

JOINT EXTERNAL EVALUATION
OF IHR CORE CAPACITIES
of
BRUNEI DARUSSALAM

Mission report:
28 October–1 November 2019



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ABBREVIATIONS

AADMER	ASEAN Agreement on Disaster Management and Emergency Response
AAR	After Action Review
AGC	Attorney General's Chambers
AHA Centre	ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management
AJDRP	ASEAN Joint Disaster Response Plan
AMR	Antimicrobial resistance
APSED III	Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies
ARCH	ASEAN Regional Capacity on Disaster Health Management Project
ARDEX	ASEAN Regional Disaster Emergency Response Simulation Exercise
ASEAN	Association of Southeast Asian Nations
ASEAN-ERAT	ASEAN Emergency Response and Assessment
ASPs	Antimicrobial Stewardship Programmes
AST	Antibiotic susceptibility testing
BDAMRC	Brunei Darussalam AMR Committee
BDMCA	Brunei Darussalam Medicines Control Authority
BDAMRNAP	Brunei Darussalam AMR National Action Plan
Bru-HIMS	Brunei Health Information Management System
BSL	Biosafety Level
CBR(e)	Chemical/biological/radiological/(explosive)
CBRN(e)	Chemical/biological/radiological/nuclear/(explosive)
CRS	Congenital Rubella Syndrome
DAF	Department of Administration and Finance, Ministry of Health
DCD	Disease Control Division
DDMC	District Disaster Management Council
DEHS	Department of Environmental Health Services, Ministry of Health
DELSA	Disaster Emergency Logistic System for ASEAN
DGMHS	Director-General of Medical and Health Services, Ministry of Health
DLS	Department of Laboratory Services, Ministry of Health
DPS	Department of Pharmaceutical Services, Ministry of Health
DMSPF	Disaster Management Strategic Policy Framework
DoAA	Department of Agriculture and Agrifood, Ministry of Primary Resources and Tourism

DOF	Department of Fisheries, Ministry of Primary Resources and Tourism
DSS	Department of Scientific Services, Ministry of Health
EIS	Epidemic Intelligence System
EMAS	Emergency Medical Ambulance Services
EMT	Emergency Medical Teams
EOC	Emergency Operations Centre
EPI	Expanded Programme on Immunization
EQA	External Quality Assessment
FAO	Food and Agriculture Organization of the United Nations
FETP	Field Epidemiology Training Programme
FPoE	First Point of Entry
FSQCD	Food Safety and Quality Control Division
GAHP	Good Animal Husbandry Practices
GAP	Good Agriculture Practices
GAP	Global Action Plan
GLASS	Global Antimicrobial Resistance Surveillance System
HAZMAT	Hazardous Material
HCAI	Healthcare-Associated Infections
HCW	Healthcare Worker
HPV	Human Papillomavirus
IAEA	International Atomic Energy Agency
IED	Improvised Explosive Device
IHR	International Health Regulations (2005)
INFOSAN	International Food Safety Authorities Network
IPC	Infection Prevention and Control
ISO	International Organisation for Standardization
JEE	Joint External Evaluation
KPI	Key Performance Indicator
MCH	Maternal and Child Health
MCM	Medical Countermeasures
MCV	Measles-Containing Vaccine
MINDEF	Ministry of Defence
MOD	Ministry of Development

MOFE	Ministry of Finance and Economy
MOH	Ministry of Health
MOHEOC	Ministry of Health Emergency Operations Centre
MOHIPCC	Ministry of Health Infection Prevention and Control Committee
MPRT	Ministry of Primary Resources and Tourism
NAFSER	National Food Safety Emergency Response Plan
NAPHS	National Action Plan for Health Security
NaSOP	National Standard Operating Procedure
NDC	National Disaster Council
NDMC	National Disaster Management Centre
NFP	National Focal Point
NGO	Non-Governmental Organization
NITAG	National Immunization Technical Advisory Group
NLS	National Laboratory System
NOS COP	National Oil Spill Contingency Plan
OCT	Outbreak Control Team
OIE	World Organisation for Animal Health
OPCW	Organization for the Prohibition of Chemical Weapons
PHECP	Public Health Emergency Contingency Plan
PoE	Points of Entry
PHEIC	Public Health Emergency of International Concern
PHEOP	Public Health Emergency Operation Plan
PVS	Performance of Veterinary Services
RBAF	Royal Brunei Armed Forces
RBPF	Royal Brunei Police Force
RIPAS Hospital	Raja Isteri Pengiran Anak Saleha Hospital
SASOP	Standard Operating Procedure for Regional Standby Arrangements and Coordination of Joint Disaster Relief and Emergency Response Operations
SHENA	Safety, Health and Environment National Authority
SOP(s)	Standard Operating Procedure(s)
SSCEC	Ship Sanitation Control Exemption Certificates
VHM	Veterinary Health Mark
VLS	Veterinary Laboratory Services
VPD	Vaccine Preventable Disease
WAHIS	World Animal Health Information System

EXECUTIVE SUMMARY

The Joint External Evaluation (JEE) team would like to express its appreciation to Brunei Darussalam for volunteering for a Joint External Evaluation. This shows a commitment, foresight and leadership from senior levels of government that will be critical to success in building and maintaining Brunei Darussalam's core capacities under the International Health Regulations (IHR (2005)).

Findings from the joint external evaluation

The International Health Regulations are the legal framework for protecting global health security. They outline the minimum core capacities that all WHO Member States must develop to detect, assess, report and respond to acute public health events and emergencies.

In the Western Pacific Region, the Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies (APSED III) has been a key regional framework to guide Member States in advancing IHR (2005) implementation since 2005.

The JEE is one of the four components of the updated IHR (2005) monitoring and evaluation framework, along with mandatory annual reporting, after action reviews (AARs), and simulation exercises. The JEE provides a unique, voluntary opportunity for multi-sectoral teamwork within a country, supported by international partners, to assess IHR implementation. It promotes transparency, mutual accountability, international collaboration and confidence.

Brunei Darussalam actively prepares for and responds to all IHR-related hazards and is supported by comprehensive legislation and government policy. The country has a dedicated workforce that includes qualified medical and public health professionals, veterinarians, preparedness experts and laboratory specialists. There is multi-level, multi-sectoral, centrally coordinated capacity to respond to emergencies, and the country has international coordination mechanisms that have been developed under the IHR framework.

During the JEE mission, Brunei Darussalam's capacities in 19 technical areas were evaluated through a peer-to-peer process that brought subject matter experts together with members of the JEE team for a week of collaborative discussion and field visits. This process led to consensus on scores and priority actions in those 19 areas. Once the JEE process is complete, these priority actions should be captured in the National Action Plan for Health Security (NAPHS).

Four overarching recommendations emerged from the week. These are intended to address cross-cutting challenges affecting Brunei Darussalam's capacities across many of the different technical areas that are explored in greater depth in the JEE process. These overarching recommendations are outlined below.

- 1. Leverage the existing National Committee for IHR Implementation to build on the momentum of the JEE process, ensuring that the committee has long-term accountability for implementing the recommendations of this report. Using the National Action Plan for Health Security (NAPHS) as a basis, the Committee should assign ownership for the necessary actions and monitor progress over time.**

Brunei Darussalam already has the National Committee for IHR Implementation and NAPHS; these provide an excellent basis for strengthening and maintaining core capacities under the IHR (2005).

- 2. Align and develop workforce development strategies across different sectors, ministries and departments into a single integrated strategy for capacity building under the IHR (2005), with particular focus on building surge capacity and strengthening capabilities in public health, animal health, emergency preparedness and response, data science, entomology, field epidemiology, and laboratory expertise.**

While Brunei Darussalam benefits greatly from a dedicated and highly capable workforce, there is insufficient human capacity across the assessed technical areas, certain of which suffer from particular capacity shortages. A comprehensive integrated workforce strategy is needed, in which it will be important to modernize the workforce towards a multidisciplinary, multi-sectoral composition that can face new challenges and keep up with technological developments, mapping how best to leverage existing resources for maximum benefit.

- 3. Establish a multi-sectoral comprehensive training and exercise programme to test, validate and enhance preparedness and response across all sectors, from district to national level, emphasizing joint work, cooperation, standard procedures and mutual understanding of the operation of the entire system.**

Brunei Darussalam's existing health security systems have not all been adequately validated and refined by a structured training and exercise programme. This programme should link existing training and exercise programmes in different sectors under an overarching vision that builds and maintains capacity under the IHR (2005), and should be carried out as far as possible in collaboration with neighbouring nations and international partners and with the private sector.

- 4. Finalize and implement the draft Disaster Management Strategic Policy Framework. Ensure that Brunei Darussalam has a single overarching, integrated multi-sectoral preparedness and response framework for health and other IHR-related hazards that rationalizes all relevant policies, plans and SOPs. Institute a standard taxonomy and glossary that facilitates interoperability, harmonization and coordination. Building on the responsibilities outlined in the NaSOP, establish ownership of and accountability for the development, updating and harmonization of necessary policies, plans and procedures across sectors. Throughout this process, ensure that elements of institutional memory currently based on individual expertise and interpersonal relationships are comprehensively documented.**

Brunei Darussalam boasts an impressive range of legislation and operational guidance for health emergency and crisis management. Various ministries and departments have closely related responsibilities for emergency response. In order to create uniformity in the line of command and to streamline actions in a coordinated fashion, Brunei Darussalam should review, and rationalize where necessary, the distribution of managerial and operational responsibilities in case of emergencies.

The health and other IHR-related sectors would benefit from a clear, uniform coordinating structure. The current lack of formalized SOPs across some sectors and a reliance on strong interpersonal relationships—natural in a small, dedicated workforce—makes institutional memory and resilience more fragile. Clarity on the ownership of, and accountability for, different plans and procedures, supplemented by the documentation of knowledge and processes that may currently rest unrecorded in institutional memory, will greatly reinforce the resilience of Brunei Darussalam's core capacities under the IHR (2005)

Brunei Darussalam scores and priority actions

The table below is the summary of the final scores for each technical area (further details are shown in the respective report chapters), as agreed by the national and external JEE teams. The principles of the scoring system are described in the JEE tool, available from:

http://www.who.int/ihr/publications/WHO_HSE_GCR_2016_2/en/

Briefly, the scoring is a 5-step Likert Scale in which a score of 1 designates no capacity, and incremental obligatory criteria for each indicator must be fulfilled to reach the next level. A score of 5 designates that the country has the required capacity and is able to sustain it. Indicators are proxies and are chosen with the aim of representing a probable wider capability than the actual measured factor.

For ease of overview, a "traffic light" colouring system is used, whereby scores of 1 are shown as red; scores of 2 and 3 are yellow; and 4 and 5 are green.

Note on scoring of technical areas of the JEE tool

The JEE process is a peer-to-peer review and a collaborative effort between host country experts and JEE team members. In completing the self-evaluation, the first step in the JEE process, and as part of preparing for an external evaluation, host countries are asked to focus on providing information on their capabilities based on the indicators and technical questions included in the JEE tool.

The host country may score their self-evaluation or propose a score during the onsite visit with the JEE team. The entire external evaluation, including the discussions around the score, strengths/best practices, the areas that need strengthening, challenges and the priority actions, is done in a collaborative manner, with the JEE team members and host country experts seeking agreement.

Should there be significant and irreconcilable disagreement between the JEE team members and the host country experts, or among the JEE team, or among the host country experts, the JEE team lead will decide on the final score and this will be noted in the final report, along with the justification for each party's position.

SCORES AND PRIORITY ACTIONS

Technical areas	Indicator no.	Indicator	Score	Priority Actions
PREVENT				
National legislation, policy and financing	P.1.1	The State has assessed, adjusted and aligned its domestic legislation, policies and administrative arrangements in all relevant sectors to enable compliance with the IHR	4	<ul style="list-style-type: none"> • Test the Infectious Diseases Act using a simulated emergency response exercise, and develop supporting standard operating procedures and work instructions to facilitate its implementation. • Ensure that the National Committee for IHR Implementation has oversight of and responsibility for monitoring mechanisms for Brunei Darussalam's compliance with the IHR (2005). • Ensure that guidelines on how to access the special budget for natural disasters and disease outbreaks are developed and disseminated.
	P.1.2	Financing is available for the implementation of IHR capacities	4	
	P.1.3	A financing mechanism and funds are available for timely response to public health emergencies	5	
IHR coordination, communication and advocacy	P.2.1	A functional mechanism established for the coordination and integration of relevant sectors in the implementation of IHR	3	<ul style="list-style-type: none"> • Conduct a simulation exercise and After Action Review at least once a year to test and strengthen the functionality of the IHR NFP and the National Committee for IHR Implementation. • Further strengthen multisectoral/multidisciplinary collaboration, in both the health and non-health sectors, to enhance information sharing between clinical, human and animal surveillance and laboratories, in order to ensure timely detection, assessment and response to public health threats.
Antimicrobial resistance	P.3.1	Effective multisectoral co-ordination on AMR	3	<ul style="list-style-type: none"> • Ensure effective implementation of the Brunei Darussalam AMR National Action Plan, and develop a robust evaluation strategy to ensure progress remains on track. • Establish a functioning National Surveillance Centre for AMR that is resourced with a competent and trained workforce capable of coordinating surveillance activities in both the human and animal health sectors. • Endorse and implement the National Infection Prevention and Control (IPC) Plan and strengthen leadership and governance of infection control programmes at national level, through the establishment of an IPC Unit within the Ministry of Health. • Develop a National Human and Animal Health Antibiotic Stewardship Programme that strengthens antimicrobial stewardship at facility level, ensures and monitors compliance with guidelines, and promotes best practices that enhance optimal use of antimicrobials.
	P.3.2	Surveillance of AMR	3	
	P.3.3	Infection prevention and control	3	
	P.3.4	Optimize use of antimicrobial medicines in human and animal health and agriculture	3	

Technical areas	Indicator no.	Indicator	Score	Priority Actions
Zoonotic diseases	P.4.1	Coordinated surveillance systems in place in the animal health and public health sectors for zoonotic diseases/pathogens identified as joint priorities	3	<ul style="list-style-type: none"> Strengthen the legislative framework for the prevention and control of diseases in animals. Ensure that the draft Animal (Diseases and Quarantine) Order goes through the drafting and legislative process, with inputs from the human health sector and other relevant sectors. Leverage the example set by the Joint National Taskforce on the Prevention and Control of Rabies for cooperation between human and animal health, and expand the scope of this Task Force to include all zoonotic diseases of public health concern. Develop and strengthen the workforce for managing zoonotic diseases in both the human and the animal health sectors, especially in field epidemiology, risk assessment and risk management, and laboratory and diagnostic services (particularly for the animal health sector). Address the recommendations of the 2013 Performance of Veterinary Services (PVS) Gap Analysis, particularly regarding the human, financial and physical resource requirements for strengthening relevant competencies.
	P.4.2	Mechanisms for responding to infectious and potential zoonotic diseases established and functional	3	
Food safety	P.5.1	Surveillance systems in place for the detection and monitoring of food-borne diseases and food contamination	4	<ul style="list-style-type: none"> Endorse and implement the National Food Safety Emergency Response Plan (NAFSER). Develop workforce capacity to implement the NAFSER. Test the NAFSER to ensure fitness-for-purpose, through simulation exercises and/or After Action Reviews of real-life scenarios. Ensure that current surveillance systems capture the entire food chain.
	P.5.2	Mechanisms are established and functioning for the response and management of food safety emergencies	2	
Biosafety and biosecurity	P.6.1	Whole-of-government biosafety and biosecurity system in place for all sectors (including human, animal and agriculture facilities)	3	<ul style="list-style-type: none"> Develop, finalize and officially endorse the national regulatory documents and guidelines for biosafety and biosecurity, including information security. Ensure proper oversight of compliance with biosafety and biosecurity requirements at both national and institutional level through: (a) developing a National Framework for Biorisk Management, including an agreed set of national standards for biosafety and biosecurity; and (b) training and empowerment of designated biosafety and biosecurity officers at various tiers of the national laboratory system. Work with local academic institutions to include biosafety, biosecurity and biorisk management modules in the curricula of relevant courses related to the human and animal health and agriculture sectors.
	P.6.2	Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)	2	

