year Score: 1

Applied epidemiology training is available in Denmark and Denmark provides, through its membership of the EU, resources for citizens to obtain training in other EU/EEA countries. As member of the EU, Danes may apply for the European Programme for Intervention Epidemiology Training (EPIET) Fellowship program under the European Centre for Disease Prevention and Control (ECDC). [1] The program is funded by ECDC and the participating training sites in the Member States. [2] In Denmark, EPIET training is offered by the State Serum Institute (SSI), Department of Infectious Disease Epidemiology & Prevention. From 1995 to 2020 a total of 22 EPIET fellows have received training at SSI; currently 4 fellows reside at SSI. [3]

[1] European Centre for Disease Prevention and Control. 14 August 2020. "Call for application for cohort 2021 ECDC Fellowship Programme EPIET and EUPHEM paths, EU-track". [https://www.ecdc.europa.eu/en/about-us/work-us/call-application-cohort-2021-ecdc-fellowship-programme-epiet-and-euphem-paths-eu]. Accessed 11 January 2021.
[2] European Centre for Disease Prevention and Control. "At a glance". [https://www.ecdc.europa.eu/en/epiet-euphem/about/intro]. Accessed 11 January 2021.
[3] European Centre for Disease Prevention and Control. 9 December 2020. "Statens Serum Institut". [https://www.ecdc.europa.eu/en/statens-serum-institut-0]. Accessed 11 January 2021.

2.6.1b

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

Yes = 1 , No = 0

Current Year Score: 1

Applied epidemiology training through the European Programme for Intervention Epidemiology Training (EPIET), which is open to veterinarians, is available in Denmark and Denmark provides, through its membership of the EU, resources for its citizens to obtain training in other EU/EEA countries. [1] As member of the EU, Danes may apply for the EPIET Fellowship program under the European Centre for Disease Prevention and Control (ECDC). [1] The program is funded by ECDC and the participating training sites in the Member States. [2] In Denmark, EPIET training is offered by the State Serum Institute. Department of Infectious Disease Epidemiology & Prevention. [3] According to the regulations of EPIET, training sites "must offer collaboration with epidemiological and microbiological sectors, as well as environmental and animal health sectors". [4]

[1] European Centre for Disease Prevention and Control. 14 August 2020. "Call for application for cohort 2021 ECDC Fellowship Programme EPIET and EUPHEM paths, EU-track". [https://www.ecdc.europa.eu/en/about-us/work-us/call-application-cohort-2021-ecdc-fellowship-programme-epiet-and-euphem-paths-eu]. Accessed 11 January 2021.
[2] European Centre for Disease Prevention and Control. "At a glance". [https://www.ecdc.europa.eu/en/epiet-euphem/about/intro]. Accessed 11 January 2021.
[3] European Centre for Disease Prevention and Control. 9 December 2020. "Statens Serum Institut". [https://www.ecdc.europa.eu/en/statens-serum-institut-0]. Accessed 11 January 2021.
[4] European Centre for Disease Prevention and Control. 2020. "Manual for the ECDC Fellowship Programme EPIET and EUPHEM paths: Cohort 2021" [https://www.ecdc.europa.eu/sites/default/files/documents/ECDC%20Fellowship%20Manual%20Cohort%202021.pdf].

2.6.2 Epidemiology workforce capacity

2.6.2a

Is there public evidence that the country has at least 1 trained field epidemiologist per 200,000 people?
Yes = 1 , No = 0

      Current Year Score: 0

2020

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

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

3.1 EMERGENCY PREPAREDNESS AND RESPONSE PLANNING

3.1.1 National public health emergency preparedness and response plan

3.1.1a

Does the country have an overarching national public health emergency response plan in place which addresses planning for multiple communicable diseases with epidemic or pandemic potential?
Evidence that there is a plan in place, and the plan is publicly available = 2, Evidence that the plan is in place, but the plan is not publicly available OR, Disease-specific plans are in place, but there is no evidence of an overarching plan = 1, No evidence that such a plan or plans are in place = 0

      Current Year Score: 2

Denmark has publicly available national and decentralized preparedness plans for combating major CBRNE-related health crises, including epidemic/pandemic outbreaks. The Danish Ministry of Health and its subsidiary the Danish Health Authority hold the overall responsibility and authority during major health crises, and are permanent member of the National Operational Staff (NOST), the Central Operational Communication Contingency (DCOK) and the International Operational Staff (IOS). [1] The health preparedness in Denmark is, however, largely decentralized - as is the health sector in general. The operational tasks in the Danish health care system rest in this way with the 5 Regions and 98 municipals. This is so both during normal operation and during crisis. The regions and municipals are required to draw up health preparedness plans that ensures that the health service can expand and restructure its treatment and care capacity beyond the daily level to cope with emergency incidents, such as major accidents or epidemics. Regions and municipalities are required to update their preparedness plans at least every fourth year. The plans must be submitted to the Danish Health Authorities for advice. An overall framework for such plans has been drawn up by the Danish Health Authorities. [2, 3] Current health preparedness plans are generally available on the websites of the respective regions and municipalities. The latest national pandemic plan was published by the Danish Health Authority in 2013 (should have been renewed during 2020, but is at the beginning of 2021 still pending [4]). The 2013 plan focuses on influenza type A, but states explicitly that the plan can be accommodated

and used in relation to other pandemic outbreaks that puts the health sector under stress. The 2013 pandemic plan is divided into two parts: Part I, describes the tasks and actions by authorities at the national level; Part II deals with the decentralized preparedness in Regions and municipals. [5] The Danish Health Authority published in 2012 a report describing how Denmark has implemented the WHO International Health Regulations (IHR). [6]

[1] Danish Health Authority (Sundhedsstyrelsen). 21 October 2019. "The Danish Health Authority's Preparedness - Organization (Sundhedsstyrelsens beredskab - Organisation)".
[https://www.sst.dk/da/Opgaver/Beredskab/Sundhedsstyrelsens-beredskab/Organisation]. Accessed 12. January 2021.
[2] Danish Health Authority (Sundhedsstyrelsen). 21 October 2019. "Health Preparedness (Sundhedsberedskabet)".
[https://www.sst.dk/da/viden/beredskab/sundhedsberedskabet]. Accessed 12 January 2021.
[3] Danish Health Authorities (Sundhedsstyrelsen.). 21 October 2029. "Health preparedness planning - Guidelines for municipalities and regions (Planlægning af sundhedsberedskab - Vejledning til kommuner og regioner)".
[https://www.sst.dk/da/Viden/Beredskab/Sundhedsberedskabet/Vejledning-til-kommuner-og-regioner]. Accessed 12 January 2021.
[4] Danish Health Authority (Sundhedsstyrelsen). 6 February 2020. "Preparedness for pandemics (Beredskab for epidemier)".
[https://www.sst.dk/da/viden/beredskab/beredskab-for-epidemier]. Accessed 12 January 2021.
[5] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)".
[https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC]. Accessed 12 January 2021.
[6] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part II: Guidelines for regions and municipalities (Beredskab for pandemisk influenza, del II: Vejledning til regioner og kommuner).
[https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-2,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=3C71CA640F768CFF503A68265200C220826B20CB]. Accessed 12 January 2021.

3.1.1b

If an overarching plan is in place, has it been updated in the last 3 years?
Yes = 1 , No /no plan in place= 0
        Current Year Score: 0

The overarching national public health emergency response plan in Denmark has not been updated during the last 3 years. The latest national pandemic plan is from 2013. [1, 2] The 2013 plan focused on pandemics resulting from outbreaks of influenza type A, but the report states explicitly that the plans can be accommodated and used in relation to other pandemic outbreaks that puts the health sector under stress. [1] According to the Danish Health Authority, the 2013 plan should have been replaced by a new, and more general, national pandemic plan, during 2020. [3] As of early 2021, the plan is still awaiting publication. The health preparedness in Denmark is, however, largely decentralized - as is the health sector in general. The operational tasks in the Danish health care system rest in this way primarily with the 5 Regions and 98 municipals, who are required to draw up preparedness plans to ensure that the health service can expand and restructure its treatment and care capacity beyond the daily level to cope with emergency incidents, such as major accidents or epidemics. The regions and municipals are required to update their preparedness plans at least every fourth year. The plans must be submitted to the Danish Health Authorities for advice. [4, 5]. The latest published guidance on how to draw up regional and municipality plans published by the Danish Health Authority is from January 2017. [6]

[1] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)".
[https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-

fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC]. Accessed 12 January 2021.

[2] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part II: Guidelines for regions and municipalities (Beredskab for pandemisk influenza, del II: Vejledning til regioner og kommuner). [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-2,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=3C71CA640F768CFF503A68265200C220826B20CB]. Accessed 12 January 2021.

[3] Danish Health Authority (Sundhedsstyrelsen). 6 February 2020. "Preparedness for pandemics (Beredskab for epidemier)". [https://www.sst.dk/da/viden/beredskab/beredskab-for-epidemier]. Accessed 12 January 2021.

[4] Danish Health Authority (Sundhedsstyrelsen). 21 October 2019. "Health Preparedness (Sundhedsberedskabet)". [https://www.sst.dk/da/viden/beredskab/sundhedsberedskabet]. Accessed 12 January 2021.

[5] Danish Health Authorities (Sundhedsstyrelsen.). 21 October 2019. "Vejledning til kommuner og regioner". [https://www.sst.dk/da/Viden/Beredskab/Sundhedsberedskabet/Vejledning-til-kommuner-og-regioner]. Accessed 12 January 2021.

[6] Danish Health Authority. January 2017. " Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 12 January 2021.

3.1.1c

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

The Danish pandemic plan includes considerations for pediatric and other vulnerable populations. The latest Danish national pandemic plan is from 2013. The 2013 plan, which consist of two parts, focuses on pandemics resulting from outbreaks of influenza type A. [1, 2] The report states, however, explicitly that the plans can be accommodated and used in relation to other pandemic outbreaks that puts the health sector under stress. [1] The 2013 pandemic plan, part II, deals with the responsibilities and tasks of the 5 Regions and 98 municipals. In Denmark, the operational tasks during a health emergency rest primarily with the regions and municipalities. [2] Among the tasks that the municipalities should be prepared to handle are children and juveniles through the municipality health service. Likewise, the municipalities must draw up plans ensuring that they will be able both to handle vulnerable citizens with infectious diseases who live at care centers and those that live in their own homes. All care centers and care districts should have instructions that describe how the individual institutions must react in the event of an outbreak of infectious diseases. In the related document - "Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)" from 2017 (most recent version) - the Danish Health Authority (Sundhedsstyrelsen) furthermore recommends that the municipalities in their crisis support contingency include staff from the "Schools, Social services, Police"-cooperation (SSP) and from the "Pedagogical-Psychological Counseling" (PPS), both of which focus on young people. [3]. The "Health preparedness planning - guidance for regions and municipalities" also recommends that the Regions' psychiatric wards should plan for draw up plans on how their increase their staff during health crises, especially in relation to the need to handle vulnerable groups such as children and young people. [3]

[1] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)". [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC]. Accessed 14 January 2021.
[2] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part II: Guidelines for regions and municipalities (Beredskab for pandemisk influenza, del II: Vejledning til regioner og kommuner).

[https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-2,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=3C71CA640F768CFF503A68265200C220826B20CB]. Accessed 14 January 2021.

[3] Danish Health Authority. January 2017. "Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 14 January 2021.

3.1.1d

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

Yes = 1 , No = 0

    Current Year Score: 1

2020

WHO Strategic Partnership for IHR and Health Security (SPH)

3.1.2 Private sector involvement in response planning

3.1.2a

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

Yes = 1 , No = 0

    Current Year Score: 0

There is insufficient evidence that Denmark has a specific mechanism for engaging with the private sector to assist with outbreak emergency preparedness and response. The possibility of including private actors in the health emergency preparedness is evident in the Danish national preparedness planning. The 2013 pandemic preparedness plan, part I, which deals with preparedness coordination at the national level, states that general practitioners (who are private business though paid for their services by the regions) and private vaccination companies are central in vaccination against seasonal influenza. During epidemics/pandemics general practitioners and private vaccine companies ought at least partially to retain this role. [1]. The 2013 pandemic preparedness plan, part II, which deals with the tasks to be carried out by regions and municipalities, in case municipalities rely on private suppliers, it should appear from the contracts that these suppliers are part of the health preparedness on an equal footing with the municipality's own staff. [2] In the related document - "Health preparedness planning - guidelines for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)" from 2017 (most recent version), there are multiple references to possible public-private cooperation in regional and municipality preparedness planning. Most importantly, it is stated that "the hospital contingency, which is the contingency in the entire hospital system, including private hospitals, must, in the event of contingency events, ensure that sick and injured people can be treated in hospital" (own translation from Danish). Private hospitals are required to take measures ensuring that they can enter into the overall hospital contingency. [3] General practitioners, on-call doctors and private specialized doctors may be assigned tasks in connection with emergency incidents in accordance with section 57 of the Emergency Preparedness Act. [4] Purchase and distribution of medicines and medical equipment mainly rely on private vendors. [3]

[1] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)". [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC]. Accessed 15 January 2021.

[2] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part II: Guidelines for regions and municipalities (Beredskab for pandemisk influenza, del II: Vejledning til regioner og kommuner). [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-2,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=3C71CA640F768CFF503A68265200C220826B20CB]. Accessed 15 January 2021.

[3] Danish Health Authority. January 2017. "Health preparedness planning - guidelines for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 14 January 2021.

[4] Danish legal information system (Retsinformation). "Order on Emergency Preparedness Act (Bekendtgørelse af beredskabsloven)". LBK nr 314 af 03/04/2017. [https://www.retsinformation.dk/eli/lta/2017/314]. Accessed 15 January 2021.

3.1.3 Non-pharmaceutical interventions planning

3.1.3a

Does the country have a policy, plan and/or guidelines in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic?
Yes, a policy, plan and/or guidelines are in place for more than one disease= 2, Yes, but the policy, plan and/or guidelines exist only for one disease = 1, No = 0

Current Year Score: 2

Denmark has a policy in place to implement non-pharmaceutical interventions (NPIs) during an epidemic or pandemic, for more than one disease.