Technical areas	Indicator no.	Indicator	Score	Priority Actions
Immunization	P.7.1	Vaccine coverage (measles) as part of national programme	5	<ul style="list-style-type: none"> • Maintain high rubella and measles vaccination coverage among target populations, through assessment and monitoring of herd immunity using serological surveys.
	P.7.2	National vaccine access and delivery	5	<ul style="list-style-type: none"> • Continue strengthening systems to detect suspected measles cases among foreigners (students and migrant workers) that could give rise to local transmission. • Strengthen the surveillance system for congenital rubella syndrome (CRS) by making CRS a notifiable disease and conducting a retrospective case review to provide evidence of the effectiveness of CRS surveillance. • Establish a National Immunization Technical Advisory Group (NITAG) to provide evidence-based advice to decision-makers and programme managers on policy issues related to immunization and vaccines.
DETECT				
National laboratory system	D.1.1	Laboratory testing for detection of priority diseases	5	<ul style="list-style-type: none"> • Strengthen mechanisms for sharing laboratory information and expertise between the animal and human health laboratory systems, leveraging opportunities under the planned Joint National Taskforce for Zoonotic Diseases. • Establish a national mechanism for laboratory licensing based on the Private Healthcare Institution Order being developed by the Ministry of Health.
	D.1.2	Specimen referral and transport system	4	
	D.1.3	Effective national diagnostic network	4	
	D.1.4	Laboratory quality system	4	
Surveillance	D.2.1	Surveillance systems	4	<ul style="list-style-type: none"> • Establish an electronic reporting mechanism for private healthcare facilities. • Incorporate automatic data analysis and alert functions into Bru-HIMS to enhance timely detection, risk assessment and decision-making. • Continue to strengthen event-based surveillance by taking advantage of existing platforms that pull information from multiple sources.
	D.2.2	Use of electronic tools	3	
	D.2.3	Analysis of surveillance data	4	
Reporting	D.3.1	System for efficient reporting to FAO, OIE and WHO	5	<ul style="list-style-type: none"> • Strengthen existing reporting mechanisms to OIE through formalized SOPs and administrative procedures. • Enhance the function of the IHR NFP to conduct all-hazard event assessments and reporting, by including chemical events and radiation emergencies in future exercises and trainings.
	D.3.2	Reporting network and protocols in country	4	

Technical areas	Indicator no.	Indicator	Score	Priority Actions
Health Workforce Development (animal and human health sectors)	D.4.1	An up-to-date multi-sectoral workforce strategy is in place	3	<ul style="list-style-type: none"> Enhance coordination of recruitment, training, capacity building and core capabilities across various sectors to support the delivery of IHR core capacities—especially for laboratories, veterinary public health and wildlife health services, field epidemiology, public health nursing, biostatistics, entomology, risk communication, health security, CBRN surveillance and emergency preparedness/response. Ensure adequate financial/budgetary support to increase animal health capacity as required by the PVS Gap Analysis and the IHR (2005). Develop a plan for access to support for surge capacity, including from outside the Ministry of Health if needed. Ensure the quality of the newly established front-line field epidemiology training programme (FETP) through training of trainers, participation in international networks, linking with more experienced FETPs in the region, and ongoing programme evaluation.
	D.4.2	Human resources are available to effectively implement IHR	3	
	D.4.3	In-service trainings are available	3	
	D.4.4	FETP or other applied epidemiology training programme in place	3	
RESPOND				
Emergency Preparedness	R.1.1	Strategic emergency risk assessments conducted and emergency resources identified and mapped	2	<ul style="list-style-type: none"> Develop a multi-sectoral, all-hazards risk assessment for use alongside After Action Reviews, in addition to the ongoing review of existing preparedness and response plans. Develop a national risk register/profile that outlines the top five major health security threats in Brunei Darussalam along with relevant mitigation strategies, and use it to ensure that SOPs and relevant guidelines are fit for purpose. Maintain up-to-date national inventories and stockpiles of key resources to deal with disasters and other public health emergencies.
	R.1.2	National multi-sectoral multi-hazard emergency preparedness measures, including emergency response plans, are developed, implemented and tested	3	
Emergency response operations	R.2.1	Emergency response coordination	3	<ul style="list-style-type: none"> Identify essential elements of technical, contextual, and response management information relevant to public health emergencies, and develop a coordinated mechanism for disseminating this information for analysis and action. Establish an all-hazards, multi-sectoral, multi-tier exercise programme for public health emergencies that builds on core competencies training for emergency management, and which integrates existing exercise activities to review and test all relevant plans and procedures. This should include: <ul style="list-style-type: none"> IHR areas of special emphasis, such as Points of Entry, Chemical and Radiation Emergencies and zoonotic diseases

Technical areas	Indicator no.	Indicator	Score	Priority Actions
	R.2.2	Emergency operations centre (EOC) capacities, procedures and plans	3	<ul style="list-style-type: none"> • Information-sharing across all tiers of government response, across sectors, and with international partners • Case management.
	R.2.3	Emergency Exercise Management Programme	3	<ul style="list-style-type: none"> • Establish a continuous improvement programme based upon exercises, After Action Reviews, and other evaluation activities. This should include senior level accountability for enhancement and maintenance of response capacities, and sharing of identified lessons.
Linking public health and security authorities	R.3.1	Public health and security authorities (e.g. law enforcement, border control, customs) linked during a suspect or confirmed biological, chemical or radiological event	3	<ul style="list-style-type: none"> • Establish and enhance mechanisms for systematic, timely sharing of information on hazards and threats of concern across relevant sectors, especially public health and security authorities. • Provide continuous training on personal protection and safety of first-line security personnel during a public health event. • Enhance existing capacity for joint threat assessments and responses to public health events by public health and security authorities, through development of SOPs, trainings and simulation exercises that include deliberate release of biological, chemical and radiation hazards.
Medical countermeasures and personnel deployment	R.4.1	System in place for activating and coordinating medical countermeasures during a public health emergency	3	<ul style="list-style-type: none"> • Strengthen capacity for rapid procurement and inventory management for priority threats, other IHR-related hazards, and veterinary countermeasures—such as through advanced purchase agreements and stockpiling. • Update and test guidelines for case management to include the management of additional IHR-related hazards and concerns such as radiation and chemical exposure, trauma and potentially infectious patients.
	R.4.2	System in place for activating and coordinating health personnel during a public health emergency	3	
	R.4.3	Case management procedures implemented for IHR relevant hazards	3	

Technical areas	Indicator no.	Indicator	Score	Priority Actions
Risk communication	R.5.1	Risk communication systems for unusual/unexpected events and emergencies	4	<ul style="list-style-type: none"> Enhance the risk communication system for emergency preparedness and response through regular staff development across multiple agencies, and provision of sustainable resources for activities and materials. Conduct regular joint After Action Reviews and evaluations of risk communication strategies in partnership with relevant sectors, and document lessons to share with other sectors and for use in communications planning and assessing impact on behaviour change. Develop guidance on the use of various communication channels in monitoring, documenting and responding to misinformation, fake news, and people's risk perceptions, including on the strategic use of new and emerging communication technologies.
	R.5.2	Internal and partner coordination for emergency risk communication	4	
	R.5.3	Public communication for emergencies	4	
	R.5.4	Communication engagement with affected communities	3	
	R.5.5	Addressing perceptions, risky behaviours and misinformation	4	
IHR-RELATED HAZARDS AND POINTS OF ENTRY				
Points of entry	PoE.1	Routine capacities established at points of entry	4	<ul style="list-style-type: none"> Maintain a written all-hazard public health emergency contingency plan, including infectious disease and other health emergencies, for designated points of entry, supported with routine review and evaluation. Test unlikely and unexpected events and/or scenarios at designated points of entry, involving multi-sectoral staff at all levels. Enhance multi-sectoral communication, coordination and effectiveness during peacetime.
	PoE.2	Effective public health response at points of entry	4	
Chemical events	CE.1	Mechanisms established and functioning for detecting and responding to chemical events or emergencies	4	<ul style="list-style-type: none"> Develop a national chemical profile, and integrate existing relevant chemical inventory data into a national priority chemicals inventory with a regular update schedule. Develop an updated national interagency response plan for chemical events that builds on the responsibilities contained in the multi-hazard National Standard Operating Procedure (NaSOP), and which establishes a clear chain of command for managing chemical emergencies.
	CE.2	Enabling environment in place for management of chemical events	4	
Radiation emergencies	RE.1	Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	2	<ul style="list-style-type: none"> Develop a national interagency response plan for radiation emergencies that builds on the responsibilities contained in the NaSOP, and which establishes a clear chain of command for managing radiation emergencies. Identify sources of additional radiation-relevant subject matter expertise for surge staffing, and establish mechanisms to access such staff during emergencies. Procure radiation detection and monitoring equipment to meet the needs already identified for points of entry and first responders.
	RE.2	Enabling environment in place for management of radiological and nuclear emergencies	2	

Scores: 1=No capacity; 2=Limited capacity; 3=Developed capacity; 4=Demonstrated capacity; 5=Sustainable capacity.

PREVENT

NATIONAL LEGISLATION, POLICY AND FINANCING

INTRODUCTION

The International Health Regulations (IHR) (2005) provide obligations and rights for State Parties. In some State Parties, implementation of the IHR (2005) may require new or modified legislation. Even if new or revised legislation may not be specifically required, States may still choose to revise some regulations or other instruments in order to facilitate IHR implementation and maintenance. Implementing legislation could serve to institutionalize and strengthen the role of IHR (2005) and operations within the State Party. It can also facilitate coordination among the different entities involved in their implementation. See detailed guidance on IHR (2005) implementation in national legislation at http://www.who.int/ihr/legal_issues/legislation/en/index.html. In addition, policies that identify national structures and responsibilities as well as the allocation of adequate financial resources are also important.

Target

Adequate legal framework for State Parties to support and enable the implementation of all their obligations and rights made by the IHR. Development of new or modified legislation in some State Parties for the implementation of the Regulations. Where new or revised legislation may not be specifically required under a State Party's legal system, the State may revise some legislation, regulations or other instruments in order to facilitate their implementation in a more efficient, effective or beneficial manner. State Parties ensure provision of adequate funding for IHR implementation through the national budget or other mechanisms. Country has access to financial resources for the implementation of IHR capacities. Financing that can be accessed on time and distributed in response to public health emergencies, is available.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam's legislation, policy and financing are governed by the Head of State, the Sultan of Brunei Darussalam. Under the terms of the 1959 Constitution, the Sultan has full executive authority, assisted and advised by five councils: the Privy Council, the Council of Succession, the Religious Council, the Council of Ministers and the Legislative Council. The Prime Minister's Office is the lead agency in the government and provides guidance in the planning, alignment and implementation of national policies for the development and progress of the State, and in maintaining the well-being of the people.

Brunei Darussalam's legal system is based on British common law, with a parallel Shariah law system for Muslims that supersedes the common law system in areas such as family, property law, and certain aspects of criminal law. For the purposes of health-related legislation and aspects concerning national security and emergency response to disasters, the laws of Brunei Darussalam fall under the common law system. Brunei Darussalam incorporates international obligations under the IHR (2005) into a variety of legislative instruments, with the Infectious Disease Act Cap. 204 as the main law covering infectious disease outbreaks, other health-related incidents and immunization.

A whole-of-government coordination approach, with established policy and financing frameworks, is used to safeguard public health safety. This uses the One Health approach, and there is strong evidence of both formal and informal networks and collaborations taking place.

Brunei Darussalam informed WHO in 2014 that it was compliant with the mandatory core IHR capabilities. To build on this achievement, the National Committee for IHR Implementation was established in 2018, which led to the development of Brunei Darussalam's National Action Plan for Health Security (2019-2024) (NAPHS). This document aims to strengthen the country's capacity to prevent, detect and respond to any acute public health event or emergency, with an emphasis on ensuring system resilience.

Animal health legislation needs to be updated, as it is still reliant on the subsidiary legislation of a repealed Act. A new Animal (Disease and Quarantine) Order has been drafted and is in the process of enactment.

The Government of Brunei Darussalam finances all necessary systems and programmes without any external funding. Ministries have access to annual line budgets for routine activities (e.g. provision of health services and other public health functions) and to emergency supplemental funding by request. Preparedness activities fall within the annual line budgets of the relevant ministries, which are responsible for their own preparedness for operational readiness, and response activities in the event of emergencies (as far as they are able to). Although there is no separate budget for IHR-specific activities, the Ministry of Health (MOH) allocates its budgets to various departments on a programme budget basis.

Public health functions for surveillance, case investigation, screening, outbreak control, and vector control fall under Programme Budget 2 – Public Health. Other activities such as treatment services, isolation services, diagnostic and treatment services (including laboratory testing) and vaccination fall under Programme Budget 4 – Secondary-Tertiary Health Care; and Programme Budget 5 – Basic Support Service.

The Ministry of Finance and Economy (MOFE) also allocates a special ring-fenced budget for timely response to public health emergencies. This is known as the Natural Disaster and Outbreak Budget. All government agencies can apply to access this via their respective Permanent Secretary. Requests must show they intend to use it to prepare for a high-risk threat, or to respond to a public health emergency.

Different aspects of the IHR are covered by different legislation. Prevention and control of communicable disease outbreaks is governed by the Infectious Disease Act Cap. 204, an Act designed to prevent the introduction and spread of infectious disease in or from Brunei Darussalam. Responsibility for administering this Act—including notification, institution of control measures, isolation and surveillance measures and imposition of mandatory vaccination—lies with the Director-General of Health Services of the MOH, who is also the designated IHR NFP. In 2015, following a review partly driven by the lessons of the 2014-15 Ebola epidemic, the Act was amended to align it more closely with the IHR. The revised draft is with the Attorney General's Chambers, awaiting formal publication.

The Disaster Management Order 2006 provides for effective disaster management. Under this legislation, the National Disaster Council (NDC) was established to ensure preparedness and response for serious disruptions caused by events such as natural disaster, explosion, disease, or intentional attack in a community that requires a significant coordinated response. The NDC is chaired by the Minister of Home Affairs. The Act also established the National Disaster Management Centre (NDMC) to review and assess the effectiveness of disaster management, and to support the NDC in day-to-day activities for disaster preparedness and response. The NDMC supports relevant government agencies to ensure operational readiness and exercise response plans, and coordinates and maintains the National Standard Operating Procedures (NaSOP) for responding to emergencies and disasters.

In response to new security challenges, a new legislation has also been developed. In 2018, the Safety, Health and Environment National Authority Order was introduced to establish and incorporate the Safety, Health and Environment National Authority (SHENA) as a statutory body with authority to regulate and collaborate in respect of workplace safety and health, environment and radiation matters. Administration of all laws and policies regarding these matters is now done by the new authority.

Indicators and scores

P.1.1 The State has assessed, adjusted and aligned its domestic legislation, policies and administrative arrangements in all relevant sectors to enable compliance with the IHR – Score 4

Strengths and best practices

- Legislation and regulation are in place to support IHR implementation. The legal basis for many IHR-related functions falls under the Infectious Disease Act Cap. 204.
- The Infectious Disease Act has undergone regular reviews and amendments to ensure continued fitness for purpose.
- Responsibility for administering the Infectious Disease Act lies with the Director-General of Health Services, who is also the IHR NFP, thus further streamlining and coordinating relevant actions.
- For other types of hazards, relevant agencies have clear legislative frameworks with which to support their functions and measures.
- The health security landscape is regularly scanned for new and emerging issues, and new legislation is proposed in response to these.
- A national coordinating agency, the NDMC, has oversight responsibility for ensuring operational readiness to respond to all hazards and emerging threats.

Areas that need strengthening and challenges

- Animal health legislation needs to be updated, as it is still reliant on the subsidiary legislation of a repealed Act.
- The Infectious Diseases Act requires further refinement and definition of roles and responsibilities, including for developing operating procedures and work instructions. Simulated emergency response exercises will assist in this process.
- Monitoring mechanisms still need to be developed to ensure compliance with all the laws and regulations that require oversight and responsibility from the National IHR Committee.
- Brunei Darussalam should formalise a process for routine assessment and revision of existing legislation. Areas for assessment and improvement may include streamlining and consolidating existing laws and regulations, incorporating lessons, and adapting to changing contexts.
- Assessment of laws and regulations has been done on an ad hoc basis. However, following the assessments, the lengthy revision process is a major challenge. Involving legal experts early in the process may help speed up the amendment process.

P.1.2 Financing is available for the implementation of IHR capacities – Score 4

Strengths and best practices

- All budgeted activities go through the annual planning cycle and are coordinated centrally at MOFE level, ensuring alignment with national strategies, avoiding duplication of activities, and addressing gaps.
- Response activities are funded by the government, with no reliance on outside sources.
- Financial planning is the responsibility of each ministry's Permanent Secretary. Budgeting for the MOH includes essential public health functions such as disease control, vaccination and immunisation, treatment, and diagnostic services.

Areas that need strengthening and challenges

- Although requests for additional budgets are normally accepted by the MOFE, delays in releasing funds can occur if there is a need for additional budgeting outside the scope of ministries' yearly budgets.

P.1.3. A financing mechanism and funds are available for the timely response to public health emergencies – Score 5

Strengths and best practices

- There is a special budget in place that is ring-fenced for natural disasters and outbreaks.
- Funds are released in a timely manner and have been used in the past for health security activities.

Areas that need strengthening and challenges

- Not all departments are aware of the availability of these funds. Many departments believe this to be a restricted budget available only to the MOH. Clearer guidelines should be developed and disseminated to all relevant departments, explaining the criteria for requesting these funds and the process for accessing them.
- There are no special mechanisms in place that allow for funds to go to the private sector or to non-governmental organizations/NGOs.
- Real-time monitoring to address and respond to changing resource needs is not done by the MOFE. After incidents occur, reports are submitted to the MOFE to address any issues.

Recommendations for priority actions

- Test the Infectious Diseases Act using a simulated emergency response exercise, and develop supporting standard operating procedures and work instructions to facilitate its implementation.
- Ensure that the National Committee for IHR Implementation has oversight of, and responsibility for, monitoring mechanisms for Brunei Darussalam's compliance with the IHR (2005).
- Ensure that guidelines on how to access the special budget for natural disasters and disease outbreaks are developed and disseminated.

IHR COORDINATION, COMMUNICATION AND ADVOCACY

INTRODUCTION

The effective implementation of the IHR requires multi-sectoral/multidisciplinary approaches through national partnerships for efficient alert and response systems. Coordination of nationwide resources, including the designation of a national IHR focal point (NFP), and adequate resources for IHR implementation and communication, is a key requisite for a functioning IHR mechanism at country level.

Target

Multi-sectoral/multidisciplinary approaches through national partnerships that allow efficient, alert and response systems for effective implementation of the IHR (2005). Coordinate nationwide resources, including sustainable functioning of a National IHR Focal Point—a national centre for IHR communications which is a key requisite for IHR (2005) implementation – that is accessible at all times. State Parties provide WHO with contact details of National IHR Focal Points, continuously update and annually confirm them.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam has been fully committed to implementing the IHR core capacities since they came into force. In 2008, the Public Health Emergency Operation Plan (PHEOP) was developed to guide public health personnel in planning, mitigating and responding to public health emergencies. The 1st revision of PHEOP was endorsed in August 2019.

IHR capacities at points of entry have been enhanced through the 2011 drafting of the Public Health Emergency Contingency Plan (PHECP) for Brunei International Airport. In 2012, the Maritime Declaration of Health form was initiated for ships entering ports in Brunei Darussalam, and Muara Port was authorized by WHO as a designated point of entry under IHR (2005), with the capacity to issue Ship Sanitation Control Exemption Certificates (SSCEC). The Brunei Darussalam National Chemical, Biological, Radiological and Nuclear (CBRN) Action Plan was drafted in 2015 to cover these additional hazards, and to reflect the all-hazards nature of the IHR (2005).

The Director-General of Medical and Health Services (DGMHS) is the appointed IHR NFP for Brunei Darussalam. In day-to-day routine practice, this function is delegated by the DGMHS to the Department of Environmental Health Services (DEHS), and specifically to the Disease Control Division (DCD), which is under its functional and administrative oversight. As such, the Director of Environmental Health Services and the Head of the (DCD), are the alternate IHR NFPs for Brunei Darussalam. The work of the IHR NFP is guided by the Standard Operating Procedures for the IHR (2005) National Focal Point for Brunei Darussalam.

In 2018, by consent of His Majesty the Sultan, a high-level National Committee for IHR Implementation was established to serve as a mechanism for the multi-sectoral and multidisciplinary coordination, communication and partnership necessary to detect, assess and respond to any public health event or risk. This committee is chaired by the Minister of Health, and its membership includes permanent secretaries from eight other ministries. The Committee is mandated to meet at least yearly but has met four times since August 2018. It has overseen the development of the NAPHS, a process undertaken with the goal of ensuring Brunei Darussalam has the capacity to prepare for, prevent, detect and respond to any acute public health event or emergency with a resilient whole-of-government system.

Prior to the establishment of the National Committee of IHR Implementation, various ad hoc mechanisms for multi-sectoral coordination had been utilized, but these were only activated during an emergency. Such emergencies to date have included the 2009 H1N1 Influenza pandemic, the 2014-15 Ebola outbreak, the 2015 MERS-CoV outbreak in the Republic of Korea, and the Zika outbreak in 2016.

Within the health sector, the Ministry of Health Infection Prevention and Control Committee (MOHIPCC), established in 2013, coordinates the various departments' actions to prepare for, and respond to, outbreaks of communicable diseases of public health concern.

Indicators and scores

P2.1 A functional mechanism established for the coordination and integration of relevant sectors in the implementation of IHR – Score 3

Strengths and best practices

- There are established mechanisms for integrating IHR-relevant sectors, including both health and non-health stakeholders.
- The National Committee for IHR Implementation serves as a key coordinating mechanism and is situated at a senior level appropriate for urgent decision-making, policy alignment, and allocation of financial resources.
- The MOHIPCC plays key roles in ensuring health sector preparedness and response.
- The IHR NFP is represented on both the national committee and the MOHIPCC, and can share as well as disseminate information in a timely manner through these mechanisms.
- Coordination mechanisms have been tested in real events such as the declaration of Ebola as a PHEIC in 2019, the Zika Virus Disease outbreak in 2016/17, the West African Ebola outbreak in 2014/15, and the emergence of Middle East respiratory syndrome coronavirus (MERS-CoV) in 2013/14.
- The IHR NFP's functions are exercised annually during the World Health Organization (WHO) Western Pacific Regional Office (WPRO) annual IHR Exercise Crystal.

Areas that need strengthening and challenges

- There is a need for regular evaluation of the functions of the IHR NFP through a systematic exercise programme that tests the mechanics and effectiveness of the National Committee for IHR Implementation.
- There is a need to strengthen collaboration and shared reporting mechanisms between the IHR NFP and other relevant national focal points, such as the World Organization for Animal Health (OIE) Delegate for Brunei Darussalam.
- Although mechanisms for coordination, collaboration, and communication have been well-established through the National Committee and MOHIPCC, their implementation could be improved by developing joint SOPs that guide the coordination of multiple agencies (e.g. through pooling resources, joint activities, and shared key performance indicators (KPIs)).
- The functions of the IHR NFP should be incorporated into the NDMC-led National SOP (NaSOP).

Recommendations for priority actions

- Conduct a simulation exercise and After Action Review at least once a year to test and strengthen the functionality of the IHR NFP and the National Committee for IHR Implementation.
- Further strengthen multi-sectoral/multidisciplinary collaboration, in both the health and non-health sectors, to enhance information sharing between clinical, human and animal surveillance and laboratories, in order to ensure timely detection, assessment and response to public health threats.

ANTIMICROBIAL RESISTANCE

INTRODUCTION

Bacteria and other microbes evolve in response to their environment and inevitably develop mechanisms to resist being killed by antimicrobial agents. For many decades, the problem was manageable as the growth of resistance was slow and the pharmaceutical industry continued to create new antibiotics.

Over the past decade, however, this problem has become a crisis. Antimicrobial resistance is evolving at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infections in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security and national security.

Target

A functional system in place for the national response to combat antimicrobial resistance (AMR) with a One Health approach, including:

- a) Multi-sectoral work spanning human, animal, crops, food safety and environmental aspects. This comprises developing and implementing a national action plan to combat AMR, consistent with the Global Action Plan (GAP) on AMR.*
- b) Surveillance capacity for AMR and antimicrobial use at the national level, following and using internationally agreed systems such as the WHO Global Antimicrobial Resistance Surveillance System (GLASS) and the OIE global database on use of antimicrobial agents in animals.*
- c) Prevention of AMR in health care facilities, food production and the community, through infection prevention and control measures.*
- d) Ensuring appropriate use of antimicrobials, including assuring quality of available medicines, conservation of existing treatments and access to appropriate antimicrobials when needed, while reducing inappropriate use.*

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

In 2018, the Brunei Darussalam AMR Committee (BDAMRC) was established. The committee involves stakeholders from the human health, animal health and environment sectors, and is co-chaired by the Deputy Permanent Secretary (Professional) of the MOH and the Deputy Permanent Secretary of the Ministry of Primary Resources and Tourism (MPRT). Implementing its decisions are four multi-sectoral technical working groups (TWGs) that are also co-chaired by senior officials from the MOH and the MPRT. These cover Awareness and Education; Surveillance and Research; Infection Prevention and Control (IPC); and Optimise Use of Antimicrobials.

Acknowledging the need to engage different stakeholders to manage AMR drivers, the BDAMRC has adopted the One Health approach, including stakeholders such as multidisciplinary human health professionals from all government and private health facilities; veterinarians and laboratory scientists from all government and private veterinary clinics; environmental and civil engineers dealing with environmental health; representatives of university and vocational learning institutes; and representatives from farms, animal feed suppliers and agri-food industries.

The major output of BDAMRC is the Brunei Darussalam AMR National Action Plan (BDAMRNAP), currently in final draft form and awaiting endorsement by the Committee. This plan is the result of joint multi-sectoral actions by the TWGs to identify gaps, challenges and opportunities at national and facility levels to strengthen AMR-related activities. It will serve as a strategy document to inform

stakeholders on priority action plans that require urgent attention, and to outline key guiding principles that will be used by stakeholders to develop subsequent operational plans to supplement it. Its guiding principles are as follows:

- Stakeholder engagement guided by One Health principles to improve planning and coordination
- Collaborative policy review of existing guidelines, supported by local surveillance data and best practices from international experts and agencies
- Incremental scaling up of existing facility level programmes using continuous improvement principles to ensure economic sustainability of programmes.

The BDAMRC has identified three priority areas of improvement: IPC education and training; healthcare associated infection (HCAI) surveillance and monitoring; and auditing and feedback for IPC practices. The country has also conducted the Hand Hygiene Self-Assessment Framework (HHSAF).

AMR surveillance is currently dispersed. The Department of Laboratory Services (DLS) monitors AMR pathogens in human samples while the Department of Pharmaceutical Services (DPS) monitors antimicrobial use and prescription by clinicians.

Laboratory capacity is established in the Raja Isteri Pengiran Anak Saleha Hospital (RIPAS Hospital), the main tertiary referral hospital in Brunei Darussalam and covers 80-90% of the total patient population for government hospitals. Accredited laboratory facilities have the capacity to detect and phenotypically categorize drug resistant microorganisms and collate data trends for common pathogens, and collaborate with established reference laboratories for antibiotic susceptibility testing (AST). The MPRT runs a surveillance system in certain agricultural and aquaculture industries, and antimicrobial use in animals (livestock) is monitored via importation data. There is, however, no coordinated mechanism that brings together these dispersed functions. In response, the BDAMRNAP establishes a National Surveillance Centre for AMR, housed within the Disease Control Division at the MOH, to act as a data repository, perform analytics, and disseminate AMR surveillance data. Its human health objective will be to coordinate the AMR surveillance system by aggregating data from human health data reporting sites. Initial emphasis will be on human clinical pathogens, but the expectation is that AMR surveillance in the long term, will be embedded in a One Health approach, with surveillance systems developing progressively to include agriculture, animal health and the environment. Agreed data reporting sites are as follows: Clinical Microbiology Laboratory of the Department of Laboratory Service (DLS) (to include data from private laboratories); the Department of Pharmacy Services; and the Department of Agriculture & Agrifood (DoAA) of the MPRT.

National guidelines have been developed on Infection Prevention and Control (IPC) for the human health sector. These include infection control guidelines for suspected cases of emerging infectious diseases, and MOH policies for hand hygiene, standard precautions, transmission-based precautions, and prioritization of isolation facilities. However, these guidelines are currently produced by different divisions of the MOH, and there is no single unit or department with overall responsibility for IPC in healthcare facilities. A National IPC Plan has been drafted and is awaiting endorsement. This plan, which is the responsibility of the Patient Safety Unit of the Department of Nursing Services, covers governance; SOPs and guidelines; training and education; surveillance; and risk management.

Hospitals have Infection Control Nurses and Infection Control Committees, but the governance and the effectiveness of these committees have not been evaluated. Only one of the 14 government health centres has a dedicated infection control policy, although all 14 health centres are supported by an Infection Control Liaison Nurse.

For the animal health sector, the DoAA continues to implement its programmes for Good Agriculture Practices (GAP), Good Animal Husbandry Practices (GAHP) and the Veterinary Health Mark (VHM). Vaccination requirements for all practicing veterinarians and para-veterinarians are incorporated as best practices in veterinary clinics.

All medicinal products intended for human use must be registered with the Brunei Darussalam Medicines Control Authority (BDMCA) to ensure all medicinal products marketed in Brunei Darussalam are safe, efficacious and of good quality. Under the Medicines Order 2007, all antimicrobials are classified as prescription-only medicines. Antibiotic Stewardship Programmes aimed at monitoring and promoting optimization of antimicrobial use in accordance with international standards are in place in selected facilities. Best practices such as good prescribing practice guidance, national antibiotic guidelines, common infections treatment protocol for primary healthcare and other facility-specific syndrome-specific antibiotic guidelines have been developed to guide appropriate antibiotic use. This body of guidance is continually growing, and some resources are undergoing ongoing review to ensure they remain relevant, up-to-date and evidence-based. There is continuous data collection on adherence to good prescribing practice and antibiotic guidelines.

Several policies and programmes that encourage prudent antimicrobial use in animal health have been formulated or are currently being reviewed. These include national guidelines for prudent use of antimicrobials in livestock, pharmacovigilance programmes in commercial farms and private veterinary clinics, and quality assurance and quality control programmes from poultry slaughterhouses and egg collection. A pharmacovigilance programme and an animal feed programme will be introduced to strengthen regulation to restrict the use of antimicrobials as animal growth promoters and prophylactics among farmers and other stakeholders. Under the Veterinary Surgeon Order (VSO) 2005, practicing veterinarians are required to register with the Veterinary Council in order to obtain a poisons license, and veterinarians are required to abide by a code of ethics that includes prudent antimicrobial usage, and to attend awareness sessions on prudent antibiotic usage.

There is a need to identify a national government agency to oversee the impact of AMR on the environment. This agency should be responsible for determining the baseline microorganism community and the diversity of environment gene reservoirs of ubiquitous microorganisms in water catchments, water and used-water treatment processes, urban water bodies and urban pests. It should conduct measurements of antibiotic concentrations; drug-resistant organisms and/or antimicrobial genes; set up a systematic environmental surveillance system; and conduct risk assessments using surveillance data.