In Denmark, NPIs are governed by the 2020 Danish Epidemic Act. [1] The diseases covered by the law are listed in Appendix 1 (List A: generally dangerous disease) and Appendix 2 (List B: Other infectious and other communicable diseases), which at any time can be supplemented at the request of the health minister. Based on the Danish Epidemic Act, the Epidemic Commission (regional body consisting of a member of the police, a medical doctor, a veterinarian, representatives from the customs and tax authority, regional hospital contingency, the Danish Emergency Management Agency as well as three elected members) may order anyone who suffers from a generally dangerous disease, or who is presumed to be infected with one, to be examined by a doctor and, if deemed necessary, to be admitted to a hospital for observation. The Epidemic Commission may also order private persons to self-isolate. The act mandates the use of police force to enforce the orders of the Epidemic Commission if people do not comply freely. The Epidemic Commission may also order areas where generally dangerous diseases are found blocked off, and ban public gatherings in such areas. Where there is a risk of infection spreading through the manufacture and distribution of foodstuffs, the Commission may order a complete or partial closure of the establishment concerned. The Epidemic Commission is also mandated to close down companies, partially or fully, who are engaged in production distribution of foodstuffs. Based on recommendations form the Danish Health Authority, the health minister may order compulsory vaccination within a defined area or among a defined group of persons. As a consequence of the COVID-19 pandemic, the Danish Epidemic Act has been changed during 2020, granting the government – and especially the health minister – significantly more powers, including the power to introduce bans on gatherings and the possibility to override other applicable law. [1]

[1] Danish legal information system. 2020. "Order on the Act on Measures against Infectious and Other Communicable Diseases (Danish Epidemic Act) (Bekendtgørelse af lov om foranstaltninger mod smitsomme og andre overførbare sygdomme (Epidemiloven)"- LBK nr 1444 af 01/10/2020. [https://www.retsinformation.dk/eli/lta/2020/1444]. Accessed 15 January 2021.

3.2 EXERCISING RESPONSE PLANS

3.2.1 Activating response plans

3.2.1a

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

Current Year Score: 1

There is evidence that Denmark has activated its national emergency response plan in the past year. There is also evience that the country has completed a national-level biological threat-focused exercise in the past year.

On 1 March 2020, the Danish National Operative Staff (National Operativ Stab, NOST) was activated in face of the COVID-19 pandemic; in particular due to an urgent need to strengthen supply of critical protective equipment. [1] NOST, which is under the auspice of the Danish National Police (Rigspolitiet), is the national Danish crisis management organization, and handles coordination across authorities during major crisis, incl. outbreaks of infectious diseases. Besides the Danish National Police, it includes as permanent members, the Danish Security and Intelligence Service (Politiets Efterretningstjeneste), the Danish Defense Intelligence Service (Forsvarets Efterretningstjeneste), the Joint Defense Command (Værnsfælles Forsvarskommando), the Danish Emergency Management Agency (Beredskabsstyrelsen), the Ministry of Foreign Affairs (Udenrigsministeriet), the Danish Health Authority (Sundhedsstyrelsen) and the Danish Transport, Construction and Housing Authority (Trafik-, Bygge- og Boligstyrelsen). [2]

The Danish Health Authority gradually activated its national health preparedness plans during early spring 2020 as the COVID-19 pandemic evolved. On 15 January 2020, the Danish Health Authority published its first guidelines for handling COVID-19 within the healthcare sector. [3] On 6 February 2020, the Health Authority and the State Serum Institute stepped up the preparedness level [4], and on 12 March 2020 - faced with increasing infection rates - the Health Authority went from a containment strategy to a mitigation strategy. [5] This change of strategy follows the transition from pre-pandemic alarm phase to the pandemic phase as described in the 2013 pandemic preparedness plan. [6] On the operational level, the Danish health preparedness is largely decentralized and rests with the 5 regions and 98 municipalities, who are required to draw up their own preparedness plans. These plans were also activated at different dates during spring 2020, see, e.g., [7].

According to WHO extranet, Denmark on 26 February 2020 conducted a Table Top Exercises (TTX) in relation to Covid-19. [8]

[1] Heuniche, Magnus, Minister of Health, 22 October 2020. "Talking Paper - Open consultation on the purchase of protective equipment and tests (Talepapir - Åbent samråd om indkøb af værnemidler og test)".
https://www.ft.dk/samling/20201/almdel/suu/spm/73/svar/1705020/2268767.pdf]. Accessed 21 January 2021.

[2] Danish Police (Politi). "Den nationale operative stab (NOST)". [https://politi.dk/samarbejde/den-nationale-operative-stab-nost]. Accessed 21 January 2021.

[3] Danish Health Authority (Sundhedsstyrelsen). 21 October 2020. "Guidelines for handling COVID-19 within the healthcare sector (Retningslinjer for håndtering af COVID-19 i sundhedsvæsenet)". https://www.sst.dk/da/Udgivelser/2020/Retningslinjer-for-haandtering-af-COVID-19] Accessed 21 January 2021.

[4] State Serum Institute. 6 Februar 2020. "EPI-NYT Uge 6a - 2020". [https://www.ssi.dk/aktuelt/nyhedsbreve/epi-nyt/2020/uge-6a---2020] Accessed 21 January 2021.

[5] State Serum Institute. 2020. "EPI-NYT Uge 12 - 2020. [https://www.ssi.dk/aktuelt/nyhedsbreve/epi-nyt/2020/uge-12---2020] Accessed 21 January 2021.

[6] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)". [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC].. Accessed 21 January 2021.

[7] Danish Regions (Danske Regioner). 13 March 2020. "The Regions: We must all take responsibility for the corona (Regionerne: Vi må alle tage et ansvar for corona)" [https://www.regioner.dk/services/nyheder/2020/marts/regionerne-vi-maa-alle-tage-et-ansvar-for-corona] Accessed 21 January 2021.

[8] World Health Organization. 2020. "Simulation Exercise". [https://extranet.who.int/sph/simulation-exercise?region=202&country=303#] Accessed 21 January 2021.

3.2.1b

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

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

Current Year Score: 0

There is insufficient evidence that Denmark 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. As the covid-19 pandemic is still evolving, the results of the evaluation efforts have still not entered the national pandemic preparedness plans. The first wave of the Covid-19 pandemic during spring 2020 spawned a series of evaluations at different administrative levels. The Danish Parliament's Committee on the Rules of Procedure on 23 June 2020 ordered an evaluation of the national preparedness and response to Covid-19, including a comparison between Danish and neighboring countries, to be conducted by an independent expert commission. The aim was to gain lessors applicable to future pandemics. The report from the commission is due by end of January 2021, and will be followed by a hearing in the Parliament (Folketinget). [1] The operative tasks in relation to the Danish health preparedness rest mainly with the 5 regions and the 98 municipalities, which is also reflected in the evaluation efforts. A host of evaluation reports have been published on the response to the Covid-19 pandemic by regions [2, 3, 4], municipalities [5], sub-branches with the municipal resort area [6] and individual hospitals (own and run by the regions) [7]. Most subnational evaluation reports notes, that the lessons learned with be worked into the preparedness plans. According to WHO extranet, Denmark on 26 February 2020 conducted an exercise related to Covid-19. [8]. However, no public information is available as to whether this exercise has resulted in a post action review report. [9]

[1] The Danish Parliament, Committee on the Rules of Procedure (Folketinget, Udvalget for Forretningsordenen). 23 June 2020. "Report on the implementation of a report on the management of covid-19 (Beretning om gennemførelsen af en udredning om håndteringen af covid-19)" [https://www.ft.dk/samling/20191/almdel/UFO/bilag/125/2214876.pdf]. Accessed

22 January 2021.

[2] Danish Regions (Danske Regioner). 14 August 2020. "The regions' experiences with capacity adjustment (Regionernes erfaringer med omstilling af kapaciteten)." [https://www.regioner.dk/media/13833/erfaringer-med-omstilling-til-covid-19.pdf]. Accessed 22 January 2021.

[3] Region Zealand (Region Sjælland). 9 November 2020. " Organizational evaluation of Region Zealand's handling of COVID-19 (Organisatorisk evaluering af Region Sjællands håndtering af COVID-19)". [http://publikationer.regionsjaelland.dk/ledelsessekretariatet/organisatorisk-evaluering-af-covid-19/?page=1]. Accessed 22 January 2021.

[4] Region North Jutland (Region Nordjylland). October 2020. "Evaluation Region North Jutland's handling of the COVID-19 pandemic (Evaluering Region Nordjyllands håndtering af COVID-19 pandemien)". [https://dpv.rn.dk/-/media/Hospitaler/Det-Pr%C3%A6hospitale-Beredskab/Kvalitet-og-patientsikkerhed/Evalueringsrapport-COVID-19_tilgaengelig.ashx?la=da]. Accessed 22 January 2021.

[5] Vejle municipality (Vejle Kommune). 2020. "Evaluation of corona | covid-19 (Evaluering af corona|covid-19)". [https://umbraco.vejle.dk/media/32169/evaluering-covid-19.pdf]. Accessed 22 January 2021.

[6] Copenhagen Municipality, Health and Care Administration, Department of Evaluation (Københavns Kommune, Sundheds- og Omsorgsforvaltningen, Afdeling for Evaluering). October 2020. "Evaluation of SUF's COVID-19 preparedness (Evaluering af SUFs COVID-19 beredskab)". [https://www.kk.dk/sites/default/files/edoc/Attachments/26686242-38379394-2.pdf]. Accessed 22 January 2021.

[7] Odense University Hospital (Odense Universitetshospital, OUH). 2020. "Evaluation of the COVID effort at OUH (Evaluering af COVID-indsatsen på OUH)" http://www.ouh.dk/dwn769752. Accessed 22 January 2021.

[8] World Health Organization. 2020. "Simulation Exercise". [https://extranet.who.int/sph/simulation-exercise?region=202&country=303#]. Accessed 21 January 2021.

[9] World Health Organization. 2020. "After Action Review". [https://extranet.who.int/sph/after-action-review?region=All&country=303]. Accessed 22 January 2021.

3.2.2 Private sector engagement in exercises

3.2.2a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no evidence that Denamrk in the past year has undergone a national-level biological threat-focused exercise that has included private sector representatives. The WHO extranet provides no information on any Danish national-level biological threat-focused exercise that includes private sector representatives during 2020. [1, 2] Nor is there any publicly available information indicating that such exercises should have been carried out during 2020 found at the homepages of the Ministry of Health, [3] the Ministry of Environment and Food of Denmark (Miljø- og fødevareministeriet), [4], or the Centre for Biosecurity and Biopreparedness [5].

[1] World Health Organization. 2020. "Simulation Exercise". [https://extranet.who.int/sph/simulation-exercise?region=202&country=303#]. Accessed 23 January 2021.

[2] World Health Organization. 2020. "After Action Review". [https://extranet.who.int/sph/after-action-review?region=All&country=303]. Accessed 23 January 2021.

[3] Ministry of Health (Sundhedsministeriet). [https://sum.dk/]. Accessed 23 January 2021.

[4] Ministry of Environment and Food of Denmark (Miljø- og fødevareministeriet). [https://fvm.dk/]. Accessed 23 January

2021.

[5] Centre for Biosecurity and Biopreparedness. [https://www.biosecurity.dk/home]. Accessed 23 January 2021.

3.3 EMERGENCY RESPONSE OPERATION

3.3.1 Emergency response operation

3.3.1a

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

Yes = 1 , No = 0

Current Year Score: 1

Denmark has in place an Emergency Operations Center (EOC). During extraordinary events, such as pandemic outbreaks, the National Operative Staff (Den Nationale Operative Stab, NOST) and its subsidary the Central Operational Communication Contingency (Det Centrale Operative Kommunikationsberedskab, DCOK) step together to manage and coordinate the operational efforts across various authorities. NOST-DCOK is under the auspice of the Danish National Police (Rigspolitiet), and include, in addition to the Danish National Police, as permanent members, the Danish Security and Intelligence Service (Politiets Efterretningstjeneste), the Danish Defense Intelligence Service (Forsvarets Efterretningstjeneste), the Joint Defense Command (Værnsfælles Forsvarskommando), the Danish Emergency Management Agency (Beredskabsstyrelsen), the Ministry of Foreign Affairs (Udenrigsministeriet), the Danish Health Authority (Sundhedsstyrelsen) and the Danish Transport, Construction and Housing Authority (Trafik-, Bygge- og Boligstyrelsen). Other actors, public as well as private, may be included on an ad hoc basis. [1, 2, 3] As a permanent member of NOST, the Danish Health Authority may request that NOST be summoned, after which the National Police will activate the staff. [2] In case the NOST is summoned due to a major health crisis, the Danish Health Authority will immediately inform the Acute Medical Coordination Center (Akut Medicinsk Koordinationscenter, AMK) in each of the 5 Danish regions about this. The AMKs have the operational/tactical responsibility in relation to health emergency incidents. [2]

[1] Danish Emergency Management Agency (Beredskabsstyrelsen). 2019. "Retningslinjer for Krisestyring". [https://brs.dk/globalassets/brs---beredskabsstyrelsen/dokumenter/krisestyring-og-beredskabsplanlagning/2020/-retningslinjer_for_krisestyring-.pdf]. Accessed 23 January 2021.
[2] Danish Health Authority. January 2017. "Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 23 January 2021.
[3] The Danish Police (Politiet). "National Operative Staff (NOST) (Den nationale operative stab (NOST))".

3.3.1b

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

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence of a requirement that the Danish Emergency Operations Center (EOC) conducts/is required to conduct a drill for a public health emergency scenario at least once per year.

The Danish National Police (Rigspolitiet) and the Danish Emergency Management Agency (Beredskabsstyrelsen) conduct biannual emergency exercises, which also includes the activation of the National Operative Staff (Den Nationale Operative Stab, NOST). [1, 2] The latest such exercise was in 2019. [1] None of the 9 exercises which have been conducted since 2003 have focused on health emergencies. [1] There is no information on any drills at the website of the Danish Ministry of Health. [3]

[1] Danish Emergency Management Agency (Beredskabsstyrelsen).19 May 2020. "KRISØV - national crisis management exercises (KRISØV - nationale krisestyringsøvelser)". [https://brs.dk/da/redningsberedskab-myndighed/krisestyring2-og-beredskabsplanlagning/krisov--nationale-krisestyringsovelser/]. Accessed 23 January 2021.
[2] The Danish Police (Politiet). 1 December 2020. "Evaluation of KRISØV 2019 (Evaluering af KRISØV 2019)". [https://politi.dk/rigspolitiet/nyhedsliste/evaluering-af-krisoev-2019/2020/12/01]. Accessed 23 January 2021.
[3] Danish Ministry of Health (Sundhedsministeriet). 2021. [https://sum.dk/english]. Accessed 5 March 2021.