Indicators and scores

P.3.1 Effective multi-sector coordination on AMR – Score 3

Strengths and best practices

- A mechanism exists for coordinated multi-sectoral action that links the human health, animal health and environment sectors.
- Membership of BDAMRC is at senior level, to ensure ownership and decision-making ability.
- The BDAMRNAP coordinates and integrates the relevant action items and links human health, animal health, food, agriculture and environment.

Areas that need strengthening and challenges

- The BDAMRNAP should be endorsed and implemented.
- An evaluation strategy is required, with key targets that ensure successful implementation of priority action items.

P.3.2 Surveillance of AMR – Score 3

Strengths and best practices

- Laboratory capacity is established in the RIPAS Hospital and covers 80-90% of the total patient population. Accredited laboratory facilities have the capacity to detect and phenotypically categorize drug resistant microorganisms, collate data trends for common pathogens, and collaborate with established reference laboratories for AST.

- Antimicrobial consumption data for human health (in the government sector) is monitored, and data is submitted annually to WHO.
- Establishment of a National Surveillance Centre for AMR is planned that will align various surveillance activities, act as a data repository, and provide analysis to generate evidence for policy development.

Areas that need strengthening and challenges

- Human resource capacity building is urgently needed to ensure that the National AMR Surveillance Centre will be able to fulfil its core functions.
- There is a need to harmonise laboratory methodologies and data reporting for phenotypic characterization of AMR organisms with relevant antimicrobial combinations in hospitals. Data collection and reporting on AMR pathogens needs to be scaled up and extended to ensure that coverage sites include all district and private hospitals and community settings.
- Data on antimicrobial consumption from both the public and private sectors needs to be incorporated into the national surveillance system and be made available for monitoring and other purposes.
- There is a need to identify a national government agency that will oversee the impact of AMR on the environment.

P.3.3 Infection prevention and control – Score 3

Strengths and best practices

- A National IPC Plan has been drafted with key measurable targets. Effective implementation of this plan can help ensure that IPC activities in the human health sector are strengthened.
- Various guidelines and policies are in place to minimise HCAs.
- Mechanisms exist for coordinating infection control activities.
- Some IPC programmes are in operation in the animal health sector.

Areas that need strengthening and challenges

- Policies and standard guidelines for IPC have been developed to ensure that health workers, patients and visitors are protected, but these should be continuously reviewed and updated.
- Governance of IPC should be strengthened through leadership from infection control teams led by a national infection control unit to be established within the MOH and tasked with delivering on IPC activities in hospitals and communities, and reducing fragmentation of IPC activities.
- Structured and focused training and education programmes are needed to equip health professionals with the knowledge and skills to apply IPC best practices.
- Key health professionals require training to be able to apply standard and transmission-based precautions.
- To ensure effective implementation of best practices in animal health, training programmes and in-house continuous education on GAP and GAHP are needed for slaughterhouse operators, farm operators and officers and livestock inspectors.
- Policies and good practices in human, animal and environmental health require periodic monitoring and evaluation to ensure they remain relevant and achieve their desired impact, and to support training programmes.
- Sector specific surveillance programmes (e.g. hand hygiene compliance in human health, and good manufacturing practice audits of slaughterhouses in animal health) should be formulated to produce data that can be analysed and communicated to inform policy review processes.
- Data trends across different sectors should be integrated and analysed to generate evidence to inform multi-sectoral IPC related policy decisions.

P.3.4 Optimize use of antimicrobial medicines in human and animal health and agriculture – Score 3

Strengths and best practices

- Legislative frameworks exist to ensure that antimicrobial use complies with accepted international standards and best practices.
- Antimicrobial Stewardship Programmes (ASPs) are conducted at local facility level to optimise antimicrobial use.
- National guidelines on antimicrobial use are available.

Areas that need strengthening and challenges

- Existing facility-based ASPs and antibiotic guidelines should be used to increase understanding of, and proficiency in, antimicrobial use among health professionals. This should be done nationally to achieve the intended impact, in a systematic, step-by-step, sustainable approach.
- Best practices to enhance optimal registration and use of antimicrobials, such as national antibiotic guidelines and other ASP strategies, require reviewing and updating to ensure fitness for purpose.
- Data systems are needed to monitor and evaluate distribution and use of antimicrobials and compliance with ASP programmes and national antibiotic guidelines.

Recommendations for priority actions

- Ensure effective implementation of the Brunei Darussalam AMR National Action Plan, and develop a robust evaluation strategy to ensure progress remains on track.
- Establish a functioning National Surveillance Centre for AMR that is resourced with a competent and trained workforce capable of coordinating surveillance activities in both the human and animal health sectors.
- Endorse and implement the National Infection Prevention and Control (IPC) Plan and strengthen leadership and governance of infection control programmes at national level, through the establishment of an IPC Unit within the Ministry of Health.
- Develop a National Human and Animal Health Antibiotic Stewardship Programme that strengthens antimicrobial stewardship at facility level, ensures and monitors compliance with guidelines, and promotes best practices that enhance optimal use of antimicrobials.

ZOONOTIC DISEASES

INTRODUCTION

Zoonotic diseases are communicable diseases that can spread between animals and humans. These diseases are caused by viruses, bacteria, parasites and fungi carried by animals, insects or inanimate vectors that aid in its transmission. Approximately 75% of recently emerging infectious diseases affecting humans are of animal origin; and approximately 60% of all human pathogens are zoonotic.

Target

Functional multi-sectoral, multidisciplinary mechanisms, policies, systems and practices are in place to minimize the transmission of zoonotic diseases from animals to human populations.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Responsibility for the prevention and control of zoonotic diseases in Brunei Darussalam is shared by multiple agencies. The surveillance, preparedness and public health response to zoonotic diseases in humans is led by the Disease Control Division (DCD) of the MOH; clinical specimen testing is handled by the Department of Laboratory Services (DLS); and clinical advice and care are provided by the Infectious Disease Unit of RIPAS hospital. The Livestock, Industry and Veterinary Services Division of the MPRT is responsible for the implementation of regulations on quarantine and prevention of disease in animals; governs the surveillance, preparedness and response to zoonotic diseases in animals; and provides veterinary laboratory services. The Biosecurity Division provides pre-border, border and post-border measures, and conducts document and physical inspection to screen for animal diseases at points of entry.

With a relatively small animal population compared to neighbouring countries, Brunei Darussalam has limited zoonotic incidences, and is currently free from the main zoonotic issues affecting the wider region (rabies, anthrax and avian influenza). Nevertheless, recognizing the increased risks for these potential threats, the MOH and the MPRT have started to develop joint and parallel measures to prevent, detect, and respond to potential zoonotic emergencies. Brunei Darussalam has a list of notifiable zoonotic diseases gazetted under Schedule 4 of the Infectious Diseases Act, top priority zoonotic diseases have been jointly defined (avian influenza, Salmonella, rabies, E. coli O157, and anthrax), and surveillance systems are in place for the majority of these.

In addition to previously existing normative processes on surveillance, specific actions to improve how these are addressed have started to take form. For example, mechanisms for interagency communication for surveillance and notification of zoonotic diseases are now explicitly outlined in the Joint Preparedness and Response Framework to Zoonotic Diseases of Public Health Concern. Joint actions to address specific zoonoses of concern, such as rabies, have also been collaboratively carried out. These have included the establishment of a joint Outbreak Control Team (OCT), the development of a national action plan, and the conduct of a tabletop exercise that tested the joint framework for preparedness for, and response to, zoonoses. The roles and responsibilities of the joint OCT are well-defined and centre primarily on field investigation, data collection and analysis, and implementation of outbreak control measures. The OCT reports concurrently to the Director of Environmental Health Services (for human health) and the Director of Agriculture and Agrifood (for animal health), both of whom chair the OCT. The framework also describes public risk communication processes when handling incidents of zoonotic diseases.

A formal multi-sectoral collaboration on rabies, the Joint Taskforce on Rabies, was jointly established in 2018 to steer, coordinate and monitor all activities related to rabies prevention and control. It is co-chaired by Deputy Permanent Secretaries from three government agencies: the MPRT, the MOH, and the MOHA. Instituting this task force meant operationalizing the Joint Framework for Zoonoses, setting a practical example that can be used as the basis for expanding the scope of such measures to include all priority zoonotic diseases in the country.

While significant progress has been achieved in operationalizing One Health mechanisms in Brunei Darussalam in the last two years alone, there are still areas that will benefit from further strengthening. Leveraging early experiences from rabies, efforts to jointly address cross-sectoral issues of concern using already established frameworks can be further expanded to other priority zoonoses and beyond. Relevant capacity needs for appropriate prevention, timely detection and rapid response to emerging and re-emerging zoonotic diseases need to be addressed, particularly in the veterinary public health sector.

Human surveillance for zoonotic diseases is conducted by the Disease Control Division. For rabies, a dog bite registry is used and shared with the Division of Livestock Industry and Veterinary Services. Surveillance activities are planned and implemented concurrently by the animal health and human health sectors. Complementing these, normative monitoring and surveillance in animal health is routine for avian influenza and salmonellosis.

Currently, however, there is no mechanism or process for exchanges between human and animal health laboratories; and while there is a platform for passing routine information from the human to the animal health sector, no similar mechanism exists by which information can move in the opposite direction.

Indicators and scores

P.4.1 Coordinated surveillance systems in place in the animal health and public health sectors for zoonotic diseases/pathogens identified as joint priorities – Score 3

Strengths and best practices

- The MOH and the MPRT have jointly developed the Joint Framework for Preparedness and Response to Zoonotic Diseases, establishing priority zoonotic diseases for surveillance, identifying procedures for inter-agency communication and escalation of responses to zoonotic diseases, mandating joint risk assessment between the human and animal health sectors when handling notification, forming a joint Outbreak Control Team, and describing public risk communication processes for zoonotic disease incidents.
- Surveillance systems are currently in place for the country's top five priority zoonotic diseases.
- Regular and routine information sharing across the animal and human sectors is established, and mechanisms for urgent notifications are operational should the need arise.

Areas that need strengthening and challenges

- There is a need to strengthen further the legal tools, financial resources, physical resources and human resources of the animal health sector, to reinforce and fulfil its veterinary public health role.
- There is a need to improve the process of information sharing between laboratories.
- Surveillance activities in wildlife and the capacity for detecting priority diseases should be strengthened through an active surveillance programme in the animal health sector.

P.4.2 Mechanisms for responding to infectious and potential zoonotic diseases established and functional – Score 3

Strengths and best practices

- The MOH/MPRT Joint Preparedness and Response Framework to Zoonotic Diseases of Public Health Concern has been developed and operationalized.
- Actual examples of coordination mechanisms have been established (e.g. the Joint Taskforce for the Prevention and Control of Rabies) and tested.

Areas that need strengthening and challenges

- Because of the low incidence of zoonoses in Brunei Darussalam, there is limited field experience and expertise across both sectors with regard to handling major zoonoses events.
- Continual capacity building of staff is needed in all areas of zoonotic disease control.
- There is a need to replicate the work accomplished for rabies, and expand its scope to include other priority zoonotic diseases.

Recommendations for priority actions

- Strengthen the legislative framework for the prevention and control of diseases in animals. Ensure that the draft Animal (Diseases and Quarantine) Order goes through the drafting and legislative process, with inputs from the human health sector and other relevant sectors.
- Leverage the example set by the Joint National Taskforce on the Prevention and Control of Rabies for cooperation between human and animal health, and expand the scope of this Task Force to include all zoonotic diseases of public health concern.
- Develop and strengthen the workforce for managing zoonotic diseases in both the human and the animal health sectors, especially in field epidemiology, risk assessment and risk management, and laboratory and diagnostic services (particularly for the animal health sector).
- Address the recommendations of the 2013 Performance of Veterinary Services (PVS) Gap Analysis, particularly regarding the human, financial and physical resource requirements for strengthening relevant competencies.

FOOD SAFETY

INTRODUCTION

Food- and water-borne diarrhoeal diseases are leading causes of illness and death, particularly in less developed countries. The rapid globalization of food production and trade has increased the potential likelihood of international incidents involving contaminated food. The identification of the source of an outbreak and its containment is critical for control. Risk management capacity with regard to control throughout the food chain continuum must be developed. If epidemiological analysis identifies food as the source of an event, based on a risk assessment, suitable risk management options that ensure the prevention of human cases (or further cases) need to be put in place.

Target

A functional system is in place for surveillance and response capacity of States Parties for foodborne disease and food contamination risks or events with effective communication and collaboration among the sectors responsible for food safety.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam uses Codex standards as reference for its systems. Responsibility for food safety is jointly shared by the MOH and the MPRT. The key legislation is the Public Health (Food) Act Cap. 182, which makes specific provisions to regulate public health in respect of food and matters connected therewith. Subsidiary legislation, in the form of the Public Health (Food) Regulations, outlines procedures for sample collection and food labelling requirements. Responsibility for the Act is held by the Director-General of Health Services.

The Food Safety and Quality Control Division (FSQCD), MOH was established to prevent and control food-borne diseases through better control of food quality and safety, and to promote public awareness. The FSQCD is responsible for the safety and quality of processed food imported into Brunei Darussalam, and regulates the safety of food at retail level by ensuring hygienic food handling and preparation in retail food establishments. The FSQCD requires food handlers to attend a Basic Food Handlers Health Education Course, have typhoid vaccinations, and have chest x-ray examinations.

Food poisoning and food-borne pathogens are notifiable diseases under the Infectious Disease Act Cap. 204. As such, the Disease Control Division (DCD) works together with the FSQCD in responding to cases of food-borne disease or illness, with DCD investigating cases and taking human biological samples, and the FSQCD inspecting food premises and taking food samples for testing.

The MPRT is responsible for the safety and quality of fresh produce and locally manufactured products, and their exportation. It ensures that the products are safe for local consumption and do not pose any risk to plant or animal health. Meat processing establishments are supervised by veterinarians and para-veterinarians/meat inspectors. Hazard analysis critical control points (HACCP) is not a legislated requirement for processors, but it is strongly encouraged. Most beef is imported, but poultry is produced locally for local consumption and export, with commercial imperatives requiring it to be tested for a variety of food safety risks. Fish and crustaceans are routinely subject to residue monitoring.

Since a 2017 consolidation of food laboratories, the MOH Department of Scientific Services (DSS) has been the national accredited food testing laboratory; but because the animal health programme, including the application of the Veterinary Health Mark (VHM), is under the purview of MPRT, testing of foodborne diseases involving meat and meat products is carried out by the MPRT Veterinary Laboratory Services.

Brunei Darussalam is in the process of finalizing its Food Safety Emergency Response Plan (NAFSER). This plan, jointly owned by MOH and MPRT, establishes an operational structure and framework for a national food safety emergency response plan; identifies a system for risk assessment and management during a food safety emergency; and outlines mechanisms for effective and timely coordination of risk communication in responding to food-related emergencies.

Indicators and scores

P.5.1 Surveillance systems in place for the detection and monitoring of foodborne diseases and food contamination – Score 4

Strengths and best practices

- Legislative frameworks govern the mandatory notification of foodborne disease. Even clinical suspicion of “food poisoning” is notifiable under the First Schedule of the Infectious Disease Act Cap. 204. Event-based surveillance for food poisoning has been demonstrated to be effective in identifying real time events.
- Laboratory capacity is easily accessible.
- Multi-sectoral coordination is evident, particularly in the development and implementation of the NAFSER.

Areas that need strengthening and challenges

- An integrated national food chain surveillance database is needed.
- The surveillance monitoring system needs to be strengthened for the entire food chain, from farm to table.

P.5.2 Mechanisms are established and functioning for the response and management of food safety emergencies – Score 2

Strengths and best practices

- The National Food Safety Emergency Response Plan is being finalized.
- Brunei Darussalam has an ad hoc coordination mechanism with several stakeholders for food safety emergency cases.

Areas that need strengthening and challenges

- Simulation exercises are needed to test the NAFSER and update it as necessary.
- Capacity building of the workforce, including in risk assessment, is essential for the smooth execution of the NAFSER.

Recommendations for priority actions

- Endorse and implement the National Food Safety Emergency Response Plan (NAFSER).
- Develop workforce capacity to implement the NAFSER.
- Test the NAFSER to ensure fitness for purpose, through simulation exercises and/or After Action Reviews of real-life scenarios.
- Ensure that current surveillance systems capture the entire food chain.

BIOSAFETY AND BIOSECURITY

INTRODUCTION

Biosafety and biosecurity are fundamental elements of effective laboratory services and public health systems in the global fight against infectious diseases. Despite this central role, many laboratories still lack effective biosafety practices, equipment and infrastructure to conduct diagnostic and surveillance activities in a safe and secure manner. These circumstances not only present a risk to laboratory-acquired infections among healthcare workers, but also present a risk of release of infectious agents back into the surrounding community and environment preventing efforts to contain and control infectious diseases.

To address these concerns, it will require national authorities to integrate biosafety into national policies and programs, to improve sustainable laboratory infrastructure and equipment, and to increase biorisk management skills and competencies among those working with infectious diseases. National biosafety programs include the “whole of government” (e.g. human, animal, and security) and are anchored in policies, standards and guidelines that control and inform the management of biological risks to lower the risk of exposure at all stages in the healthcare system where biological agents may present a risk to workers (e.g. sample collection in the field, transport, laboratory, hospital, and disposal).

Target

A whole-of-government multi-sectoral national biosafety and biosecurity system with dangerous pathogens identified, held, secured and monitored in a minimal number of facilities according to best practices; biological risk management training and educational outreach conducted to promote a shared culture of responsibility, reduce dual-use risks, mitigate biological proliferation and deliberate use threats, and ensure safe transfer of biological agents; and country-specific biosafety and biosecurity legislation, laboratory licensing and pathogen control measures in place as appropriate.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

The Department of Laboratories Services (DLS) and Department of Scientific Services (DSS) are the two departments under the Ministry of Health that provide Brunei Darussalam with laboratory services. The DLS covers all government hospital laboratories and conducts testing for diagnostic and public health purposes, while the DSS provides comprehensive analytic services for public health (environmental, food, microbiology and pharmacy work) and law enforcement (forensic biology and DNA fingerprinting). The DSS laboratories can provide analytical public health and forensic services at the regional level as well.

The Veterinary Laboratory Services (VLS) of the MPRT provides testing for quality assurance and quality control programmes and animal health programmes. Testing for diseases of fish and fishery products are carried out by the Department of Fisheries (DOF) of the MPRT.

A National Biosafety and Biosecurity guideline has been drafted and is in the finalization stage. A National Biosafety Framework and Health Care Waste Management Guidelines are currently under development. There is also a draft National Action Plan that describes biosafety and biosecurity control measures.

Some elements of biorisk assessment are in place in the human health sector. Biosafety and biosecurity practices and pathogen control measures—including physical containment, operational practices, and containment failure reporting systems—are implemented in both the human and animal health sectors, based on departmental laboratory safety manuals, and institutional protocols and standard operating

procedures (SOPs). The Workplace Safety and Health Order 2009 serves as a framework to document, report, investigate and address biosafety and biosecurity incidents and accidents. Additional monitoring is done through staff competency assessments and performance evaluations, internal audits, and periodic third-party assessments.

Available funding is adequate to support the implementation of biosafety and biosecurity programmes and carry out their oversight and enforcement.

Brunei Darussalam is finalizing a process to develop and monitor an updated record and inventory of pathogens within facilities that store or process dangerous pathogens and toxins. The DoAA has established active monitoring, and keeps an updated record and inventory of pathogens. Both government and private facilities have collections of identified pathogens and toxins. These records are updated annually. Dangerous pathogens are consolidated in two facilities: the RIPAS Hospital and the Serasa Branch of the DSS. Culturing of dangerous pathogens is minimized through the use of molecular techniques wherever feasible.

Brunei Darussalam has the trained staff and resources needed to ship Category B biological specimens within and outside the country. Shipping of Category A infectious substances is outsourced to couriers with appropriate capabilities.

Training needs assessments are conducted in the human health sector, but not for animal health. Induction and refresher trainings on biosafety and (less systematically) biosecurity are conducted at the institutional (facility) level.

Indicators and scores

P.6.1 Whole-of-government biosafety and biosecurity system in place for all sectors (including human, animal and agriculture facilities)– Score 3

Strengths and best practices

- Biosafety and biosecurity practices are mostly implemented at institutional level.
- Compliance with biosafety and biosecurity requirements is monitored through a number of mechanisms.
- Dangerous pathogens are stored in one facility, inventoried and monitored.
- Major safety equipment, including biosafety cabinets, is properly maintained, serviced and certified.
- A biosafety and biosecurity guideline has been drafted and is being finalized.

Areas that need strengthening and challenges

- There is no mechanism for biosecurity oversight of dual-use research of concern, nor is there a code of responsible conduct for scientists.
- Policies and procedures for controlling access to sensitive laboratory information are lacking.
- The legislative and regulatory basis for biosafety and biosecurity needs further strengthening.
- A shortage of trained biosafety officers undermines oversight and enforcement of biosafety and biosecurity requirements.
- Laboratory licensing mechanisms are still under development.
- Biorisk assessment is not conducted systematically.

P.6.2 Biosafety and biosecurity training and practices in all relevant sectors (including human, animal and agriculture)– Score 2

Strengths and best practices

- Training needs are assessed, even if not systematically.
- Both MOH and MPRT conduct in-house induction and refresher trainings on biosafety and biosecurity for relevant personnel.

Areas that need strengthening and challenges

- There are no academic training programmes or curricula for biosafety and biosecurity for pre-service (academic) or in-service training.
- Staff competencies in biosafety and biosecurity are not systematically monitored.

Recommendations for priority actions

- Develop, finalize and officially endorse the national regulatory documents and guidelines for biosafety and biosecurity, including information security.
- Ensure proper oversight of compliance with biosafety and biosecurity requirements at both national and institutional level through: (a) developing a National Framework for Biorisk Management, including an agreed set of national standards for biosafety and biosecurity; and (b) training and empowerment of designated biosafety and biosecurity officers at various tiers of the national laboratory system.
- Work with local academic institutions to include biosafety, biosecurity and biorisk management modules in the curricula of relevant courses related to the human and animal health and agriculture sectors.

IMMUNIZATION

INTRODUCTION

Immunizations are estimated to prevent more than two million deaths a year globally. Immunization is one of the most successful global health interventions and cost-effective ways to save lives and prevent disease. Measles immunization is emphasized because it is widely recognized as a proxy indicator for overall immunization against vaccine preventable diseases. Countries will also identify and target immunization to populations at risk of other epidemic-prone vaccine preventable diseases of national importance (e.g. cholera, Japanese encephalitis, meningococcal disease, typhoid and yellow fever). Diseases that are transferable from cattle to humans, such as anthrax and rabies, are also included.

Target

A national vaccine delivery system – with nationwide reach, effective distributions, access for marginalized populations, adequate cold chain and ongoing quality control – that is able to respond to new disease threats.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam has a comprehensive Expanded Programme on Immunization (EPI) that is mandated by the Infectious Disease Act Cap 204, and which protects children against 10 vaccine preventable diseases (VPDs). The National Childhood Immunization Programme was established in 1957 and has undergone several reviews and modifications over the years, based on WHO recommendations. Human papillomavirus (HPV) vaccination for young adolescents was introduced in 2012. The programme is aligned with the WHO Global Vaccine Action Plan and takes into consideration zoonotic diseases of national concern such as typhoid, Japanese encephalitis and rabies. Vaccines for these diseases are provided to high-risk groups on a voluntary basis. Some newer vaccines that are not part of the national immunization schedule, such as varicella, pneumococcal and rotavirus, are available at a cost in private healthcare facilities.

In general, the EPI Programme is well accepted throughout Brunei Darussalam. It is provided free of charge through government health services to all target populations residing in the country (children under five, adolescents, women throughout their antenatal and postnatal periods, etc.), regardless of citizenship. It is delivered through an extensive network of 16 maternal and child health (MCH) clinics, school health services and MOH government hospitals. Army recruits, infantry soldiers and those deployed for missions receive vaccinations through medical centres operated by the Royal Brunei Armed Forces (RBAF). Populations in remote areas are reached through a travelling clinic service (by land and by boat) and a Flying Medical Service.

Immunization coverage data are monitored monthly and annually through reports submitted by all government MCH clinics, school health services, RBAF medical centres and private healthcare facilities. There is no single national registry; immunization books are used in MCH clinics for children below five. The annual birth cohort is used as a denominator. No online platform is in place for coverage data reporting; data are manually entered in the Brunei Health Information Management System (Bru-HIMS).

With an effective monitoring system for vaccinations given to children aged five years and below at government health facilities, and with increased public awareness of the importance of vaccinations, Brunei Darussalam has maintained a nationwide immunisation coverage rate of > 95%. To maintain and improve vaccination coverage, the government organizes national immunization awareness campaigns. A small number of children from vaccine-hesitant families (numbering about 40 children at the time of

the JEE) are identified by healthcare professionals and monitored in community clinics. These families are offered regular clinic appointments with doctors for counselling on immunization.

The country has an effective competitive process for vaccine procurement that ensures uninterrupted supply and adequate quality of vaccines, and value for money. Sustainable mechanisms and procedures are in place to ensure that the cold chain is maintained, and vaccines are transported, stored and delivered safely.

Indicators and scores

P.7.1 Vaccine coverage (measles) as part of national programme – Score 5

Strengths and best practices

- In 2015, Brunei Darussalam was verified by WHO as having achieved measles elimination.
- In 2018, Brunei Darussalam was verified by WHO as having achieved rubella elimination.
- Brunei Darussalam has an EPI that is aligned with the WHO Global Vaccine Action Plan and which includes additional vaccination for HPV (for young adolescents), typhoid, rabies and Japanese encephalitis (for military personnel and other high-risk groups).
- Vaccinations are delivered to all target populations residing in the country, regardless of citizenship, through an extensive network of MCH clinics, school health services, MOH government-run hospitals, and MOD medical centres.
- Between 2015 and 2018, routine vaccination coverage rates varied between 96% and 99% for the first dose of MMR vaccine, and between 97% and 98% for the second dose.
- The government of Brunei Darussalam provides strong incentives for vaccination, offering vaccines at no cost and making them a primary school entry requirement.
- A highly effective surveillance system for measles detection, which uses active case finding, has demonstrated low and decreasing incidence rates for measles between 2015 and 2018.

Areas that need strengthening and challenges

- There is a need to assess herd immunity through a vaccine coverage survey that includes serosurveillance of measles and rubella, as the most recent such survey was in 2011.
- There is a need to assess whether there are pockets of hard-to-reach populations in the community.

P.7.2 National vaccine access and delivery – Score 5

Strengths and best practices

- The government maintains and monitors mechanisms and procedures for vaccine procurement, stockpiling, cold chain maintenance, and delivery that ensure an uninterrupted supply of vaccines to target populations.
- A well-structured, competitive vaccine procurement process is in place to ensure quality and value for money.
- Global vaccine stock levels are taken into account when reviewing domestic stock levels.
- The government organizes national immunization awareness campaigns to highlight the importance of vaccination for people of all ages.

Areas that need strengthening and challenges

- There is a need to establishment a National Immunization Technical Advisory Group (NITAG) to guide vaccination strategy.
- Consideration should be given to establishing a single national immunization registry using an electronic platform for data reporting and transferring to the Bru-HIMS.

Recommendations for priority actions

- Maintain high rubella and measles vaccination coverage among target populations, through assessment and monitoring of herd immunity using serological surveys.
- Continue strengthening systems to detect suspected measles cases among foreigners (students and migrant workers) that could give rise to local transmission.
- Strengthen the surveillance system for congenital rubella syndrome (CRS) by making CRS a notifiable disease and conducting a retrospective case review to provide evidence of the effectiveness of CRS surveillance.
- Establish a National Immunization Technical Advisory Group (NITAG) to provide evidence-based advice to decision-makers and programme managers on policy issues related to immunization and vaccines.

DETECT

NATIONAL LABORATORY SYSTEM

INTRODUCTION

Public health laboratories provide essential services including disease and outbreak detection, emergency response, environmental monitoring and disease surveillance. State and local public health laboratories can serve as a focal point for a national system, through their core functions for human, veterinary and food safety including disease prevention, control and surveillance; integrated data management; reference and specialized testing; laboratory oversight; emergency response; public health research; training and education; and partnerships and communication.

Target

Surveillance with a national laboratory system, including all relevant sectors, particularly human and animal health, and effective modern point-of-care and laboratory-based diagnostics.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

In the human health sector, the national laboratory system (NLS) in Brunei Darussalam is comprised of two main laboratories under the MOH—the Department of Laboratory Services (DLS) and the Department of Scientific Services (DSS)—and a number of private laboratories. DLS has been providing clinical laboratory services in Brunei Darussalam since 1927, serving all community and public health centres and hospitals in the country.

RIPAS Hospital in Bandar Seri Begawan is the centre for main disciplines of clinical laboratory services (i.e. clinical chemistry, haematology, immunology, blood transfusion, bacteriology, mycology, histology, cytology and mortuary services). Virology laboratory and the National TB Reference Laboratory (NTRL) are located in Sumbiling, offsite from the hospital. These laboratories serve as the national reference laboratories (NRL); specimens for tests that are not performed in district laboratories will be referred there.

The DLS performs laboratory testing for 28 notifiable infectious diseases as specified in the Infectious Disease Act Cap. 204, including nine of the ten specified core tests (influenza, poliomyelitis, HIV, TB, typhoid fever, gonorrhoea, dengue, Hepatitis B, measles, and malaria). A limited number of tests that are not performed in the country are referred overseas, mostly to the Victoria Infectious Disease Reference Laboratory in Australia.

Due to the small size of the country and a limited number of human resources, medical and public health laboratory functions are not separated; public health functions are mostly centralized in the RIPAS hospital laboratories, with some limited participation from district laboratories (mostly for malaria microscopy) and private laboratories. Limited clinical chemistry, haematology, microbiology, blood bank and mortuary services are provided in the other three district hospitals.

DSS provides comprehensive scientific analytical and calibration services to support public health and law enforcement agencies in Brunei Darussalam.

There are no national mechanisms for laboratory licensing. The MOH is making good progress towards the establishment of a Private Healthcare Institution Order. At the same time, all laboratories are accredited to ISO standards (ISO 15189 for DLS and ISO 17025 for DSS) and perform quality assurance of laboratory tests through participation in international external quality assessment (EQA) programmes.

A laboratory information system was introduced in the DLS in 1979, and since 2013 it has been integrated with Bru-HIMS. Laboratory results from government laboratories are transmitted in real time to clinicians and the DCD through Bru-HIMS. Results are accessible in all governmental health centres.

Each department adheres to institutional safety policies stated in their respective safety manuals, which address biological, chemical and, where applicable, radioactive hazards.

In the animal health sector, Brunei Darussalam's only national veterinary laboratory comes under MPRT's authority. All monitoring and testing services, including two of the core tests related to animal health, are conducted in the Veterinary Laboratory Services Unit (VLS) of the DoAA. Private veterinary clinics, livestock farms, government agencies, and other relevant institutions and industries can access laboratory services for the priority diseases stated above provided they are registered with the VLS. The veterinary laboratory is accredited to ISO 17025 standards.