3.3.1c

Is there public evidence to show that the Emergency Operations Center (EOC) has conducted within the last year a coordinated emergency response or emergency response exercise activated within 120 minutes of the identification of the public health emergency/scenario?
Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available information as to whether the National Operative Staff (Den Nationale Operative Stab, NOST) has been activated within 120 minutes of the identification of the public health emergency/scenario. [1,2] The members of NOST are, however, required to be able to convene within 1 hour when operational preparedness is declared. On 26 February 2020 NOST was activated in response to the COVID-19 pandemic. [3]

[1] Danish Emergency Management Agency (Beredskabsstyrelsen). 2019. "Retningslinjer for Krisestyring". [https://brs.dk/globalassets/brs---beredskabsstyrelsen/dokumenter/krisestyring-og-beredskabsplanlagning/2020/-retningslinjer_for_krisestyring-.pdf]. Accessed 23 January 2021.
[2] Danish Ministry of Health, 2021, Accessed 7 March 2021.
[3] Folketingets Retsudvalg. 9 December 2020. "Final answer to question 286 (Endeligt svar på spørgsmål 286")". [https://www.ft.dk/samling/20201/almdel/reu/spm/438/svar/1737031/2320824/index.htm]. Accessed 23 January 2021.

3.4 LINKING PUBLIC HEALTH AND SECURITY AUTHORITIES

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

3.4.1a

Does the country meet one of the following criteria?
- Is there public evidence that public health and national security authorities have carried out an exercise to respond to a potential deliberate biological event (i.e., bioterrorism attack)?
- Are there publicly available standard operating procedures, guidelines, memorandums of understanding (MOUs), or other agreements between the public health and security authorities to respond to a potential deliberate biological event (i.e., bioterrorism attack)?
Needs to meet at least one of the criteria to be scored a 1 on this measure., Yes for both = 1, Yes for one = 1, No for both = 0

Current Year Score: 1

The Danish public health and national security authorities have carried out exercises to respond to a potential deliberate biological event (i.e., bioterrorism attack), and there are procedures between the public health and security authorities to respond to a potential deliberate biological event. The Danish National Police (Rigspolitiet) and the Danish Emergency Management Agency (Beredskabsstyrelsen) conduct biannual national crisis management exercises (KRISØV). [1, 2] The exercises include multiple national agencies and authorities, including health authorities, national security agencies, and the National Operative Staff (Den Nationale Operative Stab, NOST). The scenario of the KRISØV 2013 was a cyberattack on Denmark targeting among other things the Danish health sector. [3], while the KRISØV 2007 included a terror attach with a biological agent. [4] The National Operative Staff, NOST, which is activated during extraordinary events, such as pandemic outbreaks or terror attacks using biological agents, is tasked with the management and coordination of the operational efforts across various authorities, including the health authorities and the national security agencies. The Danish Health Authority (Sundhedsstyrelsen), under the auspice of the Ministry of Health, is a permanent member of NOST, which also includes representatives from the Danish National Police, the Danish Security and Intelligence Service (Politiets Efterretningstjeneste), the Danish Defense Intelligence Service (Forsvarets Efterretningstjeneste), the Joint Defense Command (Værnsfælles Forsvarskommando), the Danish Emergency Management Agency, the Ministry of Foreign Affairs (Udenrigsministeriet), and the Danish Transport, Construction and Housing Authority (Trafik-, Bygge- og Boligstyrelsen). [5, 6, 7] In the event of incidents involving biological substances the Danish Emergency Management Agency cooperates with the Danish Veterinary and Food Administration (DVFA) and the Centre for Biosecurity and Biopreparedness, which is under the auspice of the State Serum Institute, on decontamination and work with protective equipment in the danger area. [8]

[1] Danish Emergency Management Agency (Beredskabsstyrelsen).19 May 2020. "KRISØV - national crisis management exercises (KRISØV - nationale krisestyringsøvelser)". [https://brs.dk/da/redningsberedskab-myndighed/krisestyring2-og-beredskabsplanlagning/krisov--nationale-krisestyringsovelser/]. Accessed 24 January 2021.
[2] The Danish Police (Politiet). 1 December 2020. "Evaluation of KRISØV 2019 (Evaluering af KRISØV 2019)".
[https://politi.dk/rigspolitiet/nyhedsliste/evaluering-af-krisoev-2019/2020/12/01]. Accessed 24 January 2021.
[3] Danish Emergency Management Agency (Beredskabsstyrelsen) and Danish National Police (Rigspolitiet). August 2014. "Evaluation of KRISØV 2013 (Evaluering af KRISØV 2013)". [https://brs.dk/globalassets/brs---beredskabsstyrelsen/dokumenter/krisestyring-og-beredskabsplanlagning/2020/-krisoev_2013_evalueringsrapport-.pdf. Accessed 24 January 2021.
[4] Danish Emergency Management Agency (Beredskabsstyrelsen) and Danish National Police (Rigspolitiet). " Cross-cutting evaluation of Crisis Management Exercise 2007 (KRISØV 2007) (Tværgående evaluering af Krisestyringsøvelse 2007 (KRISØV 2007))". [https://brs.dk/globalassets/brs---beredskabsstyrelsen/dokumenter/krisestyring-og-beredskabsplanlagning/2020/-evalueringsrapport_krisoev_2007-.pdf]. Accessed 24 January 2021.
[5] Danish Emergency Management Agency (Beredskabsstyrelsen). 2019. "Retningslinjer for Krisestyring".
[https://brs.dk/globalassets/brs---beredskabsstyrelsen/dokumenter/krisestyring-og-beredskabsplanlagning/2020/-retningslinjer_for_krisestyring-.pdf]. Accessed 24 January 2021.
[6] Danish Health Authority. January 2017. "Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 24 January 2021.
[7] The Danish Police (Politiet). "National Operative Staff (NOST) (Den nationale operative stab (NOST))".
[https://politi.dk/samarbejde/den-nationale-operative-stab-nost]. Accessed 24 January 2021.
[8] Danish Emergency Management Agency (Beredskabsstyrelsen). 24 july 2020. "The Danish Emergency Management Agency's CBRNE Contingency (Beredskabsstyrelsens CBRNE Beredskab)". [https://brs.dk/da/redningsberedskab-myndighed/assistance-fra-beredskabsstyrelsen/kemiske-haendelser-cbrn/cbrn-beredskab/]. Accessed 24 January 2021.

3.5 RISK COMMUNICATIONS

3.5.1 Public communication

3.5.1b

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence of a 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) in Denmark. The Danish Health Authority's national pandemic plan from 2013 states explicitly that that all citizens should have equal and easy access to information. This means that information, in addition to Danish, should be offered in foreign languages and that communication should be targeted towards vulnerable groups. [1]. The Danish Health Authority has, for instance released information material such as videos and posters in Arabic, Bosnian/Serbo-Croatian, English, Farsi, German, Kurdish, Latvian, Lithuanian, Polish, Romanian, Somali, Tigrinya, Turkish, Ukrainian, and Urdu. [2, 3] In Denmark, the operational tasks during public health emergencies rest mainly with the 5 regions and the 98 municipalities, who are required to draw up health preparedness plans. [4] In the Danish Health Authority's latest published guidance on how regions and municipals should draw up their health preparedness plans, crisis communication is listed as one among six core areas that the regions and municipalities have to perform, and therefore also plan for. [5]. The guidance gives rather detailed information on the communication needs that the regions and municipalities should plan for, and that non-Danish groups need to be considered. National Operational Staff (Den nationale operative stab, NOST), which is activated during major crises and events, has its own communication preparedness unit. the Central Operational Communication Contingency (Det Centrale Operative Kommunikationsberedskab, DCOK). DCOK has, for instance, been highly active player during the Covid-19 pandemic. [6]

[1] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)". [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC]. Accessed 25 January 2021.
[2] Danish Health Authority (Sundhedsstyrelsen). "Releases (Udgivelser)". "https://www.sst.dk/da/Udgivelser?Emne={AF884A43-9989-44B1-8A29-352E72D3325A}&Udgivelse%20sprog={9DD0028C-6560-4237-BE21-D6D534DDCA3C}". Accessed 25 January 2021.
[3] Danish Health Authority (Sundhedsstyrelsen). "Publications". [https://www.sst.dk/en/English/publications]. Accessed 25 January 2021.
[4] Danish Legal Information System (Retsinformation). "Bekendtgørelse om planlægning af sundhedsberedskabet". BEK no 971 of 28/06/2016. [https://www.retsinformation.dk/eli/lta/2016/971]. Accessed 25 January 2021]
[5] Danish Health Authority. January 2017. "Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 25 January 2021.
[6] Redaktionen Kforum. 1 September 2020. "Police Covid-19 experiences: Messages that are contagious (Politiets Covid-19 erfaringer: Budskaber, der smitter)". [https://www.kommunikationsforum.dk/artikler/Politiets-kommunikations-erfaringer-].

Accessed 25 January 2021.

3.5.1 Risk communication planning

3.5.1a

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that Denmark has a risk communication plan that is specifically intended for use during a public health emergency. The Danish Health Authority's (Sundhedsstyrelsen) national pandemic plan from 2013, Chapter 10 which focuses on communication, deals with some aspects of communication during a pandemic. The chapter describes who holds the overall communicative responsibility, who the target groups are, main and special messages that need to be conveyed, as well as forms of communication to be used during the emergency. [1]. While it is the Danish Health Authority in cooperation with the State Serum Institute (Statens Serum Institut) that holds the overall sectoral responsibility, and thus also the responsibility for risk communication, the operational tasks during public health emergencies in Denmark rest mainly with the 5 regions and the 98 municipalities, who are required to draw up health preparedness plans. [2] In the Danish Health Authority's latest published guidance on how regions and municipals should draw up their health preparedness plans, crisis communication is listed as one among six core areas that the regions and municipalities have to perform, and therefore also plan for. [3]. The guidance gives rather detailed information on the communication needs that the regions and municipalities should plan for. National Operational Staff (Den nationale operative stab, NOST), which is activated during major crises and events, has its own communication preparedness unit. the Central Operational Communication Contingency (Det Centrale Operative Kommunikationsberedskab, DCOK). DCOK has, for instance, been highly active player during the Covid-19 pandemic. [4]

[1] Danish Health Authority (Sundhedsstyrelsen). 21 Januar 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)". [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC]. Accessed 25 January 2021.
[2] Danish Legal Information System (Retsinformation). "Bekendtgørelse om planlægning af sundhedsberedskabet". BEK no 971 of 28/06/2016. [https://www.retsinformation.dk/eli/lta/2016/971]. Accessed 25 January 2021]
[3] Danish Health Authority. January 2017. "Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 25 January 2021.
[4] Redaktionen Kforum. 1 September 2020. " Police Covid-19 experiences: Messages that are contagious (Politiets Covid-19 erfaringer: Budskaber, der smitter)". [https://www.kommunikationsforum.dk/artikler/Politiets-kommunikations-erfaringer-]. Accessed 25 January 2021.

3.5.1c

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

Yes = 1 , No = 0

      Current Year Score: 0

There is insufficient evidence that the Danish risk communication strategies designate responsibility for communication to specific persons/agencies during major health crises. During a public health emergency in Denmark, it is the Danish Health Authority (Sundhedsstyrelsen), in cooperation with the State Serum Institute (Statens Serum Institut), that holds the overall responsible for the general communication. Danish Health Authority coordinates the information flows to and from the healthcare system and convenes press conferences. [1] In the case of large national crises, such as epidemics/pandemics, where the National Operational Staff (Den Nationale Operative Stab, NOST), under the auspice of the National Police (Rigspolitiet), is activated, the Central Operational Communication Contingency (Det Centrale Operative Kommunikationsberedskab, DCOK), a sub-unit of NOST, is also activated. DCOK coordinates, among other things, announcements to the population and the media and draw up joint press strategies. However, the individual authorities involved – the Danish Health Authority and the State Serum Institute in the event of epidemics/pandemics – retain responsible for risk communication within their own resort area via their own information and press service, cf. the Danish general principle of sectoral responsibility. [2]. The regions, which have the operational responsibility for the Danish public hospitals, have typically prepared procedures for activation, notification and briefing of all relevant parts of the region's preparedness. This includes procedures for cooperation and coordination with relevant authorities, e.g., in relation to information of the citizens of the region. [3]

[1] Danish Health Authority (Sundhedsstyrelsen). 21 January 2013. "Preparedness for pandemic influenza, Part I: National strategy and professional basis (Beredskab for pandemisk influenza, del I: National strategi og fagligt grundlag)". [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-1,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=2305CBE480C05DB1D70BA82E5C9E33C0945CA3AC]. Accessed 25 January 2021.]
[2] Danish Health Authority. January 2017. "Health preparedness planning - guidelines for regions and municipalities (Planlægning af sundhedsberedskab – vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 8 March 2021.
[3] Danish Health Authority (Sundhedsstyrelsen). 15 June 2012. "(The International Health Regulations - implemented in structure and practice in Danish emergency preparedness (Det Internationale Sundhedsregulativ – gennemført i struktur og praktik i dansk beredskab.)" [https://www.sst.dk/-/media/Udgivelser/2012/Publ2012/Det-internationale-sundhedsregulativ-%E2%80%93-gennemf%C3%B8rt-i-struktur-og-praktik-i-dansk-beredskab.ashx]. Accessed 8 March 2021.