Indicators and scores

D.1.1 Laboratory testing for detection of priority diseases – Score 5

Strengths and best practices

- The national laboratory for human health conducts nine out of the ten core infectious disease tests locally.
- All Brunei Darussalam citizens can access laboratory testing for infectious diseases free of charge.
- The national laboratory system has a strong regional and international laboratory network with external quality assessment in place for any confirmation, genotyping and virus characterisation.
- All laboratories in the country have established strong quality management systems and biosafety programmes and are accredited to ISO standards.
- All infectious diseases tests are covered by corresponding proficiency testing programmes.
- The MOH has a five-year strategic plan (2019-2023) that includes an action plan for upgrading laboratory facilities and preparation for a BSL3 laboratory.

Areas that need strengthening and challenges

- There is a need to strengthen the mechanism for sharing laboratory information and expertise between human and animal laboratory systems through the joint zoonotic taskforce framework.
- Laboratory capacity for virus detection should be strengthened through international collaboration for capacity building.
- There is no national mechanism for laboratory licensing.
- Laboratory outbreak preparedness—including surge capacity planning—could be strengthened.
- There is limited infrastructure to facilitate safe handling of dangerous pathogens (such as, for example, a higher biosafety level/BSL containment lab).

D.1.2 Specimen referral and transport system – Score 4

Strengths and best practices

- Brunei Darussalam enjoys a comprehensive, functional system of specimen transportation that takes samples from community health clinics and animal farms at district level to the national laboratories, via water and land, within 24 hours.
- There is a functional system for specimen referrals to respective national laboratories for confirmation of the nine listed core tests performed locally.
- Regional and international collaborations for specimen referral and confirmatory tests are well established for the 10 national core tests.
- Certified couriers are available for international and authorized local transportation.

Areas that need strengthening and challenges

- The specimen transportation system for national human health labs, which is greatly dependent on government transports, requires strengthening in terms of manpower and systems for maintaining specimen quality (such as temperature monitoring of specimens).
- There is a need to strengthen preparedness for possible future outbreaks by building laboratory capacity for packing and shipping category A infectious substances.

D.1.3 Effective national diagnostic network – Score 4

Strengths and best practices

- Brunei Darussalam has a functional national referral laboratory network for human health, handled by two MOH departments, and one MPRT department for animal health.
- National laboratories are easily accessible within 24 hours.
- Some rapid test, such as immunochromatographic test for dengue NS1/IgM/IgG are used for quick diagnostics.

Areas that need strengthening and challenges

- The National Health Laboratory System Framework (tier-specific diagnostic strategy) requires strengthening.

D.1.4 Laboratory quality system – Score 4

Strengths and best practices

- The DLS, DSS and VLS laboratories and private laboratories are accredited to ISO standards.
- Participation in External Quality Assessment (EQA) programmes is managed by individual laboratories and is done through a range of international EQA providers. All core tests are covered by EQA programmes.
- The DLS virology laboratory has been a WHO-accredited national measles and rubella laboratory since 2014.

Areas that need strengthening and challenges

- There is no national mechanism for laboratory licensing (though this will become a legal requirement through implementation of the Private Healthcare Institution Order, which is currently in draft form).

Recommendations for priority actions

- Strengthen mechanisms for sharing laboratory information and expertise between the animal and human health laboratory systems, leveraging opportunities under the planned Joint National Taskforce for Zoonotic Diseases.
- Establish a national mechanism for laboratory licensing based on the Private Healthcare Institution Order being developed by the Ministry of Health.

REAL-TIME SURVEILLANCE

INTRODUCTION

The purpose of real-time surveillance is to advance the safety, security and resilience of the nation by leading an integrated surveillance effort that facilitates early warning and situational awareness of all IHR hazard-related events.

Target

(1) Strengthened foundational indicator- and event-based surveillance that are able to detect events of significance for public health and health security; (2) improved communication and collaboration across sectors and between sub-national (local and intermediate), national and international levels of authority regarding surveillance of events of public health significance; and (3) improved national and intermediate level regional capacity to analyse and link data from and between, strengthened, early-warning surveillance, including interoperable, interconnected electronic tools. This would include epidemiologic, clinical, laboratory, environmental testing, product safety and quality and bioinformatics data; and advancement in fulfilling the core capacity requirements for surveillance in accordance with the IHR and OIE guidelines.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

For human health, the national surveillance system is comprised of indicator-based, event-based and syndromic surveillance systems with a legislative basis in the Infectious Disease Act Cap. 204. The Disease Control Division (DCD) of the Department of Environmental Health Services (DEHS) functions as the national surveillance centre and is responsible for the surveillance, epidemiological investigation and prevention and control of communicable diseases in the public while the Environmental Health Division of the Department conducts environmental surveillance of vectors. The DoAA manages event-based and indicator-based surveillance systems for animal health.

Indicator-based surveillance relies on Bru-HIMS, which covers all public hospitals and one private hospital. For event-based surveillance, all emergency department staff, the emergency ambulance service, and the heads of Health Centres in the community are trained to report clusters and unusual events to the DCD. Most commonly, these involve diarrhoeal or respiratory disease in institutional settings, and provide early warning of potential disease outbreaks. Vector, population and pathogen data are analysed and collectively interpreted to inform risk-based response operations.

There are syndromic surveillance systems for sentinel surveillance of influenza-like illness in two main health centres; for severe acute respiratory infection in intensive care admissions; and for acute flaccid paralysis in paediatric admissions and all 16 maternal and child health clinics.

Epidemic Intelligence System (EIS) is an online platform linked to Bru-HIMS in hospitals, ensuring an electronic real-time reporting tool for surveillance. A duty medical officer in DCD screens reporting data, assesses the level of risk, and decides on appropriate courses of action guided by appropriate SOPs. DCD conducts data analysis and risk assessment. Weekly epidemiological bulletins and annual reports are disseminated to relevant agencies in human and animal health.

The data in Bru-HIMS are received from health facilities including the public hospital (which supplies it automatically through EIS links) and private health centres (via manual notifications or fax or phone calls). Relevant data around notifications from event-based and syndromic surveillance systems are also reported into Bru-HIMS, along with data from laboratory notification systems.

For animal health, the DoAA manages event-based and indicator-based surveillance systems for animal health, guided by the policy that veterinarians and farmers who suspect or diagnose a priority disease in animals (such as Rabies, Anthrax, E. coli 0157, Salmonella or Avian Influenza) are required to report it to the DoAA via phone call. The list of notifiable priority diseases in animals has been put into a legal order that is currently in draft stage. In addition, an active surveillance programme for avian influenza and salmonellosis is conducted by the DoAA in farms around the country. Although there is no electronic online tool for surveillance for animal health, surveillance data from farms and surveillance programme owners are submitted to MPRT via excel files.

Informal joint risk assessments have been performed, and there is data sharing between human and animal health through the weekly epidemiological bulletins.

Indicators and scores

D.2.1 Surveillance systems – Score 4

Strengths and best practices

- Brunei Darussalam has a strong legislative framework for mandatory notification supported by regular training for healthcare providers.
- Communicable diseases of public health concern are recognised in real time.
- There is a duty officer system to support event-based surveillance.
- Laboratory and clinician notifications feed directly into the surveillance system.
- There is performance evaluation of surveillance for specific diseases.

Areas that need strengthening and challenges

- There is a need to improve formal communication from the animal to the human health sector.
- The weekly epidemiological bulletin should include disease occurrences in animals.
- Draft legislation for notifiable disease in animals should be enacted and implemented.
- There is a need to evaluate the performance of surveillance for other diseases of public health concern.

D.2.2 Use of electronic tools – Score 3

Strengths and best practices

- Bru-HIMS is an innovative digital platform that links all MOH-run health facilities and enables notification via the patient record.
- Mandatory ICD-10 coding system allows for validation of completeness of notification data.

Areas that need strengthening and challenges

- An electronic notification system should be identified for private healthcare facilities.
- There is a need to develop data analysis of existing farm data on population and animal health.
- Human health and veterinary systems are not interoperable or connected.
- Data analysis on Bru-HIMS should be automated, with automatic triggers for action.

D.2.3 Analysis of surveillance data – Score 4

Strengths and best practices

- There is daily screening and risk assessment of all notifications via a duty officer system.
- Escalation pathways and triggers for action are clearly outlined.
- Systematic risk assessment of cross-border threats is done through horizon scanning practices.
- Aggregate data analysis is conducted at least weekly with peer review at PHEOC meetings.
- Weekly epidemiological bulletins are disseminated to senior management, heads of all healthcare facilities, and the animal health sector.

Areas that need strengthening and challenges

- There is a need to integrate various disease reporting mechanisms in a centralised system for both human and animal health. This would strengthen capacity for comprehensive surveillance data analysis and outbreak management.
- Weekly reports should include analysis of both the human and animal health sectors.

Recommendations for priority actions

- Establish an electronic reporting mechanism for private healthcare facilities.
- Incorporate automatic data analysis and alert functions into Bru-HIMS to enhance timely detection, risk assessment and decision-making.
- Continue to strengthen event-based surveillance by taking advantage of existing platforms that pull information from multiple sources.

REPORTING

INTRODUCTION

Health threats at the human–animal–ecosystem interface have increased over the past decades, as pathogens continue to evolve and adapt to new hosts and environments, imposing a burden on human and animal health systems. Collaborative multidisciplinary reporting on the health of humans, animals and ecosystems reduces the risk of diseases at the interfaces between them. The national IHR focal points, the OIE delegate, and WAHIS national focal point should have access to a toolkit of best practices, model procedures, reporting templates, and training materials to facilitate rapid (within 24 hours) notification of events that may constitute a public health emergency of international concern (PHEIC) to WHO and listed diseases to OIE, and will be able to rapidly (within 24/48 hours) respond to communications from these organizations.

Target

Timely and accurate disease reporting according to WHO requirements and consistent reporting to/information of FAO and OIE.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam has a well-established system for efficient identification and reporting of potential public health emergencies of international concern (PHEICs) to WHO as required under the IHR (2005), supported by a standard operating procedure that is endorsed by the Minister of Health.

The Director-General of Medical and Health Services is the primary IHR NFP, with the staff of the Disease Control Division working together to perform their functions as IHR reporting officers. The IHR NFP is accessible at all times via email, telephone and fax, and communicates with WHO via email. IHR reporting officers receive didactic and on- the- job training on conducting risk assessments and are familiarized with the SOPs for the IHR NFP. The capacity for timely reporting under IHR has been tested in real events (e.g. imported measles in 2019 and a tuberculosis outbreak in 2017) and in exercises (e.g. the annual IHR Exercise Crystal conducted by the WHO Regional Office for the Western Pacific, and annual meetings of the Asia Pacific Strategy for Emerging Diseases/APSED III).

The World Organisation for Animal Health (OIE) Delegate for Brunei Darussalam is the Head of the Livestock, Industry and Veterinary Services Division at the DoAA. The Delegate can notify OIE promptly about animal diseases in Brunei Darussalam using the World Animal Health Information System (WAHIS), or by fax or email. The MPRT submits six-monthly and annual reports to OIE as required and performs immediate notification of first occurrence or re-occurrence of OIE-listed diseases. With the adoption of a joint framework for preparedness and response to zoonotic disease of public health concern, a multi-sectoral process is in place in Brunei Darussalam for assessing potential zoonotic threats or events that may require reporting to WHO/ OIE.

DEHS staff perform the functions of Focal Points for the International Food Safety Authorities Network (INFOSAN), and the Director of Environmental Health Services and the Head of Disease Control Division (who are alternate IHR NFPs) serve as the INFOSAN Emergency Contact Points.

Indicators and scores

D.3.1 System for efficient reporting to FAO, OIE and WHO – Score 5

Strengths and best practices

- MOH staff are effective IHR NFP duty officers and ensure efficient reporting through relevant channels.
- IHR NFP officers are contactable via mobile and email 24 hours a day, 7 days a week.
- IHR-related reporting has been tested in real life events and in annual exercises.
- The IHR NFP and INFOSAN focal points are within the same department, enabling real-time communication.

Areas that need strengthening and challenges

- Existing reporting to OIE could be augmented by formalized reporting mechanisms using an SOP or other administrative procedure.

D.3.2 Reporting network and protocols in country – Score 4

Strengths and best practices

- There is a formalized reporting protocol for reporting PHEICs to WHO that covers the whole country.
- SOPs outline clear time standards for when and how reporting should take place.
- Reporting templates are used to speed up reporting processes.

Areas that need strengthening and challenges

- Reporting of chemical and radiological events have not been tested. Focus to date has mainly been on communicable diseases and, or food safety issues.

Recommendations for priority actions

- Strengthen existing reporting mechanisms to OIE through formalized SOPs and administrative procedures.
- Enhance the function of the IHR NFP to conduct all-hazard event assessments and reporting, by including chemical events and radiation emergencies in future exercises and trainings.

HEALTH WORKFORCE DEVELOPMENT

INTRODUCTION

Health workforce development is important in order to develop a sustainable public health system over time. A highly qualified public health workforce should be developed and maintained with appropriate technical training, scientific skills and subject matter expertise. Health workforce includes nurses and midwives, physicians, public health and environmental specialists, social scientists, communication, occupational health, laboratory scientists/technicians, biostatisticians, IT specialists and biomedical technicians and a corresponding workforce in the animal sector: veterinarians, animal health professionals, para-veterinarians, epidemiologists, IT specialists etc.

The recommended density of doctors, nurses and midwives per 1,000 populations for operational routine services is 4.45 plus 30% surge capacity. The optimal target for surveillance is one trained (field) epidemiologist (or equivalent) per 200,000 populations who can systematically cooperate to meet relevant IHR and PVS core competencies. One trained epidemiologist is needed per rapid response team.

Target

States Parties with skilled and competent health personnel for sustainable and functional public health surveillance and response at all levels of the health system and the effective implementation of the IHR (2005).

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam's workforce capacity for skilled field epidemiologists, public health physicians, veterinarians, information specialists and biostatisticians is limited.

A single specialist public health physician leads on IHR-related activities, although this post is supported by several new senior medical officers. There is no advanced Field Epidemiology Training Programme (FETP) officer in post at present, although one senior medical officer is currently undergoing advanced FETP training through an arrangement with the Thailand Ministry of Public Health and the ASEAN Plus Three Field Epidemiology Training Network. There are no veterinarians in Brunei Darussalam who have received formal veterinary epidemiology training through an FETP.

Recruitment, retention, and training therefore form vital components of the development of the public health workforce. For the human health sector, this is the responsibility of the Department of Administration and Finance (DAF), which works closely with DEHS in this process.

DAF reports directly to the Permanent Secretary of the MOH. Its roles include managing recruitment processes, facilitating the development of both the professional and non-professional workforces, and determining the requirements of the public health workforce, all in order to ensure the provision of public health services is at optimum level.

For short-term training and development of the public health workforce, MOH has allocated a specific budget for capacity building activities such as attending courses, workshops, seminars and conferences, both within and outside the country. While long term training and development needs are identified by individual MOH departments, approval to attend training events and courses is granted by the Public Services Department of the Prime Minister's Office.

DEHS has participated in various short-term training and capacity development activities such as training in disaster response and pandemic and emergency preparedness. These can be funded either by the government of Brunei Darussalam or by relevant regional and international bodies. MOH is highly committed to ensuring and maintaining the professionalism of its public health workforce by equipping them with relevant and suitable professional courses, and helping obtain professional qualifications. Over the years, a number of public health professionals of different specialties have been sent to undergo a range of public health trainings at various qualification levels.

With informal support from the ASEAN Plus Three Field Epidemiology Training Network and the US Centers for Disease Control and Prevention (US CDC), Brunei Darussalam has established a Frontline FETP programme that will commence in December 2019. This is a basic applied epidemiology training programme, adapted from the established US CDC curriculum to meet local needs and capacity, and aims to maintain a well-trained public health workforce on the ground that is prepared to detect and quickly respond to health threats, stopping them close to their source. The first cohort will be restricted to DEHS staff, but the plan for subsequent cohorts is to include nurses, veterinary officers, health education officers, and other healthcare staff in order to ensure adequate surge capacity to cope with larger scale outbreaks.