3.5.2 Public communication

3.5.2a

In the past year, is there evidence that the public health system has actively shared messages via online media platforms (e.g. social media, website) to inform the public about ongoing public health concerns and/or dispel rumors, misinformation or disinformation?
Public health system regularly shares information on health concerns = 2, Public health system shares information only during active emergencies, but does not regularly utilize online media platforms = 1, Public health system does not regularly utilize online media platforms, either during emergencies or otherwise = 0

      Current Year Score: 2

During 2020, the Danish 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. Danish national authorities are generally active when it comes to sharing information via their respective websites. During

2020 information on various health topics have shared or reshared through the health authorities' social media outlets, e.g., on antibiotic resistance [1], free HPV vaccine for gay men [2], and dementia [3]. The COVID-19 pandemic has increased the amount of information shared on the various authorities' websites, and a dedicated cross-authority web portal - https://coronasmitte.dk - has been established with the aim to provide citizens and companies with updated national and local news reports and analysis, recommendations, and information on rules and regulations related to the pandemic. [4] The Covid-19 pandemic has also led to an increased use of social media as a means to disseminate information from the health authorities to a broader set of target groups. Prior to the Covid-19 pandemic, the Danish Health Authority (Sundhedsstyrelsen), for instance, did not have a Facebook page. In just over two months, however, the Danish Health and Medicines Authority's new Facebook profile has gained over 100,000 followers, with the Danish Health Authority receiving about 300 comments and questions a day. [5]. The Ministry of Health keeps an online archive of their communication via social media, see [6]. The spread of rumors and fake news through social media seems to be a concern to the Danish authorities. On 23 December 2020 the Danish Health Authority posted a video on Facebook on how to detect fake information and a warning against sharing dubious information [7], and a repost on 29 December; this time with a link to a fact check report from TjekDet. [8]

[1] State Serum Institute (Statens Serum Institut). 18 November 2020. Twitter feed. [https://twitter.com/SSI_dk/status/1328970733062664192]. Accessed 9 March 2021).
[2] Danish Health Authority (Sundhedsstyrelsen). 21 August 2020. " Did you know that men who love men can be vaccinated against HPV for free? (Vidste du, at mænd, der elsker mænd, kan blive gratis vaccineret mod HPV?)". [https://www.facebook.com/sundhedsstyrelsenDK/posts/166897708248925]. Facebook. Accessed 9 March 2021).
[3] Sundhedsministeriet. 19 November 2020. [https://twitter.com/DKsundhed/status/1329433552723775489]. Twitter feed. Accessed 9 March 2021.
[4] National Communication Partnership (Nationalt Kommunikationspartnerskab) "The authorities' joint website on COVID-19 (Myndighedernes fælles hjemmeside om COVID-19)". Accessed 26 January 2021.
[5] Danish Health Authority. 12 May 2020. "Sundhedsstyrelsens borgerrettede kommunikationsindsats om ny coronavirus/COVID-19". [https://www.sst.dk/-/media/Udgivelser/2020/Corona/Kommunikationsindsats/Statusrapport-over-Sundhedsstyrelsens-kommunikationsindsats-under-ny-coronavirus.ashx?la=da&hash=8D7685B1FAE0E146876488FB3775C2820AACD4CA]. Accessed 26 January 2021.
[6] Danish Ministry of Health. "Social media archive (Sociale medier arkiv)". [https://sum.dk/ministeren/sociale-medier-arkiv]. Accessed 26 January 2021.
[7] Danish Health Authority. "Use your common sense before sharing (Brug din sunde fornuft, før du deler)" [https://fb.watch/3glSd15bXc/]. Accessed 26 January 2021.
[8] TjekDet. 29 December 2020. "Den får tusindvis af delinger: Vaccineskeptisk advarsel indeholder både usandheder og konspirationsteorier". [https://www.tjekdet.dk/faktatjek/vaccineskeptisk-advarsel-indeholder-baade-usandheder-og-konspirationsteorier?fbclid=IwAR300lIDP88vz44iOxSL8B6mxAV9CX1PcUCYPLKC0N01f7QtTsn9xDUv90U]. Accessed 26 January 2021.

3.5.2b

Is there evidence that senior leaders (president or ministers) have shared misinformation or disinformation on infectious diseases in the past two years?
No = 1, Yes = 0

Current Year Score: 0

The government, headed by Prime Minister, Ms. Mette Frederikssen, has been accused of misinforming the public and the Danish Parliament (Folketinget) during the COVID-19 pandemic. In relation to the first lockdown due to COVID-19 on March 11, 2020, the Prime Minister claimed that the government's decision to close down day care centers, schools and educational

institutions, was based on recommendations from the health authorities. This claim has, however, been called into question both in the media, [1] and by an independent expert commission. [2]

[1] Berlingske. 22 May 2020. "It was the "authorities' recommendation" to shut down Denmark, Mette F. repeated at a historic press conference. But documents reveal a different story (Det var »myndighedernes anbefaling« at lukke Danmark ned, gentog Mette F. på historisk pressemøde. Men dokumenter afslører en anden historie)." [https://www.berlingske.dk/politik/det-var-myndighedernes-anbefaling-at-lukke-danmark-ned-gentog-mette-f-paa]. Accessed 16 March 2021.
[2] Danish Parliament (Folketinget). January 2021. "The handling of covid-19 in the spring of 2020 - Report submitted by the expert group set up by the Folketing's Rules of Procedure Committee to investigate the handling of covid-19 (Håndteringen af covid-19 i foråret 2020 — Rapport afgivet af den af Folketingets Udvalg for Forretningsordenen nedsatte udredningsgruppe vedr. håndteringen af covid-19)". [https://www.ft.dk/-/media/sites/ft/pdf/publikationer/haandtering-af-covid19-foraar-2020.ashx]. Accessed 16 March 2021.

3.6 ACCESS TO COMMUNICATIONS INFRASTRUCTURE

3.6.1 Internet users

3.6.1a
Percentage of households with Internet
Input number
    Current Year Score: 98.05

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: 125.5

2019

International Telecommunication Union (ITU)

3.6.3 Female access to a mobile phone

3.6.3a
Percentage point gap between males and females whose home has access to a mobile phone
Input number
    Current Year Score: 0

2019

Gallup; Economist Impact calculation

3.6.4 Female access to the Internet

3.6.4a

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

Current Year Score: 2.0

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

There is evidence that Denmark, in the pas year, 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. On 14 March 2020, in light of the pandemic, the European Union (EU), of which Denmark is a member, adopted Regulation 2020/402, under which special authorization was required to export personal protective equipment (masks, gloves, goggles, face shields and overalls) out of the EU. [1] On 23 April 2020 this was superseded by a new regulation, numbered 2020/568, under which authorization was required to export personal protective equipment out of the EU, except to Albania, Andorra, Bosnia, the Faroe Islands, Gibraltar, Iceland, Kosovo, Liechtenstein, Montenegro, Norway, North Macedonia, San Marino, Serbia and Switzerland. [2]

Further, based on provisions given in the Danish Epidemic Act (Epidemiloven), two identical Executive Orders from the Ministry of Health - the first valid from 23 March 2020 to 31 August 2020 and the second from 18 August 2020 to 31 December 2020 granted the Danish Medicines Agency (Lægemiddelstyrelsen) the right to order private Danish manufacturers, importers and distributors to sell protective equipment, medical equipment and medicines to the Danish regions to counter possible shortages of such goods within the Danish health system. [3, 4, 5] The provisions in the Executive Orders, which if applied would amount to an indirect export restriction, have not, however, been used. [6] There is no publicly available information on any import or export restrictions available at the homepage of the Danish Ministry of Health. [7]

[1] Euopean Commission. Commission Implementing Regulation (EU) 2020/402 of 14 March 2020. "Making the exportation of certain products subject to the production of an export authorisation." [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R0402]. Accessed 7 August 2020.

[2] Euopean Commission. Commission Implementing Regulation (EU) 2020/568 of 23 April 2020. "Making the exportation of certain products subject to the production of an export authorisation." [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0568]. Accessed 7 August 2020.

[3] Danish Legal Information Service. 2020. "Promulgation of the Act on Measures against Infectious and Other Communicable Diseases (Epidemic Act) (Bekendtgørelse af lov om foranstaltninger mod smitsomme og andre overførbare sygdomme (Epidemiloven))". [https://www.retsinformation.dk/eli/lta/2020/253]. Accessed 27 January 2021.

[4] Danish Legal Information System (Retsinformation). 2020. "Executive Order on special measures regarding the supply of medical equipment and personal protective equipment in connection with the management of Coronavirus disease 2019 (COVID-19) (Bekendtgørelse om særlige foranstaltninger vedrørende forsyning af medicinsk udstyr og personlige værnemidler i forbindelse med håndtering af Coronavirussygdom 2019 (COVID-19))." BEK no 253 of 22/03/2020. [https://www.retsinformation.dk/eli/lta/2020/253]. Accessed 27 January 2021.

[5] Danish Legal Information System (Retsinformation). 2020. "Executive Order on special measures regarding the supply of medical equipment and personal protective equipment in connection with the management of Coronavirus disease 2019 (COVID-19) (Bekendtgørelse om særlige foranstaltninger vedrørende forsyning af medicinsk udstyr og personlige værnemidler i forbindelse med håndtering af Coronavirussygdom 2019 (COVID-19))". BEK no 1211 of 16/08/2020. [https://www.retsinformation.dk/eli/lta/2020/1211]. Accessed 27 January 2021.

[6] Tao Ask Andersen. 24 November 2020. "Export restrictions in the EU during the first wave of covid-19 (Eksportrestriktioner i EU under første bølge af covid-19)". Think Tank Europa (Tænketanken Europa).

[7] Danish Ministry of Health. [https://sum.dk/english]. Accessed 12 March 2021.

3.7.1b

In the past year, has the country issued a restriction, without international/bilateral support, on the export/import of non-medical goods (e.g. food, textiles, etc) due to an infectious disease outbreak?
Yes = 0 , No = 1

Current Year Score: 0

The is no indication that Denmark during 2020 has issued any restrictions without international/bilateral support, on the export/import of non-medical goods due to an infectious disease outbreak. Denmark has import restrictions on various food and feed products, animal and non-animal, from different countries due to risk of infectious disease outbreaks, see "Executive Order on the import of food and feed, animal by-products and derived products for feed as well as food contact materials with special restrictions, etc. as well as penalties for infringements of related EU acts [1] and the Veterinary and Food Administration's list of non-animal products under import restriction [2]. However, the restrictions rely on EU regulation, e.g., "Commission implementing decision of 9 October 2014 concerning animal health control measures relating to African swine fever in certain Member States and repealing Implementing Decision 2014/178/EU [3], and is thus not implemented without international/bilateral support. No further information is found at the Ministry of Foreign Affairs of Denmark [4], the Danish Ministry of Health [5], or the Ministry of Food, Agriculture and Fisheries. [6]

[1] Danish Legal Information System (Retsinformation). 2021. "Executive Order on the import of food and feed, animal by-products and derived products for feed as well as food contact materials with special restrictions, etc. as well as penalties for infringements of related EU acts (Bekendtgørelse om indførsel af fødevarer og foder, animalske biprodukter og afledte produkter til foder samt fødevarekontaktmaterialer med særlige restriktioner m.v. og om straffebestemmelser for overtrædelse af relaterede EU-retsakter)". BEK no 22 of 11/01/2021. [https://www.retsinformation.dk/eli/lta/2021/22]. Accessed 27 January 2021.

[2] The Danish Veterinary and Food Administration (Fødevarestyrelsen, DVFA). 26 October 2020. "Non-animal products under import restriction (Ikke-animalske produkter under importrestriktion)". [https://www.foedevarestyrelsen.dk/Leksikon/Sider/Ikke-animalske-fødevarer-under-restriktion-eller-intensiveret-

kontrol.aspx]. Accessed 27 January 2021.

[3] EU Commission. 11 October 10.2014. "Commission implementing decision of 9 October 2014 concerning animal health control measures relating to African swine fever in certain Member States and repealing Implementing Decision 2014/178/EU". Official Journal of the European Union. [https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014D0709&from=EN]. Accessed 27 January 2021.

[4] Ministry of Foreign Affairs of Denmark (Udenrigsministeriet). [https://um.dk/en]. Accessed 9 March 2021.

[5] Danish Ministry of Health (Sundhedsministeriet). [https://sum.dk/english]. Accessed 9 March 2021.

[6] Ministry of Food, Agriculture and Fisheries (Ministeriet for Fødevarer, Landbrug og Fiskeri. [https://en.fvm.dk/]. Accessed 9 March 2021.

3.7.2 Travel restrictions

3.7.2a

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

Yes = 0 , No = 1

Current Year Score: 0

In relation to the COVID-19 pandemic, Denmark has during 2020 implemented ban, without international/bilateral support, on travelers from other countries. On 13 March 2020, the Danish Prime Minister, Mette Frederikssen, announced that the Danish borders would be closed for all foreigners not having a "recognizable purpose", the content of which has changed throughout the year. The closure was effective from noon 14 March 2020. [1] The closure of the borders was gradually eased starting from 15 June. [2]. On 18 June, the Ministry of Justice (Justitsministeriet) announced that, effective from 27 June, decisions on whether foreign citizens from EU and Schengen member countries and the UK would be allowed to enter into Denmark would be made dependent on "objective criteria" related to infection rates and test regimes in the country of origin. [3] On 1 July Denmark, in line with decisions of the EU, opened its borders for citizens from certain countries outside of the EU. [4] On December 22, Denmark closed its borders for most people arriving from the UK due to the identification of a new more contagious COVID-19-variant (B.1.1.7). [5]

[1] The Danish Government (Regeringen). 13 March 2020. "Press conference in the Mirror Room about COVID-19 (Pressemøde i Spejlsalen om COVID-19)". https://www.regeringen.dk/nyheder/2020/pressemoede-i-spejlsalen-om-covid-19/]. Accessed 28 January 2021.

[2] Ministry of Justice (Justitsministeriet). 10 June 2020. "Denmark is further opening up the borders (Danmark åbner yderligere op for grænserne)". [https://www.justitsministeriet.dk/pressemeddelelse/danmark-aabner-yderligere-op-for-graenserne/]. Accessed 28 January 2021.

[3] Ministry of Justice (Justitsministeriet). 18 June 2020. "Denmark opens the borders further and relaxes the travel guidelines (Danmark åbner grænserne yderligere og lemper rejsevejledningerne).
[https://www.justitsministeriet.dk/pressemeddelelse/danmark-aabner-graenserne-yderligere-og-lemper-rejsevejledningerne/]. Accessed 28 January 2021.

[4] Ministry of Justice (Justitsministeriet). 1 July 2020. "Denmark opens the border for selected countries outside the EU (Danmark åbner grænsen for udvalgte lande uden for EU)". [https://www.justitsministeriet.dk/pressemeddelelse/danmark-aabner-graensen-for-udvalgte-lande-uden-for-eu/]. Accessed 28 January 2021.

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

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

4.1.1 Available human resources for the broader healthcare system

4.1.1a

Doctors per 100,000 people

Input number

> Current Year Score: 400.99

2016

WHO; national sources

4.1.1b

Nurses and midwives per 100,000 people

Input number

> Current Year Score: 1031.95

2016

WHO; national sources

4.1.1c

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

Yes = 1 , No = 0

> Current Year Score: 1

Denmark has a health workforce strategy in place (which has been updated in the past five years) to identify fields where there is an insufficient workforce and strategies to address these shortcomings. Challenges and possible policies related to the recruitment of health professionals have in recent years been addressed both at the national level, [1, 2, 3] at the level of the 5 Danish regions, [4] and at the level of the 98 municipalities. [5, 6, 7]. Policies aimed at solving workforce challenges are generally subject to tripartite agreements between the government and the interest organizations Danish Regions (Danske Regioner) and Local Government Denmark (KL) representing, respectively, the Danish regions and the municipalities. [8]

[1] Ministry of Finance, Ministry of Employment. Ministry of Children and Education, Ministry of Higher Education and Science and Ministry of Health. December 2018. "Mapping recruitment challenges for social and health professionals and nurses in municipalities and regions (Kortlægning af rekrutteringsudfordringer for social-og sundhedspersonale og

sygeplejersker i kommuner og regioner)" [https://www.uvm.dk/-/media/filer/uvm/aktuelt/pdf18/181214-samlet-kortlaegning-af-rekrutteringsudfordringer.pdf]. Accessed 28 January 2021.