Indicators and scores

D.4.1 An up-to-date multi-sectoral workforce strategy is in place – Score 3

Strengths and best practices

- Brunei Darussalam shows a high level of commitment to upgrading and upskilling the public health workforce.
- A Public Health Workforce Development Plan has been finalised that outlines objectives for recruitment, retention and training of the public health workforce under the DEHS.

Areas that need strengthening and challenges

- There is a need for coordinated action on the workforce to ensure that animal health workforce development is also a priority.
- Brunei Darussalam should consider how best to develop capacity for surveillance of and response to chemical and radiation events. Better coordination in recruitment, training and capacity building across various areas—including the laboratory, field epidemiology, public health nursing, statistics, chemical/biological/radiological/nuclear (CBRN) surveillance and response capacity sectors—would augment the existing Public Health Workforce Development Plan.

D.4.2 Public health personnel are available to effectively implement IHR – Score 3

Strengths and best practices

- The number of public health personnel in Brunei Darussalam is increasing, due to efforts to manage the healthcare workforce at national level.
- There is established close cooperation between DAF and DEHS to promote public health careers in order to attract, retain and develop talent. Trained medical officers are now deployed at district level to ensure public health capacities are delivered across the country. The geographic size of Brunei Darussalam means rapid deployment of staff to less urban areas in the event of emergencies is not an issue.
- Apprenticeship programmes for public health officers have led to the recruitment of two new public health officers at central level.

Areas that need strengthening and challenges

- While capacity for managing events during “peacetime” does exist, surge capacity for longer-term outbreaks is an issue.
- Human resource capacity for managing events other than communicable disease outbreaks is limited at present.

D.4.3. In-service training is available – Score 3

Strengths and best practices

- There are close links between academic institutions to support and tailor advanced degree and diploma programmes for in-service staff.
- a basic specialty training programme is available for medical officers in public health, leading up to Master of Medicine level.
- An MOU is in place with other WHO Member States to support advanced specialist training in public health.
- There is an ongoing educational programme for MOH and district health staff that includes support for attendance at conferences and workshops.

Areas that need strengthening and challenges

- More formalized and regular joint animal and human health training programmes should be established specifically for outbreak preparedness and control.
- All frontline public health staff should be equipped with basic field epidemiology and statistics skills as fundamental tools for surveillance and response.
- There is a need for longer-term strategies for staff training in sub-specialist areas including outbreak planning and preparedness, disease-specific areas, and health impact assessments. These strategies should identify named personnel for these areas.

D.4.4 FETP or other applied epidemiology training programme in place – Score 3

Strengths and best practices

- A frontline FETP is newly established. The curriculum builds on the established US CDC curriculum, but has been adapted for local context. The first cohort of students has been identified. This measure is directly funded by the MOH.
- There is an agreement in place with the Thailand Ministry of Public Health to train one advanced field epidemiologist.

Areas that need strengthening and challenges

- There is a need to ensure the quality and sustainability of the new frontline FETP through participation in international networks such as TEPHINET, and by ensuring that trainers themselves are well-trained, by facilitating their attendance at a training-of-trainers programme or other suitable alternative.
- There is a need to build on links within the ASEAN region, and with other countries with experience in running FETPs, to further refine the local frontline FETP.
- There is a need to identify career pathways for FETP graduates, including progression to advanced FETP training for the best graduates.
- The frontline FETP should develop formal links with the animal health sector to upgrade capacities in both human and animal health.

Recommendations for priority actions

- Enhance coordination of recruitment, training, capacity building and core capabilities across various sectors to support the delivery of IHR core capacities—especially for laboratories, veterinary public health and wildlife health services, field epidemiology, public health nursing, biostatistics, entomology, risk communication, health security, CBRN surveillance and emergency preparedness/response.
- Ensure adequate financial/budgetary support to increase animal health capacity as required by the PVS Gap Analysis and the IHR (2005).
- Develop a plan for access to support for surge capacity, including from outside the Ministry of Health if needed.
- Ensure the quality of the newly established frontline field epidemiology training programme (FETP) through training of trainers, participation in international networks, linking with more experienced FETPs in the region, and ongoing programme evaluation.

RESPOND

EMERGENCY PREPAREDNESS

INTRODUCTION

Emergency preparedness is defined as “the knowledge and capacities and organizational systems developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent, emerging or current emergencies.” A state of preparedness is the combination of planning, allocation of resources, training, exercising, and organizing to build, sustain, and improve operational capabilities at national, intermediate and local or primary response level based on strategic risk assessments. A strategic risk assessment identifies, analyses and evaluates the range of risks in a country and enables risks to be assigned a level of priority. Strategic risk assessments include analyses of potential hazards, exposures and vulnerabilities, identification and mapping of available resources, and analyses of capacities (routine and surge) at the national, intermediate and local or primary levels to manage the risks of outbreaks and other emergencies. Emergency preparedness applies to any hazard that may cause an emergency, including relevant biological, chemical, radiological and nuclear hazards, natural hazards, other technological hazards and societal hazards.

Target

Emergency preparedness includes the development and maintenance of national, intermediate and local or primary response level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. These will cover mapping of potential hazards, identification and maintenance of available resources – including national stockpiles – and the capacity to support operations at intermediate and local or primary response levels during a public health emergency.

(1) Existence of national strategic multi-hazard emergency risk assessments, risk profiles, and resource mapping (2) Existence of multi-hazard emergency response plans, (3) Evidence, from after action and other reviews, of effective and efficient multi-sectoral emergency response operations for outbreaks and other public health emergencies.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

There is strong political support and dedicated funding for emergency preparedness activities in Brunei Darussalam. These activities adopt a whole-of-nation approach coordinated by a central body, based on a legislative framework provided by the Disaster Management Order 2006. The Order mandates strategic risk assessments for all types of disasters and incidents affecting the country, including natural disasters, man-made incidents such as hazardous chemical events, and public health emergencies such as pandemics and other incidents.

The Order further establishes the National Disaster Council (NDC), Brunei Darussalam's main strategic level body for disaster management. The NDC ensures high-level representation to steer the national strategic framework for disaster management, ensures the implementation of effective disaster management, and ensures that emergency preparedness measures are in place in line with regional

and international requirements. The National Disaster Management Centre (NDMC) is the central coordinating agency for emergency preparedness and response measures in Brunei Darussalam, and supports the implementation of strategic policies formulated by the NDC which convenes regularly. With respect to IHR-related hazards, the last time a special meeting of NDC was convened was in October 2016, in response to the Zika virus outbreak affecting Singapore and other ASEAN Member States.

National risk assessments are conducted by respective agencies. Risk assessment for natural disasters is conducted regularly by the NDMC; ongoing risk assessment and horizon scanning for public health threats is done by the MOH through its public health emergency operations centre (PHEOC); the Prime Minister's Office carries out risk assessments for CBRN threats; the Ministry of Energy, Manpower and Industries assesses risks from major industries such as the oil and gas sector; and the Marine and Port Authority of Brunei Darussalam (MPABD) addresses oil spill prevention, risk assessments and management. All these risk assessments involve multi-sectoral approaches: for example, a risk assessment for CBRN hazards was conducted in October 2018 as part of the National CBRN Action Plan and involved multi-sectoral agencies that all played different roles in detection, prevention, risk preparedness and response to CBRN-related emergencies.

The Strategic National Action Plan (SNAP) for Disaster Risk Reduction 2012-2025 was developed as a comprehensive and cohesive plan of action for capacity building of both government and non-government organizations to promote disaster risk reduction, including thorough preparedness activities, disaster response programmes and risk mitigation projects.

In 2019, the Disaster Management Strategic Policy Framework (DMSPF) was being finalized. This guides the development and implementation of disaster management policies following an all-hazards, all-agencies approach. It covers events such as natural disasters, chemical incidents, public health events and other national emergencies at national and district levels. The various components of the DMSPF are research; policy and governance; risk assessment and mitigation; preparedness; response; relief and recovery; and post-disaster assessment.

The National Standard Operating Procedure (NaSOP) was also developed by the NDC in 2012, and implemented through the NDMC. It is a compendium of SOPs for the whole nation that outlines the agreed procedures for all relevant agencies during disaster responses. It includes preparedness measures, response operations and disaster recovery procedures for all respective agencies.

As outlined in the NaSOP, for disaster events such as forest fires and local floods at district level, emergency preparedness and response measures are institutionalised through the District Disaster Management Council (DDMC), which is coordinated by NDMC and which utilises the NaSOP, and thus is applicable at district or national level. The NaSOP therefore provides linkages with the specific SOPs of each of the relevant response agencies, depending on the type of incident.

For public health and medical emergency events, the MOH uses an incident command system and has developed and utilised emergency preparedness and response plans such as the Public Health Emergency Operation Plan (PHEOP) and major medical emergency plans for all government hospitals. For animal health events, the DoAA, MPRT utilizes the SOP for emergency response following disease outbreak or pest infestation.

Indicators and scores

R.1.1 Strategic emergency risk assessments conducted and emergency resources identified and mapped – Score 2

Strengths and best practices

- Multi-sectoral collaboration and cooperation between relevant agencies for risk assessment of specific hazards is mandated by legislation and implemented through a whole-of-nation approach.

- The NDMC provides central level coordination and a single focal point for risk assessment reports and liaison with regional and international partners.
- Ongoing risk assessment of public health threats and daily horizon scanning are provided through the PHEOC.

Areas that need strengthening and challenges

- There is a lack of expertise in risk assessment for certain hazards, and it may therefore be challenging to form several response teams to deal with large scale events—although in this type of situation the NDMC would be activated to engage regional counterparts through regional platforms such as the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre).
- The national inventory of available resources for emergency response could be improved with more regular updates to ensure equipment and resources are up-to-date and readily available.
- Resource mapping should be enhanced to include resources from all relevant sectors, catering for all types of hazards.
- A national risk register of major health threats should be developed and reviewed on an ongoing basis to ensure preparedness and response plans are fit for purpose.

R.1.2 National multi-sectoral multi-hazard emergency preparedness measures, including emergency response plans, are developed, implemented and tested – Score 3

Strengths and best practices

- There are demonstrated mechanisms for multi-sectoral involvement in disaster preparedness and response—for example, strategically through the NDC, and for coordination through the NDMC. This has been tested in real life situations and through various national exercises.
- The National SOP provides linkages for all relevant stakeholders to ensure a more coordinated and systematic emergency response.
- For health emergencies, various response plans such as the major medical emergency plans and the airport emergency plan have been tested and revised through tabletop exercises, with identification of gaps and challenges for improvement.

Areas that need strengthening and challenges

- Regular training and advocacy is required on the use of the NaSOP, especially for newly-appointed senior management and other new staff.
- A system is needed for regular reviews and updates for preparedness and response plans, based on tabletop or simulation exercises and/or real events.
- More frequent use of After Action Reviews would enhance learning from real life events.
- Fortunately, large-scale emergency events are infrequent in Brunei Darussalam, but this means that national capabilities to respond to all types of hazards have not been fully tested. More regular exercises for all types of hazards would enhance preparedness.

Recommendations for priority actions

- Develop a multi-sectoral, all-hazards risk assessment for use alongside After Action Reviews, in addition to the ongoing review of existing preparedness and response plans.
- Develop a national risk register/profile that outlines the top five major health security threats in Brunei Darussalam along with relevant mitigation strategies and use it to ensure that SOPs and relevant guidelines are fit for purpose.
- Maintain up-to-date national inventories and stockpiles of key resources to deal with disasters and other public health emergencies.

EMERGENCY RESPONSE OPERATIONS

INTRODUCTION

A public health emergency operations centre is a central location for coordinating operational information and resources for strategic management of public health emergencies and emergency exercises. Emergency operations centres provide communication and information tools and services, and a management system during a response to an emergency or emergency exercise. They also provide other essential functions to support decision-making and implementation, coordination and collaboration.

Target

Countries will have a coordination mechanism, incident management systems, exercise management programmes and public health emergency operations centre (EOC) functioning according to minimum common standards; maintaining trained, functioning, multi-sectoral rapid response teams and "real-time" biosurveillance laboratory networks and information systems; as well as trained EOC staff capable of activating a coordinated emergency response within 120 minutes of the identification of a public health emergency.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

The National Disaster Management Centre (NDMC) is the lead agency for disaster management in Brunei Darussalam. It operates under the provisions of the Disaster Management Order 2006, the country's overarching disaster management authority source document, and the administration of the Ministry of Home Affairs. The NDMC acts as the secretariat and implementing body for the strategic committee of the National Disaster Council, and manages the National Standard Operating Procedure (NaSOP), which functions as the central concept of operations document, and outlines the roles and responsibilities of all agencies involved in disaster response management under a whole-of-government approach.

Ad hoc task forces or committees may be established to coordinate responses. For example, in 2016 the Multi-sectoral Task Force on Zika Virus Prevention and Control was established and led by the MOH to support the NDC, which convened during the Zika epidemic affecting Southeast Asia at the time.

The Ministry of Health EOC (MOHEOC) is the national strategic health EOC responsible for coordinating public health emergency responses. The MOHEOC uses the Incident Command System as its emergency response coordination mechanism. The Permanent Secretary of the MOH is designated Emergency Commandant upon activation of the MOHEOC. Decision making within this emergency response mechanism is advised by the Director General of Medical and Health Services, who is the Operations Incident Commander. Incident action plans are prepared at all levels, using standardized forms to document response objectives.

Beneath the MOHEOC, DGMHS has a Departmental EOC that is activated during an emergency and which brings together various departments, units, and services to deliver all-inclusive response capacity. There are also smaller EOCs at the operational level and technical level. Each of these has its own Emergency Operations Plan (EOP) and Major Medical Emergencies (MME) Plan, and these are periodically reviewed and updated.

MOHEOC activation is immediate depending on the type and scope of emergency or the tier of alert from the NDMC. It has only been activated twice in the past five years (for Ekseis Perisai Kebangsaan 2015, a nationwide multi-agency exercise, and for Jubli Emas 2017, His Majesty the Sultan's 50th Coronation Celebration).

Brunei Darussalam has participated in various national and regional exercises. These have been led by local governmental and nongovernmental agencies and were organized in collaboration with partners such as the European Union and the United States of America. The infrastructure and logistic preparedness of the MOHEOC is in need of enhancement and is currently being developed to align with international standards.

Indicators and scores

R.2.1 Emergency Response Coordination – Score 3

Strengths and best practices

- The health sector has duty officers available 24/7 as emergency response operations points of contact.
- Brunei Darussalam has standardized the use of the Incident Command System across all sectors as its emergency response coordination mechanism; this enhances interoperability between all EOCs.

Areas that need strengthening and challenges

- There are no identified essential elements of information established for health sector emergency response coordination.
- Emergency response coordination between the MOHEOC and NDMC is not exercised on a regular basis.

R.2.2 Emergency Operations Centre Capacities, Procedures and Plans – Score 3

Strengths and best practices

- There are EOCs identified at multiple levels of the health sector to support the country's structure of standardized response tiers.
- All health sector EOCs have emergency operations plans through which to manage their emergency response functions.

Areas that need strengthening and challenges

- There is no dedicated staffing for the EOCs within the MOH. Although health sector EOCs have some personnel identified for potential service in the operations centres, and some of these personnel have received some relevant training, there is no credentialing of personnel who have received position-specific training to fill those positions. Positions are filled either on a rotational basis or by surge personnel.
- Unclear ownership and lack of documentation prevents most existing EOCs from validating their ability to activate within 120 minutes.
- Although many plans and procedures are reviewed and updated periodically, there is no mechanism to ensure that a standard method and schedule is used to evaluate, update, and maintain all such documents.
- Lack of a comprehensive reference collection of contingency plans and procedures within the health sector.