[2] Ministry of Finance (Finansmimisteriet). May 2020. "Avenues to more hands - Task force on the health care employees (Veje til flere hænder - Task force om social- og sundhedsmedarbejdere)". [https://fm.dk/media/18061/veje_til_flere_haender-task_force_om_social-_og_sundhedsmedarbejdere_web_a.pdf]. Accessed 28 January 2021.

[3] Danish Health Authority (Sundhedsstyrelsen). 2020. "Recommendations for the recruitment and retention of health professionals in psychiatry (Anbefalinger til rekruttering og fastholdelse af sundhedspersonale i psykiatrien)". [https://www.sst.dk/-/media/Udgivelser/2020/Anbefalinger-til-rekruttering-og-fastholdelse-af-sundhedspersonale-i-psykiatrien.ashx?la=da&hash=F85559A82F652AC62C9A9B5142CB4AD219483719]. Accessed 28 January 2021.

[4] Capital Region, Center for HR (Region Hovedstaden, Center for HR). 27 August 2020. "Forecast for the labor market for health professionals in the Capital Region (Prognose for arbejdsmarkedet for sundhedspersonale i Region Hovedstaden)". [https://www.regionh.dk/til-fagfolk/uddannelse/Udvikling-af-sundhedsuddannelsesomradet/prognose-for-arbejdsmarkedet-i-region-h/Documents/Sygeplejerskerapporten_endelig_udgave_november_2019_CHRU.pdf]. Accesssed 28 January 2021.

[5] Local Government Denmark (Kommunernes Landsforening). "Flere hænder i sundheds- og ældresektoren". [https://www.kl.dk/arbejdsgiver/arbejdsgiverpolitik-og-analyse/flere-haender-i-sundheds-og-aeldresektoren/]. Accessed 28 January 2021.

[6] Local Government Denmark (Kommunernes Landsforening). October 2018. "Handleplan til øget rekruttering". [https://www.kl.dk/arbejdsgiver/arbejdsgiverpolitik-og-analyse/flere-haender-i-sundheds-og-aeldresektoren/handleplan-til-oeget-rekruttering/]. Accessed 28 January 2021.

[7] Holbæk Municipality (Holbæk Kommune). September 2020. "Recruitment and Retention Strategy: Social and health care workers in Holbæk Municipality [Rekrutterings- og Fastholdelsesstrategi: SOSU i Holbæk Kommune)". [https://holbaek.dk/media/27580390/final_rekrutteringsstrategi.pdf]. Accessed 28 January 2021.

[8] Ministry of Finance (Finansmimisteriet). 3 June 2020. "The government, Local Government Denmark and Danish Regions will work for more social and health workers (Regeringen, KL og Danske Regioner vil arbejde for flere social- og sundhedsmedarbejdere)". [https://fm.dk/nyheder/nyhedsarkiv/2020/juni/regeringen-kl-og-danske-regioner-vil-arbejde-for-flere-social-og-sundhedsmedarbejdere/]. Accessed 28 January 2021.

4.1.2 Facilities capacity

4.1.2a

Hospital beds per 100,000 people

Input number

Current Year Score: 260

2019

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

Denmark has the capacity to isolate patients with highly communicable diseases in a biocontainment patient care unit and patient isolation facility. Isolation of individual patients in single rooms or of several individuals in entire sections is available at most public hospitals in Denmark including with a capacity to perform positive/negative pressures and with associated decontamination units. High-level isolation in bio-containment patient care units used, for example, in the event of an Ebola or MERS-Cov outbreak, is available at Hvidovre Hospital and Aarhus University Hospital. [1]

[1] State Serum Institute, Central Unit for Infection Hygiene (Statens Serum Institut, Central Enhed for Infektionhygiejne. 2019. "Infection Hygiene Guidelines: On supplementary precautions in case of infections and carrier state in the healthcare sector (Infektionshygiejniske Retningslinjer: Om supplerende forholdsregler ved infektioner og bærertilstand i sundhedssektoren)". [https://hygiejne.ssi.dk/NIRsupplerende]. Accessed 28 January 2021.

4.1.2c

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

Current Year Score: 1

In the past two years, Denmark has developed and updated a plan to expand isolation capacity in response to an infectious disease outbreak, and has actually expanded isolation capacity.

Since the start of the COVID-19 pandemic, the Danish Health Authority (Sundhedsstyrelsen) has worked together with the Danish regions to ensure that hospitals have a sufficient number of beds ready to receive patients with COVID-19. [1] All regions have plans for how they can increase the number of beds for both patients with COVID-19 and for all the other patients that the hospitals have to take care of if the need arises. The plans describe the concrete placement of the beds, how to ensure that the necessary equipment is in place, such as respirators, and that there are enough doctors, nurses and nursing staff. [1] The Danish Health Authority has set up a special COVID-19 Task Force for hospital capacity, which meets regularly and published weekly status reports in relation to the need in the hospital system. [2]

[1] Danish Health Authority (Sundhedsstyrelsen). 2020. "Capacity management for COVID-19 in the hospital system - Regional planning and national coordination". ("Håndtering af kapacitet til COVID-19 i sygehusvæsenet - Regionernes planlægning og national koordinering"). [https://www.sst.dk/-/media/Udgivelser/2020/Corona/Kapacitet/Haandtering-af-kapacitet-til-COVID-19-i-sygehusvaesenet.ashx?la=da&hash=02A499A8AF1BAE0C878DA891909305ADF4CE1325]. Accessed 6 May 2021.
[2] Danish Health Authority (Sundhedsstyrelsen). May 2021. "Hospital capacity: COVID-19". ("Sygehuskapacitet: COVID-19"). [https://www.sst.dk/da/udgivelser/2021/sygehuskapacitet-covid-19]. Accessed 6 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: 2

Denmark has a national procurement protocol which can be utilized by the Ministry of Health and Ministry of Environment and Food of Denmark for the acquisition of laboratory and medical supplies for routine needs. The central national protocol for procurement practices in all public institutions in Denmark is governed by the Procurement Law (Udbudsloven) of 2015. [1] This law is based on the EU Directive on Public Procurement, which applies to all government entities in Denmark and the European Union, and specify clear guidelines and rules for the tendering process. [2] Tenders for the acquisition of laboratory and medical supplies are published on the online portal "Tenders Electronic Daily" (TED). [3]

[1] Danish legal information system. 2015. "The Public Procurement Act (Udbudsloven)".
[https://www.retsinformation.dk/eli/lta/2015/1564]. Accessed 29 January 2021.
[2] Official Journal of the European Union. 26 February 2014. "Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC Text with EEA relevance".
[https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0024&from=EN]. Accessed 29 January 2021.
[3] Tenders Electronic Daily. "Tenders Electronic Daily" [https://ted.europa.eu/TED/main/HomePage.do]. Accessed 29 January 2021.

4.2.2 Stockpiling for emergencies

4.2.2a

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

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

Current Year Score: 1

Denmark has a stockpile of medical supplies (e.g. MCMs, medicines, vaccines, medical equipment, PPE) for national use during a public health emergency, but there is limited evidence about what the stockpile contains.

The operational tasks in the Danish health system rest largely with the 5 regions, who run the public hospitals, and the 98 municipalities, who are responsible for the primary health care. [1] Both regions and municipalities are required to draw up medical preparedness plans and to build up stocks of medical supplies accessible in times of emergency. Each region should, according to the guidelines from the Danish Health Authority, build up stocks of medicines and medical equipment to cover both the needs of the hospitals and the pre-hospital efforts. The regions should also draw up plans that ensure that supplementary medicines and medical equipment can urgently be produced and/or ordered. The region's medical preparedness plan should be coordinated with surrounding regions, and there should be agreements with the municipalities

in the region regarding medicines and medical equipment for patients who are extraordinarily released from hospital. Each municipality should have a stock of medical equipment, including, inter alia, utensils, personal protective equipment, bandages and aids, as well as the opportunity to urgently order additional equipment. The stocks should be sufficient to cover the needs of home care, care centers and other relevant municipal institutions, including municipal residential institutions and municipal dental care. The government, represented by the State Serum Institute (Statens Serum Institut), the Danish Health Authority (Sundhedsstyrelsen) and the Danish Medicines Agency (Lægemiddelstyrelsen), is, according to the national medical preparedness plan, which was activated on 12 March 2020, responsible for the supply of sera and vaccines, emergency medicine and procurement of medicines from abroad, as well as redistribution of medicines and medical equipment between regions, municipalities and pharmacies. The Danish Medicines Agency (Lægemiddelstyrelsen) runs a 24/7 emergency service, which can be contacted in the event of supply emergencies. [1, 2, 3]

As a consequence of imminent shortages of medical supplies at the outset of the COVID-19 pandemic, the government decided on 12 May 2020 to establish a new agency, the Danish Agency for Security of Supply (Styrelsen for Forsyningssikkerhed), under the auspices of the Ministry of Justice. [4] The Agency for Security of Supply, which became operational on 28 August 2020, is tasked with contributing to and coordinating the construction and management of national stocks of protective equipment and other critical resources, setting up and securing the operation of an EU emergency stockpile, ensure an overview of current and potential national producers of critical resources, support the health authorities' COVID-19 testing schemes, and to draw up plans to tackle general security of supplies during future emergencies. [5]

The State Serum Institute, under the auspices of the Ministry of Health, is responsible for the security of supply of vaccines and sera for the Danish market and the national vaccine stockpiles. [6] The regions purchase medicines both through Amgros, a purchasing organization owned by the 5 Danish regions, and directly by the regions 8 Hospital Pharmacies. [7] According to guidelines from the Danish Health Authority the region's stocks of medical countermeasures should amount to at least two days of ordinary consumption (placed at the individual hospital departments) and an additional stock equal to at least five days stored at the hospital pharmacies. [6] There is no publicly available information available on the actual size of the stocks of medical countermeasures prior to the outbreak of the COVID-19 pandemic. However, since February 2020, the Hospital Pharmacies and Amgros have sought to establish stockpiles equal to 3 months of normal use for "basic medicines", 6 months of normal use for "critical medicines" and 9 months of normal use of medicines used for treatment of COVID-19 patients. [7]

[1] Danish Health Authority (Sundhedsstyrelsen). January 2017. "Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 30 January 2021.
[2] Danish Medicines Agency (Lægemiddelstyrelsen). 9 March 2020. "All sails set to reduce disruptions in the supply of medicine and medical equipment Alle (sejl sat til for at mindske forstyrrelser i forsyningen af medicin og medicinsk udstyr). [https://laegemiddelstyrelsen.dk/da/nyheder/2020/alle-sejl-sat-til-for-at-mindske-forstyrrelser-i-forsyningen-af-medicin-og-medicinsk-udstyr/]. Accessed 30 January 2021.
[3] Danish Medicines Agency (Lægemiddelstyrelsen). 13 March 2020 "Changing dispensing groups to prevent hoarding of over-the-counter medications (Ændring af udleveringsgrupper for at hindre hamstring af håndkøbsmedicin)". [https://laegemiddelstyrelsen.dk/da/nyheder/2020/aendring-af-udleveringsgrupper-for-at-hindre-hamstring-af-haandkoebsmedicin/]. Accessed 30 January 2021.
[4] Danish Agency for Security of Supply (Styrelsen for Forsyningssikkerhed). "Danish Agency for Security of Supply (Styrelsen for Forsyningssikkerhed)" 2020. [https://sfos.dk/]. Accessed 30 January 2021.
[5] Styrelsen for Forsyningssikkerhed. 18 December 2020. "Mål- og Resultatplan for Styrelsen for Forsyningssikkerhed". [https://sfos.dk/media/8962/styrelsen-for-forsyningssikkerheds-maal-og-resultatplan-2021.pdf]. Accessed 30 January 2021.
[6] Danish Health Authority (Sundhedsstyrelsen). 2016. "Appendix to Health Emergency Planning: Guidelines for Regions and

Municipalities (Bilag til Planlægning af sundhedsberedskab: Vejledning til regioner og kommuner)." [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Bilag-til-Planl%C3%A6gning-af-sundhedsberedskab,-d-,-vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=5E62AC6D7154D475482B85C69D3C07F080760F9A]. Accessed 13 February 2021.
[7] Danish Regions (Danske Regioner). 14 August 2020. "Regionernes erfaringer med omstilling af kapaciteten". https://www.regioner.dk/media/13833/erfaringer-med-omstilling-til-covid-19.pdf]. Accessed 15 February 2021.

4.2.2b

Does the country have a stockpile of laboratory supplies (e.g. reagents, media) for national use during a public health emergency?
Yes = 2, Yes, but there is limited evidence about what the stockpile contains = 1, No = 0

> **Current Year Score: 0**

There is no publicly available evidence that Denmark has a stockpile of laboratory supplies for national use during a public health emergency. According to the 2013 pandemic plan, the 5 regions, which run the Danish public hospitals, are required to build up a stock of diagnostic kits for quick test as well as other laboratory equipment. [1] However, there is no further publicly available information on the actual stocks. [2, 3, 4, 5]

[1] Danish Health Authority (Sundhedsstyrelsen). 21 January 2013. "Preparedness for pandemic influenza, Part II: Guidelines for regions and municipalities (Beredskab for pandemisk influenza, del II: Vejledning til regioner og kommuner). [https://www.sst.dk/-/media/Udgivelser/2013/Publ2013/Beredskab-for-pandemisk-influenza-del-2,-d-,-National-strategi-og-fagligt-grunndlag.ashx?la=da&hash=3C71CA640F768CFF503A68265200C220826B20CB]. Accessed 14 February 2021.
[2] Danish Ministry of Health (Sundhedsministeriet). [https://sum.dk/english]. Accessed 16 March 2021.
[3] Danish Ministry of Defense (Forsvarsministeriet). [https://fmn.dk/en/]. Accessed 16 March 2021.
[4] Danish Emergency Management Agency (Beredskabsstyrelsen). [https://brs.dk/en/]. Accessed 16 March 2021.
[5] Danish Medicines Agency (Lægemiddelstyrelsen). [https://laegemiddelstyrelsen.dk/en/]. Accessed 16 March 2021.

4.2.2c

Is there evidence that the country conducts or requires an annual review of the national stockpile to ensure the supply is sufficient for a public health emergency?
Yes = 1, No = 0

> **Current Year Score: 0**

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

The operational tasks in the Danish health system rest largely with the 5 regions, which run the public hospitals, and the 98 municipalities, which are responsible for primary health care. Both regions and municipalities are required to draw up medical preparedness plans and to build up stocks of medical supplies accessible in times of emergency. Each region should, according to the guidelines from the Danish Health Authority, build up stocks of medicines and medical equipment to cover both the needs of the hospitals and the pre-hospital efforts. The regions should also draw up plans that ensure that supplementary medicines and medical equipment can urgently be produced and/or ordered. [1] However, there is no evidence that an annual review of the national stockpile is conducted or required on the websites of the Ministry of Health, Ministry of Defense, the Danish Emergency Management Agency, and the Danish Medicines Agency. [2,3,4,5]

[1] Danish Health Authority (Sundhedsstyrelsen). January 2017. "Health preparedness planning - guidance for regions and municipalities (Planlægning af sundhedsberedskab - vejledning til regioner og kommuner)". [https://www.sst.dk/-/media/Udgivelser/2017/Sundhedsberedskab/Planl%C3%A6gning-af-sundhedsberedskab,-d-,-Vejledning-til-regioner-og-kommuner,-d-,-2017.ashx?la=da&hash=1C2A640EB6E9DE6CC3CC9BA7343E2168677C4041]. Accessed 6 May 2021.
[2] Danish Ministry of Health (Sundhedsministeriet). [https://sum.dk/english]. Accessed 6 May 2021.
[3] Danish Ministry of Defense (Forsvarsministeriet). [https://fmn.dk/en/]. Accessed 6 May 2021.
[4] Danish Emergency Management Agency (Beredskabsstyrelsen). [https://brs.dk/en/]. Accessed 6 May 2021.
[5] Danish Medicines Agency (Lægemiddelstyrelsen). [https://laegemiddelstyrelsen.dk/en/]. Accessed 6 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: 1

There is evidence that Denmark has a plan, agreement or mechanism to facilitate procurement or leverage domestic manufacturing capacity for production of medical supplies (e.g. MCMs, medicines, vaccines, equipment, PPE) for national use during a public health emergency.

According to the health minister's response to a 2020 question by the Danish Parliament's Health and Elderly Committee (Folketingets Sundheds- og Ældreudvalg), the Danish Medicines Agency is collaborating with Amgros, a purchasing organization owned by the 5 Danish regions, and the wholesalers Nomeco and TMJ to adjust their stocks in order to support the supply of the critical medicines to the Danish hospitals and pharmacies. [1]

The cooperation between the different members of the supply chain has, during 2020, resulted in the buildup of significant stocks of essential medicines. [2] While the COVID-19 did not lead to critical shortages of medicine supplies to the Danish hospitals, Denmark has the possibility to alleviate shortage of medicines via a dispensing permit, which ensures that patients can continue their treatment with the same or similar medicines until the supply difficulties on the Danish market are over. [1] The possibility of producing medicines in-house at the regions' hospital pharmacies also plays an important role in securing security of supply within the Danish health sector. [3, 4] However, there is no evidence that any of this is rooted in a pre-existing plan, agreement or mechanism, including on the website of the Ministry of Health. [5]

[1] Danish Parliament's Health and Elderly Committee (Folketingets Sundheds- og Ældreudvalg). 2020. "Answer to question no. 977 (ord. part) (Svar til spørgsmål nr. 977 (Alm. del))".
[https://www.ft.dk/samling/20191/almdel/suu/spm/977/svar/1675942/2218208/index.htm]. Accessed 14 February 2021.
[2] Lægemiddelstyrelsen. [https://laegemiddelstyrelsen.dk/da/nyheder/2020/beredskabslagre-af-medicin-skal-modvirke-forsyningsproblemer-under-covid-19/]. Accessed 14 February 2021.
[3] Amgros. 5 February 2021. "A year marked by the pandemic (Et år i pandemiens tegn)". [https://www.amgros.dk/viden-og-analyser/artikler/et-aar-i-pandemiens-tegn/]. Accessed 14 February 2021.
[4] Northern Denmark Region. 8 December 2020. "Production (Produktion)". [https://rn.dk/om-region-nordjylland/organisation/sygehusapoteket/afdelinger/produktion]. Accessed 14 February 2021.

[5] Danish Ministry of Health (Sundhedsministeriet). [https://sum.dk/english]. Accessed 6 May 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

Prior to the COVID-19 pandemic, there seems to have been no publicly available coherent plan stipulating how to procure or leverage domestic manufacturing capacity to produce laboratory supplies (e.g., reagents, media) for national use during a public health emergency. There is, however, evidence that public-private cooperation has been established to reduce the risk of shortages of laboratory supplies. In Denmark, the State Serum Institute (Statens Serum Institut, SSI) is the Danish reference laboratory, while the regions' clinical micro biological departments (KMAs) play a vital role in detection of infectious diseases at the hospital level. A report from Danish Regions (Danske Regioner), evaluating the adjustment efforts in the region's health care system during the COVID-19 pandemic, stresses how cooperation between diagnostic departments, universities and private companies been important role in preventing shortage of laboratory supplies, and how in-house production of reagents may be essential during future epidemics. The report also describes how, faced with shortages of test kits through conventional suppliers, the regions have established cooperation with a domestic plastic producer, who has been able to produce kits that can analyze both virological and bacteriological samples, as well as a swab with the desired properties for a good inoculation. [1]. There is also evidence suggesting cooperation with a private Danish manufacturer has aided the SSI in making an upscale of its testing capacity possible without cannibalizing resources (swabs) essential in the regions' test efforts. [2] No further public information on plans on how to purchase or leverage domestic manufacturing capacity to produce laboratory supplies for national use during a public health emergency is available on the homepages of the Danish Ministry of Health [3], the Danish Medicines Agency [4] or the Danish Ministry of Defense [5].

[1] Danish Regions (Danske Reginer). 2020. "Robust Dianostics (Robust Dianostik)". [https://www.regioner.dk/media/13951/robust-diagnostik.pdf]. Accessed 14 February 2021.
[2] Danish Bioanalytics (Danske Bioanalytikere, dBio). "From construction site to test factory in two weeks. The story of Testcenter Denmark (Fra byggetomt til testfabrik på to uger. Historien om Testcenter Danmark)". [http://www.dbio.dk/Nyheder/Sider/Fra-byggetomt-til-testfabrik-p%C3%A5-to-uger.-Historien-om-Testcenter-Danmark-.aspx]. Accessed 14 February 2021.
[3] Danish Ministry of Health (Sundhedsministeriet). [https://sum.dk/english]. Accessed 10 March 2021.
[4] Danish Medicines Agency (Lægemiddelstyrelsen). [https://laegemiddelstyrelsen.dk/en/]. Accessed 10 March 2021.
[5] Danish Ministry of Defense (Forsvarsministeriet). [https://fmn.dk/en/]. Accessed 10 March 2021.

4.3 MEDICAL COUNTERMEASURES AND PERSONNEL DEPLOYMENT

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

4.3.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that Denmark has guidelines in place for dispensing medical countermeasures for national use during a public health emergency. Denmark keeps a stockpile of medical countermeasures for national use during a public health emergency (i.e. vaccines, therapeutics and diagnostics), which is maintained by Statens Serum Institut (SSI). [1] The SSI is in charge of providing vaccines to the Danish health system during a public health emergency, but its website keeps no further information on a plan, program, or guidelines in place for dispensing such medical countermeasures. The websites of the Ministry of Health, the Ministry of Defense and the Danish Emergency Management Agency provides no details on plans, programs or guidelines in place for dispensing medical countermeasures. [2, 3, 4]

[1] State Serum Institute. 2016. "Om smitteberedskab (About Preparedness for Contagion)".
[https://www.ssi.dk/Smitteberedskab/Om%20smitteberedskab.aspx]. Accessed 25th February 2020.
[2] Ministry of Health. 2020. "Sundheds- og Ældreministeriet (Ministry of Health)". [http://sum.dk/]. Accessed 25th February 2020.
[3] Ministry of Defense. 2020. "Forsvarsministeriet (Ministry of Defense)". [http://www.fmn.dk/Pages/default.aspx]. Accessed 25th February 2020.
[4] Danish Emergency Management Agency. 2020. "Beredsskabsstyrelsen (Danish Emergency Management Agency)". [http://www.fmn.dk/Pages/default.aspx]. Accessed 25th February 2020.

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

4.3.2a

Is there a public plan in place to receive health personnel from other countries to respond to a public health emergency?

Yes = 1 , No = 0

Current Year Score: 0

There is no public evidence of a plan on how Denmark should receive health personnel from other countries to respond to a public health emergency. Denmark is part of the Nordic Group for Public Health Preparedness (the Svalbard Group) and the Nordic countries, insofar as possible, are required to: provide each other with assistance in a crisis situation; inform and consult each other regarding measures that are implemented in crisis situations; promote cooperation by removing obstacles in national rules, etc.; and cooperate on the exchange of experience and increase of expertise. [1] However, there is no public evidence on the website of neither the Ministry of Health nor Ministry of Defense of a plan on how the country plans to facilitate the arrival and movement of foreign personnel during an emergency (e.g., facilitating visas and travel, designating an agency responsible for coordinating their travel, etc.). [2,3]

[1] Nordic Cooperation. October 2018. "Mandate for the Nordic Group for Public Health Preparedness (the Svalbard Group)". [https://www.norden.org/en/information/mandate-nordic-group-public-health-preparedness-svalbard-group]. Accessed 9 February 2021.

[2] Ministry of Health. "The Danish Ministry of Health". [https://sum.dk/english]. Acccessed 9 February 2021. Danish Ministry of Defence (Forsvarsministeriet). "Danish Ministry of Defense". [https://fmn.dk/en/]. Accessed 9 February 2021.

4.4 HEALTHCARE ACCESS

4.4.1 Access to healthcare

4.4.1a

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

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

Current Year Score: 0

2020

World Policy Analysis Center

4.4.1b

Access to skilled birth attendants (% of population)

Input number

Current Year Score: 94.4

2016

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

4.4.1c

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

Input number

Current Year Score: 756.99

2017

WHO Global Health Expenditure database

4.4.2 Paid medical leave

4.4.2a

Are workers guaranteed paid sick leave?

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

Current Year Score: 2

2020

World Policy Analysis Center

4.4.3 Healthcare worker access to healthcare

4.4.3a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence that the Danish government 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. [1, 2, 3, 4]

[1] Ministry of Health (Sundhedsministeriet). [www.sum.dk]. Accessed 9 February 2021.
[2] Danish Health Authority (Sundhedsstyrelsen). [https://www.sst.dk]. Accessed 9 February 2021.
[3] Ministry of Defence (Forsvarsministeriet). [https://fmn.dk/en/]. Accessed 9 February 2021.
[4] Danish Emergency Management Agency (Beredskabsstyrelsen). [https://brs.dk/en/]. Accessed 9 February 2021.

4.5 COMMUNICATIONS WITH HEALTHCARE WORKERS DURING A PUBLIC HEALTH EMERGENCY

4.5.1 Communication with healthcare workers

4.5.1a

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

Yes = 1 , No = 0

Current Year Score: 1

There is evidence that there is a system in place for public health officials and healthcare workers to communicate during a public health emergency in Denmark.

Denmark has a united secure radio-based communication system, that ensures of an efficient communication across the different Danish emergency services, including actors involved in public health emergencies. The system, which is called SINE, is used by the police, rescue and health preparedness as well as parts of the national defense and the Danish Emergency Management Agency. SINE is also used by private actors who solve societal tasks for the emergency authorities. [1] It facilitates, among other things, two-way communication between various parts of the emergency response, including for instance between the fire brigades, ambulance services and the police. [2] Different health authorities also operates 24/7 hotlines, which can be used by health care workers and authorities to report or gain information about health events or

emergencies. [3, 4, 5, 6]

[1] Centre of Emergency Communication (Center for Beredskabskommunikation). "About SINE (Om SINE)".
[https://www.sikkerhedsnet.dk/om-sine/]. Accessed 9 February 2021.
[2] Dansk Beredskabskommunikation. "SINE". [http://dbkas.dk/sine-2/]. Accessed 9 February 2021.
[3] Danish Patient Safety Authority (Styrelsen for Patientsikkerhed). "Hotlines (Vagttelefoner)".
[https://stps.dk/da/sundhedsfare-og-beredskab/vagttelefoner/]. Accessed 9 February 2021.
[4] "New COVID-19 hotline for employees and managers in the health, elderly and social areas (Ny COVID-19-hotline til medarbejdere og ledere på sundheds-, ældre- og socialområdet)". [https://stps.dk/da/nyheder/2020/ny-covid-19-hotline-til-medarbejdere-og-ledere-paa-sundheds-,-aeldre-og-socialomraadet/]. Accessed 9 February 2021.
[5] State Serum Institute (Statens Serum Institut). 26. marts 2020. "24/7 preparedness (Vagtberedskab)".
[https://www.ssi.dk/sygdomme-beredskab-og-forskning/vagtberedskab]. Accessed 9 February 2021.
[6] Danish Health Authority (Sundhedsstyrelsen). "Contract and visit (Kontakt og besøg)" [https://www.sst.dk/da/Om-os/Kontakt-og-besoeg]. Accessed 9 February 2021.

4.5.1b

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

Yes = 1 , No = 0

Current Year Score: 1

The system for public health officials and healthcare workers to communicate during an emergency encompasses healthcare workers in both the public and private sector.

Denmark has a united secure radio-based communication system, that ensures of an efficient communication across the different Danish emergency services, including actors involved in public health emergencies. The system, which is called SINE, is used by the police, rescue and health preparedness as well as parts of the national defense and the Danish Emergency Management Agency. SINE is also used by private actors who solve societal tasks for the emergency authorities. [1] It facilitates among other things two-way communication between various parts of the emergency response, including for instance between the fire brigades, ambulance services and the police. [2]

[1] Centre of Emergency Communication (Center for Beredskabskommunikation). "About SINE (Om SINE)".
[https://www.sikkerhedsnet.dk/om-sine/]. Accessed 9 February 2021.
[2] Dansk Beredskabskommunikation. "SINE". [http://dbkas.dk/sine-2/]. Accessed 9 February 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

The Danish national public health system monitors and tracks the number of healthcare-associated infections that take place in healthcare facilities.

The Hospital-Acquired Infections Database (HAIBA) at the State Serum Institute (Statens Serum Institut, SSI) automatically collects data on an ongoing basis of health care-associated infections (HCAI or HAI). [1] The electronic system has been in place since 2015, and its website provides publicly available figures on the frequency of different types of health care-associated infections that take place in healthcare facilities. [2]

[1] State Serum Institute. 5 October 2020. "HAIBA". [https://miba.ssi.dk/haiba]. Accessed 6 February 2021.
[2] Danish Health Authority, eSundhed (Sundhedsstyrelsen, eSundhed). 2020."Healthcare-Associated Infections Database - HAIBA". [https://www.esundhed.dk/home/emner/patienter%20og%20sygehuse/haiba]. Accessed 6 February 2021.

4.7 CAPACITY TO TEST AND APPROVE NEW MEDICAL COUNTERMEASURES

4.7.1 Regulatory process for conducting clinical trials of unregistered interventions

4.7.1a

Is there a national requirement for ethical review (e.g., from an ethics committee or via Institutional Review Board approval) before beginning a clinical trial?
Yes = 1 , No = 0

Current Year Score: 1

Denmark requires an ethical review before a clinical trial may be started. According to the Ministry of Health's Committee Law of 2017 all clinical trials must be approved by a regional ethical review board before beginning a clinical trial. If a trial is rejected at the regional level, it may be brought before the National Ethical Review Board. [1]

[1] Danish Legal Information System (Retsinformation). 2020. "Promulgation of the Act on the ethical treatment of health science research projects and health data science research projects (Bekendtgørelse af lov om videnskabsetisk behandling af sundhedsvidenskabelige forskningsprojekter og sundhedsdatavidenskabelige forskningsprojekter)". LBK no 1338 of 01/09/2020. [https://www.retsinformation.dk/eli/lta/2020/1338]. Accessed 7 February 2021.

4.7.1b

Is there an expedited process for approving clinical trials for unregistered medical countermeasures (MCM) to treat ongoing epidemics?
Yes = 1 , No = 0

Current Year Score: 0

There is evidence of an expedited process for approving medicines, but not clinical trials for unregistered medical countermeasures (MCM) to treat ongoing epidemics. Denmark has an expedited process for approving clinical trials for unregistered medical countermeasures (MCM) to treat ongoing epidemics. Within the EU, medicines for infectious diseases are approved by the European Medicines Agency (EMA) through the centralized procedure. EMA approves, with the

endorsement of the EU Commission, in this way medicines on behalf of all member states of the EU/EEA, including Denmark. [1] In case a product is deemed of major interest for public health and therapeutic innovation, the EMA's Committee for Medicinal Products for Human Use may apply accelerated assessment, which reduce the approval procedure from the normal 210 days to 150 days. [2] Accelerated assessment, possibly combined with rolling review, may result in a conditional marketing authorization, which is valid for one year at a time. [3] The Accelerated assessment procedure has been used during the COVID-19 pandemic. [3]

[1] European Medicines Agency. "Authorisation of medicines". [https://www.ema.europa.eu/en/about-us/what-we-do/authorisation-medicines#centralised-authorisation-procedure-section]. Accessed 13 February 2021.
[2] European Medicines Agency. "Accelerated assessment" [https://www.ema.europa.eu/en/human-regulatory/marketing-authorisation/accelerated-assessment]. Accessed 13 February 2021.
[3] European Medicines Agency. "Conditional marketing authorization". [https://www.ema.europa.eu/en/human-regulatory/marketing-authorisation/conditional-marketing-authorisation]. Accessed 13 February 2021.

4.7.2 Regulatory process for approving medical countermeasures

4.7.2a

Is there a government agency responsible for approving new medical countermeasures (MCM) for humans?
Yes = 1 , No = 0
Current Year Score: 1

There is a government agency responsible for approving new medical countermeasures for humans in Denmark. According to the Medicines Law of 2018, the Danish Health Authority (Sundhedsstyrelsen) or the European Commission must approve new medical countermeasures in Denmark. Either body's approval will allow the medical countermeasure to be used in Denmark [1]. Medical countermeasures include medicines for both humans and animals.

[1] Danish Legal Information System. 2018. "Promulgation of the Medicines Act (Bekendtgørelse af lov om lægemidler (Lægemiddelloven)". LBK no 99 of 16/01/2018. [https://www.retsinformation.dk/eli/lta/2018/99]. Accessed 7 February 2021.

4.7.2b

Is there an expedited process for approving medical countermeasures (MCM) for human use during public health emergencies?
Yes = 1 , No = 0
Current Year Score: 1

An expedited process for approving medical countermeasures for human use during public health emergencies is available in Denmark. According to the Medicines Act of 2018, the Danish Health Authority (Sundhedsstyrelsen) or the European Commission must approve new medical countermeasures in Denmark. However, Article 5 of the Medicines Act grants the Minister for Health the authority to make exceptions for specific categories of medical countermeasures for humans, if assessed to be necessary, for example in the case of a health emergency in the country. [1]

[1] Danish Legal Information System. 2018. "Promulgation of the Medicines Act (Bekendtgørelse af lov om lægemidler (Lægemiddelloven)". LBK no 99 of 16/01/2018. [https://www.retsinformation.dk/eli/lta/2018/99]. Accessed 7 February 2021.

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

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

5.1.1 Official IHR reporting

5.1.1a

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

Yes = 1 , No = 0

> Current Year Score: 1

2020

World Health Organization

5.1.2 Integration of health into disaster risk reduction

5.1.2a

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

Yes = 1 , No = 0

> Current Year Score: 0

There is no evidence that pandemics are integrated into the Danish national risk reduction strategy. Nor is there evidence of a standalone national disaster risk reduction strategy for pandemics. The "Strategy for Prevention of Catastrophes" (National strategi for forebyggelse af ulykker og katastrofer), published by the Danish Emergency Management Agency in December 2016, addresses risk reduction in the country. However, the strategy focuses on preventing emergencies related to fire and extreme meteorological events. [1] The coming Danish epidemic plan, which was supposed to have been published during 2020, but which in February 2021 is still awaiting, is supposed to include considerations about ways to prevent epidemic/pandemic outbreaks. [2] There is no evidence of a standalone national disaster risk reduction strategy for pandemics on the websites of the Ministry of Health, the Ministry of Defense or the Danish Emergency Management Agency. [3, 4, 5]

[1] Danish Emergency Management Agency (Beredskabsstyrelsen). December 2016. "National Strategy for Prevention of Disasters and Catastrophes (National strategi for forebyggelse af ulykker og katastrofer".
[http://brs.dk/viden/publikationer/Documents/National-forebyggelsesstrategi-2017.pdf]. Accessed 7 February 2021.
[2] Danish Health Authority (Sundhedsstyrelsen. 6 February 2021. "Epidemic preparedness (Beredskab for epidemier)"
[https://www.sst.dk/da/viden/beredskab/beredskab-for-epidemier]. Accessed 7 February 2021.
[3] Ministry of Health (Sundhedsministeriet). 2021. [http://sum.dk/]. Accessed 7 February 2021.
[4] Danish Ministry of Defense (Forsvarsministeriet). 2021. [https://fmn.dk/en/]. Accessed 7 February 2021.

[5] Danish Emergency Management Agency (Beredskabsstyrelsen). 2021. [https://brs.dk/en/]. Accessed 7 February 2021.

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

5.2.1 Cross-border agreements

5.2.1a

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

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

Current Year Score: 2

Denmark has cross-border agreements as part of a regional group with regards to public health emergencies, and there is no evidence of gaps in implementation. Denmark is part of the Nordic Group for Public Health Preparedness (the so called "Svalbard Group"), which was established in 2002, together with Finland, Iceland, Norway, Sweden and the three autonomous areas, the Faroe Islands, Greenland, and Åland. The Agreement encompasses 1. "preparation of contingency measures" and 2. "assistance on occasions when one of the contracting states suffers an emergency or disaster." A member of the "Svalbard Group" may according to the Agreement request assistance from the other contracting partners in case of emergencies. [1] In addition to the "Svalbard Group", Denmark, through the State Serum Institute (Statens Serum Institut), partakes in a range of international collaborative activities, such as the regional monitoring of diseases and health emergency response, with the WHO, the European Centre for Disease Prevention and Control (ESDC) and The European Programm for Intervention Epidemiology. [2]

Nordhels. 2002. "Nordic Public Health Preparedness Agreement".
[http://www.nordhels.org/siteassets/nordhels/avtal/nordiskt-halsoberedskapsavtal---engelska.pdf]. Accessed 7 February 2021.
[2] State Serum Institute. 21 March 2016. "International Cooperation (Internationalt Samarbejde)".
[https://www.ssi.dk/sygdomme-beredskab-og-forskning/sygdomsovervaagning/i/international-overvaagning]. Accessed 7 February 2021.

5.2.1b

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

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

Current Year Score: 2

There is evidence that Denmark has cross-border agreements as part of a regional group, with regards to animal health emergencies, and there is no evidence of gaps in implementation. Denmark follows the EU Directive on The Monitoring of Zoonoses and Zoonotic Agents, which requires that each Member State ensures the establishment of effective and continuous cooperation based on free exchange of general information and, where necessary, of specific data. [1] Article 1 of the Directive specifies that "the purpose of this Directive is to ensure that zoonoses, zoonotic agents and related antimicrobial resistance are properly monitored, and that food-borne outbreaks receive proper epidemiological investigation, to enable the collection in the Community of the information necessary to evaluate relevant trends and sources". [1] Moreover, Denmark, through the State Serum Institute (Statens Serum Institut, SSI), engages in a range of

collaborative activities, including responses to animal health emergencies involving zoonoses, with the WHO, the European Center for Disease Prevention and Control (ECDC) and the European Programme for Intervention Epidemiology. [2] The ECDC produces an annual surveillance report on zoonoses covering all EU member states, including Denmark, which supports the regional animal health preparedness plans. [3]

[1] European Union. 2003. "Directive 2003/99/EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC". [https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32003L0099&from=EN]. Accessed 7 February 2021.
[2] State Serum Institute. 21 March 2016. "International Cooperation (Internationalt Samarbejde)". [https://www.ssi.dk/sygdomme-beredskab-og-forskning/sygdomsovervaagning/i/international-overvaagning]. Accessed 7 February 2021.
[3] ECDC. 2018. "The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2017" [https://www.ecdc.europa.eu/sites/default/files/documents/zoonoese-food-borne-outbreaks-surveillance-2017-updated.pdf]. Accessed 7 February 2021.

5.3 INTERNATIONAL COMMITMENTS

5.3.1 Participation in international agreements

5.3.1a

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

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

Current Year Score: 2

2021

Biological Weapons Convention

5.3.1b

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

Yes = 1 , No = 0

Current Year Score: 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: 4

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: 0

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: 1

Denmark has allocated national funds to improve capacity to address epidemic threats within the past three years. In 2020, the government established a new agency - the Danish Agency for Security of Supply (Styrelsen for Forsyningssikkerhed) - which beyond the COVID-19 pandemic is tasked to improve the Danish health preparedness. On 3 September 2020, the Danish Parliamentary Finance Committee (Folketingets Finansudvalg) approved a petition from the Ministry of Justice of an additional appropriation of 20M Danish Crowns (US$ 3,240,388) to fund the establishment of the Agency as well as 9,8M Danish Crowns (US$ 1,587,790) to be used to strengthen the emergency preparedness area, including the establishment of a new emergency preparedness department, within the Ministry of Justice. [1]

[1] The Danish Parliament (Folketinget). 3 September 2020. "Document no 275 (Aktstykke nr. 275)". [https://www.ft.dk/RIPdf/samling/20191/aktstykke/aktstk275/20191_aktstk_afgjort275.pdf]. Accessed 8 February 2021.

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

5.5.2a
Does the Joint External Evaluation (JEE) report, National Action Plan for Health Security (NAPHS), and/or national GHSA roadmap allocate or describe specific funding from the national budget (covering a time-period either in the future or within the past five years) to address the identified gaps?
Yes = 1 , No/country has not conducted a JEE = 0

Current Year Score: 0

2021

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

5.5.2b
Does the Performance of Veterinary Services (PVS) gap analysis and/or PVS assessment allocate or describe specific funding from the national budget (covering a time-period either in the future or within the past five years) to address the identified gaps?
Yes = 1 , No/country has not conducted a PVS = 0

Current Year Score: 0

2021

OIE PVS assessments

5.5.3 Financing for emergency response

5.5.3a
Is there a publicly identified special emergency public financing mechanism and funds which the country can access in the face of a public health emergency (such as through a dedicated national reserve fund, an established agreement with the World Bank pandemic financing facility/other multilateral emergency funding mechanism, or other pathway identified through a public health or state of emergency act)?

Yes = 1 , No = 0

       Current Year Score: 0

Denmark has no special emergency public financing mechanism or national reserve fund which the country can access in the face of a public health emergency [1] and as a high-income country, Denmark cannot draw on the World Bank's IDA or Pandemic Emergency Financing Facility [2, 3]. However, with AAA credit ratings, [4] Denmark has access to a broad array of cheap financial sources, including the possibility to issue government bonds, treasury bills (Skattekammerbeviser), Commercial papers, and European Medium Term Notes (EMT). The government may also draw on general cash reserves placed at the State Account in the Danmark Nationalbank (National Bank of Denmark) [5]. During 2020 the Danmark Nationalbank reactivated an existing swap line with the ECB to provide euro liquidity [6] and established a bilateral swap agreement in dollars with the US Federal Reserve [7]. No further information is found at the website of the Danish Ministry of Health. [8]

[1] Danmarks Nationalbank. 10 February 2021. "State funds (Statslige fonde)".
[https://www.nationalbanken.dk/da/statsgaeld/statens_gaeld/Sider/Statslige-fonde.aspx]. Accessed 15 February 2021.
[2] World Bank. "Borrowing Countries". [http://ida.worldbank.org/about/borrowing-countries]. Accessed 15 February 2021.
[3] World Bank. December 2017. "Pandemic Emergency Financing Facility (PEF): Operational Brief for Eligible Countries".
[http://pubdocs.worldbank.org/en/119961516647620597/PEF-Operational-Brief-Dec-2017.pdf]. Accessed 15 February 2021.
[4] Danmarks Nationalbank. 28 August 2017 "Rating".
[https://www.nationalbanken.dk/en/governmentdebt/IR/Pages/Rating.aspx]. Accessed 15 February 2021.
[5] Danmarks Nationalbank. 15 April 2020. "The state has a good starting point for financing corona-related expenses (Staten har et godt udgangspunkt for at finansiere corona-relaterede udgifter)".
[https://www.nationalbanken.dk/da/publikationer/Documents/2020/04/ANALYSE_Nr.%206_Staten%20har%20et%20godt%20udgangspunkt%20for%20at%20finansiere%20corona-relaterede%20udgifter.pdf]. Accessed 15 February 2021.
[6] Danmarks Nationalbank. 20 March 2020. "Danmarks Nationalbank and ECB reactivate swap line to provide euro liquidity".
[https://www.nationalbanken.dk/en/pressroom/Pages/2020/03/DNN202005416.aspx]. Accessed 15 February 2021.
[7] Danmarks Nationalbank. 19 March 2020. "Danmarks Nationalbank has established a bilateral swap agreement in dollars with the Federal Reserve". [https://www.nationalbanken.dk/en/pressroom/Pages/2020/03/DNN202005405.aspx]. Accessed 15 February 2021.
[8] Danish Ministry of Health (Sundhedsministeriet). [https://sum.dk/english]. Accessed 11 March 2021.

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

5.5.4a

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

       Current Year Score: 1

There is evidence that Danish senior leaders in the past three years have made public commitments to improve domestic Danish capacity, but insufficient evidence of support for other countries to improve their capacity to address epidemic threats. In respect to the improvement of domestic capacity to address epidemics, the PM Ms. Mette Frederiksen on 12 May

2020 announced the establishment of a new agency - the Danish Agency for Security of Supply (Styrelsen for Forsyningssikkerhed), under the auspice of the Ministry of Justice. [1] The agency, which became operational on 28 August 2020, is tasked to contribute to and coordinate the construction and management of national stocks of protective equipment and other critical resources, set up and secure the operation of an EU emergency stockpile, establish an overview of current and potential national producers of critical resources, support the health authorities' COVID-19 testing schemes, and to draw up plans on how to tackle general security of supplies during future emergencies. [2] International support is primarily geared toward response efforts. In April 2020, for instance, the Government, represented by the Minister of Foreign Affairs, the Minister of Defense, and the Minister of Health announced an aid package for Italy consisting of a number of ventilators (which later proved unusable for treatment of corona patients), erection of an unmanned field hospital from the Danish Emergency Management Agency, and a donation of €1 million to the Italian Red Cross. [3] Another example, on 18 December 2020, the Minister for Development Cooperation announced that Denmark would contribute provide 100 million Danish Crown COVID-19 to vaccines to the world's poorest. [4]

[1] The Danish Government (Regeringen). 12 May 2020. "Press conference: New agency and test strategy (Pressemøde: Ny styrelse og teststrategi)". [https://www.regeringen.dk/nyheder/2020/pressemoede-i-spejlsalen-om-covid-19-i-danmark/]. Accessed 14 February 2021.
[2] Danish Agency for Security of Supply (Styrelsen for Forsyningssikkerhed). 18 December 2020. "Mål- og Resultatplan for Styrelsen for Forsyningssikkerhed". [https://sfos.dk/media/8962/styrelsen-for-forsyningssikkerheds-maal-og-resultatplan-2021.pdf]. Accessed 14 February 2021
[3] Government (Regeringen). 20. "Danish assistance for Italy (Dansk hjælp til Italien)".
[https://www.regeringen.dk/nyheder/2020/dansk-hjaelp-til-italien/]. Accessed 14 February 2021.
[4] Ministry of Foreign Affairs of Denmark (Udenrigsministeriet). 18 December 2020. "The government will provide COVID-19 vaccines to the world's poorest (Regeringen vil sikre COVID-19 vacciner til verdens fattigste)". [https://um.dk/da/nyheder-fra-udenrigsministeriet/newsdisplaypage/?newsID=AD47FEF8-F39C-4CE8-9939-BFCDFB03945E]. Accessed 14 February 2021.

5.5.4b

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

Denmark has, in the past three years, provided other countries with financial or technical assistance to improve capacity to address epidemic threats, but there is no publicly available evidence that Denmark has requested financial or technical assistance to improve capacity to address epidemic threats.

During 2020, for instance, Denmark allocated more than DKK 1 billion (US$ 163 million) to alleviate the effects of COVID-19 in Africa, DKK 10 million (US$ 1.63 million) to the Norwegian founded Coalition for Epidemic Preparedness Innovations, DKK 58 million (US$ 9.5 million) to the WHO and DKK 50 million (US$ 8.1 million) to UNICEF. [1,2,3]

In addition to financial assistance, Denmark has also sent 80 ventilators abroad. [4] There is no publicly available information on the websites of the Ministry of Health, Ministry of Foreign Affairs of Denmark, or World Health Organization (WHO) indicating that Denmark has requested assistance from abroad during the last three years. [5,6,7] According to the Global Health Security Tracker, Denmark disbursed USD 571,44 million of funding to low and middle-income countries between 2018 and 2020. Top funding categories include immunization, zoonotic diseases, and biosafety and biosecurity

enhancement. [8]

[1] Ministry of Foreign Affairs of Denmark (Udenrigsministeriet). 2 April 2020. "Large majority sends corona aid to the world's poorest (Bredt flertal sender corona-hjælp til verdens fattigste)". [https://um.dk/da/nyheder-fra-udenrigsministeriet/newsdisplaypage/?newsID=7C67F0A7-6721-4A59-B7DC-0570C84603DD]. Accessed 13 February 2021.

[2] Ministry of Foreign Affairs of Denmark (Udenrigsministeriet). 14 March 2020. "The Minister of Development provides DKK 10 million for the development of the Corona vaccine (Udviklingsministeren giver 10 mio. kr. til udvikling af Corona-vaccine)" [https://um.dk/da/udenrigspolitik/udenrigspolitiske-nyheder/newsdisplaypage/?newsid=42d48de2-536d-43a1-aaa6-62446f678853]. Accessed 13 February 2021.

[3] Ministry of Foreign Affairs of Denmark (Udenrigsministeriet). 21 March 2020. "New emergency package: The Minister for Development Aid gives DKK 100 million for corona control (Ny akutpakke: Udviklingsministeren giver 100. mio kr. til coronabekæmpelse)". [https://um.dk/da/nyheder-fra-udenrigsministeriet/newsdisplaypage/?newsID=122BA01F-3DFB-481E-AE5A-194C95CC4F59]. Accessed 13 February 2021.

[4] Altinget. 10 August 2020. "Denmark is ready to send 80 ventilators abroad (Danmark er klar til at sende 80 respiratorer til udlandet)" [https://www.altinget.dk/eu/artikel/danmark-er-klar-til-at-sende-80-respiratorer-til-udlandet]. Accessed 13 February 2021.

[5] Danish Ministry of Health. [https://sum.dk/english]. Accessed 12 March 2021.

[6] Ministry of Foreign Affairs of Denmark. [https://um.dk/en/]. Accessed 12 March 2021.

[7] World Health Organization (WHO). [https://www.who.int/]. Accessed 12 March 2021.

[8] Global Health Security Tracking. "Funder profile - Denmark". [https://tracking.ghscosting.org/details/927/funder]. Accessed 5 May 2021.

5.5.4c

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

Yes = 1 , No = 0

Current Year Score: 1

2021

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

5.6 COMMITMENT TO SHARING OF GENETIC AND BIOLOGICAL DATA AND SPECIMENS

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

5.6.1a

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

Yes = 1 , No = 0

Current Year Score: 0

There is no publicly available evidence of a plan in Denmark for sharing epidemiological data with international and regional organizations, that go beyond influenza. While Denmark follows the publicly available EU Directive on The Monitoring of Zoonoses and Zoonotic Agents, which provides for the sharing of routine epidemiological data between member states on human cases of zoonoses, there is no evidence of a specific mechanism being established in the case of a health emergency. [1] Similarly, the State Serum Institute, (Statens Serum Institut, SSI), being the national laboratory serving as a reference facility for Denmark, engages in a range of collaborative activities, including data sharing, with the WHO, the European Center for Disease Prevention and Control (ESDC) and The European Programme for Intervention Epidemiology Training (EPIET). [2] However, these partnership also does not show evidence of including specifically established mechanism for sharing data in the event of an emergency. No publicly available information indicating that Denmark is sharing epidemiological data with international and regional organizations is available at the homepages of the Danish Ministry of Health or the Ministry of Food, Agriculture and Fisheries of Denmark. [3,4]

[1] European Union. 2003. "Directive 2003/99/EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC". [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32003L0099]. Accessed 15 February 2021.
[2] State Serum Institute. 21 March 2016. "International Cooperation (Internationalt Samarbejde)". [https://www.ssi.dk/sygdomme-beredskab-og-forskning/sygdomsovervaagning/i/international-overvaagning]. Accessed 15 February 2021.
[3] Danish Ministry of Health. [https://sum.dk/english]. Accessed 12 March 2021.
[4] Ministry of Food, Agriculture and Fisheries of Denmark. [https://en.fvm.dk/]. Accessed 12 March 2021.

5.6.1b

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

Yes = 0 , No = 1

      Current Year Score: 1

There is no public evidence indicating that Denmark has not shared samples in accordance with the Pandemic Influenza Preparedness (PIP) framework in the past 2 years. In fact, charts depicting the weekly prevalence of influenza in Denmark, including the past 2 years, are available from the WHO Influenza Laboratory Surveillance Information (FluNet) website, testify that Denmark has shared samples in accordance with the Pandemic Influenza Preparedness (PIP) framework in the past 2 years. [1]

World Health Organization (WHO). "WHO Influenza Laboratory Surveillance Information". [https://apps.who.int/flumart/Default?ReportNo=7]. Accessed 15 February 2021.

5.6.1c

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

Yes = 0 , No = 1

      Current Year Score: 1

There is no public evidence that Denmark has not shared samples pandemic pathogen samples in the past 2 years, including Covid-19 samples. Most noticeable, the Danish State Serum Institute (Statens Serum Institut, SSI) shared on 4-5 November 2020 the entire gene sequence of the SARS-CoV-2 spike mutations arising in Danish mink with the European Early Warning

Response System (EWRS), the GISAID data base, and the WHO International Health Regulation's global warning network. [1, 2]

[1] State Serum Institute (Statens Serum Institut, SSI). 10 November 2020. "SSI's sharing of data on "cluster 5" sars-CoV-2 mink variant virus (SSI's deling af data om "cluster 5" sars-CoV-2 minkvariant virus)". [https://www.ssi.dk/aktuelt/nyheder/2020/ssis-deling-af-data-om-cluster-5-sars-cov-2-minkvariant-virus]. Accessed 15 February 2021.
[2] State Serum Institute (Statens Serum Institut, SSI). November 2020. "Preliminary rapport on SARS-CoV-2 spike mutations arising in Danish mink, their spread to humans and neutralization data. SARS-CoV-2spike mutations arising in Danish mink and their spread to humans" [https://www.ssi.dk/-/media/arkiv/dk/aktuelt/nyheder/2020/mink-cluster-5-kort-rapport.pdf?la=da]. Accessed 15 February 2021.

Category 6: Overall risk environment and vulnerability to biological threats

6.1 POLITICAL AND SECURITY RISK

6.1.1 Government effectiveness

6.1.1a

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

Current Year Score: 2

2020

Economist Intelligence

6.1.1b

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

Current Year Score: 3

2020

Economist Intelligence

6.1.1c

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

Current Year Score: 4

2020

Economist Intelligence

6.1.1d

Vested interests/cronyism (Economist Intelligence score; 0-4, where 4=best)
Input number
Current Year Score: 3

2020

Economist Intelligence

6.1.1e

Country score on Corruption Perception Index (0-100, where 100=best)
Input number
Current Year Score: 88

2020

Transparency International

6.1.1f

Accountability of public officials (Economist Intelligence score; 0-4, where 4=best)
Input number
Current Year Score: 4

2020

Economist Intelligence

6.1.1g

Human rights risk (Economist Intelligence score; 0-4, where 4=best)
Input number
Current Year Score: 4

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: 4

2021

Economist Intelligence

6.1.3 Risk of social unrest

6.1.3a

What is the risk of disruptive social unrest?

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

Current Year Score: 3

2021

Economist Intelligence

6.1.4 Illicit activities by non-state actors

6.1.4a

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

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

Current Year Score: 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: 2

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: 4**

2021

Economist Intelligence

6.1.5 Armed conflict

6.1.5a

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

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

> **Current Year Score: 4**

2021

Economist Intelligence

6.1.6 Government territorial control

6.1.6a

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

Yes = 1, No = 0

> **Current Year Score: 1**

2021

Economist Intelligence

6.1.7 International tensions

6.1.7a

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

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

> **Current Year Score: 3**

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: 99.9

2008-2018

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

6.2.2 Gender equality

6.2.2a

United Nations Development Programme (UNDP) Gender Inequality Index score
Input number
    Current Year Score: 0.96

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: 0.1

2017

World Bank; Economist Impact

6.2.3b

Share of employment in the informal sector
Greater than 50% = 2, Between 25-50% = 1, Less than 25% = 0

Current Year Score: 0

According to the World Bank's data on vulnerable employment, 4.94% of total employment in Denmark in 2019 constituted vulnerable employment. [1] 'Vulnerable employment' is defined by the World Bank as: contributing family workers and own-account workers as a percentage of total employment. [2] Denmark does not feature in any ILOSTAT data on informal sector employment. [3]

[1] World Bank data. "Vulnerable employment". [https://data.worldbank.org/indicator/SL.EMP.VULN.ZS] Accessed 18 Macrh 2021.
[2] World Bank. Metadata glossary: vulnerable employment. [https://databank.worldbank.org/metadataglossary/world-development-indicators/series/SL.EMP.VULN.ZS] Accessed 18 Macrh 2021.
[3] ILOSTAT. [https://ilostat.ilo.org/data/]. Accessed 12 March 2021.

6.2.3c

Coverage of social insurance programs (% of population)
Scored in quartiles (0-3, where 3=best)
      Current Year Score: 3

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: 2

2021

Economist Intelligence Democracy Index

6.2.6 Inequality

6.2.6a

Gini coefficient

Scored 0-1, where 0=best

Current Year Score: 0.28

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: 87.99

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: 1.91

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: 4

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: 80.95

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: 342.9

2019

WHO

6.5.1c
Population ages 65 and above (% of total population)
Input number
Current Year Score: 19.97

2019

World Bank

6.5.1d
Prevalence of current tobacco use (% of adults)
Input number
Current Year Score: 18.6

2018

World Bank

6.5.1e
Prevalence of obesity among adults
Input number
Current Year Score: 19.7

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: 4860.26

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