R.2.3 Emergency Exercise Management Programme – Score 3

Strengths and best practices

- The MOH has established an exercise programme within the health sector to test the capacities of all hospital and service-level EOCs. In the last year, the Departmental EOC, the Health EOC, the PHEOC and all hospital EOCs have been tested.
- The NDMC manages an ongoing programme of periodic exercises addressing various emergencies, usually held at district level.

- Brunei Darussalam participates in regional exercises through the AHA Centre and ASEAN Regional Capacity on Disaster Health Management (ARCH) Project.

Areas that need strengthening and challenges

- The MOHEOC is not included in exercises.
- There is no system for training new health sector staff prior to exercises, in order to prepare them for the positions they might fill in an EOC.
- Sharing of information from After Action Reviews is limited; often, the opportunity to share lessons is missed.

Recommendations for priority actions

- Identify essential elements of technical, contextual, and response management information relevant to public health emergencies, and develop a coordinated mechanism for disseminating this information for analysis and action.
- Establish an all-hazards, multisectoral, multi-tier exercise programme for public health emergencies that builds on core competencies training for emergency management, and which integrates existing exercise activities to review and test all relevant plans and procedures. This should include:
 - IHR areas of special emphasis, such as Points of Entry, Chemical and Radiation Emergencies and zoonotic diseases
 - Information-sharing across all tiers of government response, across sectors, and with international partners
 - Case management.
- Establish a continuous improvement programme based upon exercises, After Action Reviews, and other evaluation activities. This should include senior level accountability for enhancement and maintenance of response capacities, and sharing of identified lessons.

LINKING PUBLIC HEALTH AND SECURITY AUTHORITIES

INTRODUCTION

Public health emergencies pose special challenges for law enforcement, whether the threat is man-made or naturally-occurring. In a public health emergency, law enforcement will need to quickly coordinate its response with public health and medical officials.

Target

Country conducts a rapid, multi-sectoral response in case of a biological event of suspected or confirmed deliberate origin, including the capacity to link public health and law enforcement, and to provide and /or request timely international assistance, such as to investigate alleged use events.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Under Brunei Darussalam's whole-of-nation approach to emergency preparedness and response, there is close collaboration and coordination between MOH, MPRT and security authorities (the Royal Brunei Police Force (RBPF), the Royal Brunei Armed Forces (RBAF), and the National Security Department). This collaboration is coordinated via NDMC and applies to preparedness measures and response operations.

The NDMC mechanism enables the exchange of vital information—for example, in the form of reports distributed to relevant agencies, or information exchange during NDC meetings (regular and ad hoc gatherings conducted by these agencies).

While no specific memorandum of understanding (MOU) exists to link public health and security enforcement, the NaSOP, as the country's agreed-upon, overarching SOP, guides coordination during a health emergency. Addressing health security issues, the MOH also produces a quarterly intelligence report for the National Security Council that assesses the potential risks of disease outbreaks and other health issues.

When dealing with CBRN incidents, the RBPF are the initial responders, and hazardous material (HAZMAT) personnel from the Brunei Fire Rescue Department are called in to identify the causative agent, especially if it is thought to be toxic industrial chemicals. For incidents involving CBRN materials of suspected or deliberate origin or materials of a possible explosive nature, the CBRE (chemical/biological/radiological/explosives) Unit of the Brunei Royal Land Force is deployed to take the lead.

Other enforcement agencies, such as the Department of Immigration and National Registration and the Department Royal Customs and Excise, are involved at points of entry, and further enforcement agencies have supporting roles as outlined in NaSOP and their own respective SOPs. MOH, including its Emergency Medical Ambulance Services (EMAS), is involved in acute management of medical cases. Public Health Emergency (PHE) Response Team is deployed for risk assessment, surveillance and response in cases of public health emergencies (as outlined in the PHEOP).

Information relevant to the MOH on issues such as counterfeit or controlled medications is relayed through INTERPOL Brunei Darussalam, a unit that comes under the International Affairs, INTERPOL and ASEANAPOL Unit of the RBPF and which is the liaison between Interpol, the RBPF and other relevant agencies.

RBAF also plays a supporting role in counter terrorism and prevention measures. This includes bilateral intelligence and information exchange meetings with foreign counterparts.

Several tabletop exercises have been conducted to test the coordination and response operations of relevant stakeholders. These have included the Ekksesais Perisai Kebangsaan 2015, in preparation for Jubli Emas 2017, and a Safety Emergency Drill in 2018 that involved security authorities and health personnel at the Brunei International Airport. An additional exercise was held in 2019 to test the coordination of the MOH with various security agencies at the airport during a suspected case of communicable disease of public health concern onboard an aircraft. Other scenarios tested have included mass casualty events from an improvised explosive device (IED), and an improvised plane crash.

Indicators and scores

R.3.1 Public health and security authorities (e.g. law enforcement, border control, customs) linked during a suspect or confirmed biological, chemical or radiological event – Score 3

Strengths and best practices

- The MOH is linked with security agencies through the whole-of-government approach guided by the NaSOP.
- Public health and security sectors regularly exchange risk assessment reports. The MOH, as the lead organization on risk assessment for health-related issues, submits a quarterly intelligence report that is discussed at the National Security Committee

Areas that need strengthening and challenges

- There is a need for regular tabletop and simulation exercises to test risk assessment and information sharing between security authorities and public health. These should be related to all types of hazards, including bioterrorism.
- Joint risk assessments and joint training programmes on information exchange would help ensure close cooperation and enhanced coordination between public health and security authorities.
- A mechanism is required for more speedy information exchange on hazards of concern between public health and security authorities, to enable more effective and efficient responses.

Recommendations for priority actions

- Establish and enhance mechanisms for systematic, timely sharing of information on hazards and threats of concern across relevant sectors, especially public health and security authorities.
- Provide continuous training on personal protection and safety of first-line security personnel during a public health event.
- Enhance existing capacity for joint threat assessments and responses to public health events by public health and security authorities, through development of SOPs, trainings and simulation exercises that include deliberate release of biological, chemical and radiation hazards.

MEDICAL COUNTERMEASURES AND PERSONNEL DEPLOYMENT

INTRODUCTION

Medical countermeasures (MCM) are vital to national security and protect nations from potentially catastrophic infectious disease threats. Investments in medical countermeasures create opportunities to improve overall public health. In addition, it is important to have trained personnel who can be deployed in case of a public health emergency. Regional (international) collaboration will assist countries in overcoming the legal, logistical and regulatory challenges to the deployment of public health and medical personnel from one country to another. Case management procedures should be available to all staff, and implemented across the system during health emergencies due to IHR related hazards.

Target

National framework for transferring (sending and receiving) medical countermeasures, and public health and medical personnel from international partners during public health emergencies and procedures for case management of events due to IHR-related hazards.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam has sufficient resources to respond to public health and animal health emergencies. The government is the main provider of assistance and support for its own people when affected by a disaster, and the cost of disaster response is borne primarily by the main responsible ministry (depending upon the nature of the disaster), and supplemented by NDMC according to the Disaster Management Order 2006 whenever there is a shortage of funds.

Although Brunei Darussalam does not manufacture medical countermeasures, MOH has established mechanisms in place for the urgent procurement of vaccine stockpiles and other medical countermeasures. In addition, the Brunei Darussalam Medicines Control Authority can provide urgent regulatory clearance or exemptions for importing unlicensed products. There is, however, as yet, no national assessment for countermeasures for the whole population that are considered difficult to procure during crises or civil emergencies. The related stockpile for the MOH is limited to personal protective equipment and selected medication, and the overall requirements for emergencies need to be better managed, reviewed and updated.

During a national emergency, a declared Tier III emergency under the Brunei Darussalam National Operational Disaster Management Guideline, the NDC is activated and the NDMC can request assistance through the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre), following precise communication and coordination protocols defined in the Standard Operating Procedure for Regional Standby Arrangements and Coordination of Joint Disaster Relief and Emergency Response Operations (SASOP).

With SASOP, the ASEAN Agreement on Disaster Management and Emergency Response (AADMER – “One ASEAN, One Response”) sanctions the AHA Centre, using the ASEAN Joint Disaster Response Plan (AJDRP), to mobilize standby assets and personnel. This might include sending relief items through the Disaster Emergency Logistic System for ASEAN (DELSA) and deploying the ASEAN Emergency Response and Assessment Team (ASEAN-ERAT).

Any NDMC request for assistance during a Tier III declaration will result categorically in the provision, via the AJDRP, of nine modules of assets and capacities, thereby assuring the prerequisite medical countermeasures and health personnel.

Regional assistance in the form of health personnel is alerted, requested and coordinated by NDMC. However, confirmed deployment of MOH personnel depends on advice from the Director General of Medical and Health Services and the approval of the Minister of Health. Brunei Darussalam demonstrated their personnel deployment capacity in dispatching health personnel during the Indian Ocean Tsunami, when personnel were deployed to Aceh, Indonesia in 2005 in combination with personnel from the RBAF. The RBAF also deployed humanitarian assistance and disaster relief to Tacloban, Philippines, after Typhoon Haiyan in 2013, and to the Nepal earthquake in 2015. The most recent deployment of multi-agency personnel, was for an ASEAN Regional Disaster Emergency Response Simulation Exercise (ARDEX) held in 2018 in Cilegon, Indonesia.

Brunei Darussalam can expedite customs, immigration and quarantine procedures to facilitate verification and movements of assets and capabilities highlighted in the SASOP, as per the directives of the Minister of Home Affairs or the NDMC Director. MOH is able to receive foreign medical expertise as necessary (this was tested and demonstrated during ARDEX 2016).

There are SOPs for the management and transport of highly infectious patients in the MOH National Influenza Pandemic Action Plan, the Ebola Preparedness Plan, and the National Isolation Centre Guidelines, and these are implemented and exercised. The MOH provides further guidance on case management to healthcare practitioners and other healthcare institutions whenever there is a new major public health threat. These are updated with new information as it arises, based on the nature of the threat and ongoing risk assessments.

Indicators and scores

R.4.1 System in place for activating and coordinating medical countermeasures during a public health emergency – Score 3

Strengths and best practices

- There is an established coordinating mechanism, via NDMC, for liaison with the AHA Centre to provide medical and relief countermeasures.
- The MOH has procedures for urgent procurement of vaccines and other medical supplies.
- The RBAF has the capacity to provide humanitarian assistance and disaster relief.

Areas that need strengthening and challenges

- The coordination mechanism and agreed scope of response set out between NDMC and the AHA Centre requires dissemination to all relevant agencies.
- There is a very limited stockpile of medical countermeasures for distribution even within the country. Brunei Darussalam should consider developing and/or enhancing a system for effective stockpiling.
- No formal agreement is in place for receiving veterinary countermeasures or personnel in animal health emergencies.

R.4.2 System in place for activating and coordinating health personnel during a public health emergency – Score 3

Strengths and best practices

- The NDMC can coordinate with the AHA Centre to provide health personnel and other expertise.
- The country is part of ASEAN-ERAT in “One ASEAN, One Response”.
- The MOH can facilitate temporary registration of incoming medical, nursing and other health personnel.

Areas that need strengthening and challenges

- As Brunei Darussalam has a small population, there is a very limited number of health personnel available for external deployment.

R.4.3 Case management procedures implemented for IHR relevant hazards – Score 3

Strengths and best practices

- Case management guidance is available and is updated whenever there is a new or emerging public health threat.
- SOPs are available for transport of potentially infectious patients from points of entry to the designated hospitals.

Areas that need strengthening and challenges

- Case management guidance could be updated and disseminated more regularly, particularly to private medical practitioners and healthcare institutions.
- There is a need for regular training and refresher training to maintain competency in infection control, case management, and HAZMAT procedures.
- There is a need for SOPs for transport of potentially infectious patients, and for HAZMAT-related issues.
- There is a need for more exercises to test case management guidelines.
- Guidelines and trainings are needed on the management of potentially infectious patients by ambulance services.

Recommendations for priority actions

- Strengthen capacity for rapid procurement and inventory management for priority threats, other IHR-related hazards, and veterinary countermeasures—such as through advanced purchase agreements and stockpiling.
- Update and test guidelines for case management to include the management of additional IHR-related hazards and concerns such as radiation and chemical exposure, trauma and potentially infectious patients.

RISK COMMUNICATION

INTRODUCTION

Risk communications should be a multilevel and multifaceted process which aims to help stakeholders define risks, identify hazards, assess vulnerabilities and promote community resilience, thereby promoting the capacity to cope with an unfolding public health emergency. An essential part of risk communication is the dissemination of information to the public about health risks and events, such as disease outbreaks. For any communication about risk caused by a specific event to be effective, the social, religious, cultural, political and economic aspects associated with the event should be taken into account, including the voice of the affected population.

Communications of this kind promote appropriate prevention and control action through community-based interventions at individual, family and community levels. Disseminating the information through appropriate channels is essential. Communication partners and stakeholders in the country need to be identified, and functional coordination and communication mechanisms established. In addition, the timely release of information and transparency in decision-making are essential to build trust between authorities, populations and partners. Emergency communications plans should be tested and updated as needed.

Target

State Parties use multi-level and multi-faceted risk communication capacity. Real-time exchange of information, advice and opinions between experts and officials or people who face a threat or hazard (health, economic or social wellbeing) to their survival, so that informed decisions can be made to mitigate the effects of the threat or hazard, and protective and preventive action can be taken. This includes a mix of communication and engagement strategies, such as media and social media communications, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement and community engagement.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam has a fully operational, whole-of-nation system for risk communication. MOH has a dedicated Corporate Communications Unit, managed by a team of trained communications officers, that maintains a strong partnership with all government agencies. During peacetime, MOH is responsible for developing health messages and media statements. In times of national emergencies or disasters, in accordance with NaSOP, the Information Department of the Prime Minister's Office takes the lead for risk communication and coordinates with other relevant agencies and stakeholders.

Communication plans are tested in exercises, implemented in real-life events, and updated accordingly. There is an existing mechanism to cascade information among communication officers of relevant government agencies using mobile-based communication networks.

Public communication is done using multiple channels and platforms, taking into consideration audiences' preferred sources of information. This includes the use of press releases to mainstream media, radio, MOH website, and social media channels such as Facebook and Instagram. A system is in place for the development and clearance of communication products and identifying spokespersons depending on the nature of the emergency. There is an arrangement for national media organizations to broadcast public health announcements rapidly in times of emergencies.

The communications teams have access to audience surveys done by the media to assess public reactions to key messages. There is also a well-established relationship with local communities that is used for quick dissemination of information. Communication materials are available in English or Malay.

Risk perception assessment is routinely done as part of the communications response, and results are used to guide the development of communication materials and address the information needs of at-risk communities.

In addition to an online portal, the public can also report, and get clarification on fake news and other misinformation via a hotline (Talian Darussalam 123) which is a single national call centre for government services and enquiries. Misinformation is swiftly identified and addressed, usually within hours. Community risk perceptions, risky behaviours and misinformation are regularly evaluated and analysed to guide subsequent communication responses.

Indicators and scores

R.5.1 Risk communication systems for unusual/unexpected events and emergencies - Score: 4

Strengths and best practices

- The Corporate Communications Unit in the Ministry of Health Brunei Darussalam has an integrated system for risk communication with other government agencies.
- Trained communication teams (public information officers, liaison officers and public relations officers) manage communication during non-emergency times and peacetime, give warnings prior to disasters, disseminate information during disasters, and provide advice during recovery periods.
- Public relations officers within the Corporate Communications Unit at the MOH and/or other operations centre staff can be used as surge staff for risk communication during emergencies.
- Communications plans are applied in real life events and updated accordingly.

Areas that need strengthening and challenges

- There is a need for sustainable resources to fund communications personnel, materials and activities for emergency preparedness and response.
- Brunei Darussalam would benefit from routine After Action Reviews and evaluations of risk communication strategies, performed jointly with the relevant sectors. Lessons identified should be used for future communications planning and assessing the impact of communications on behaviour change.

R.5.2 Internal and partner coordination for emergency risk communication - Score: 4

Strengths and best practices

- Brunei Darussalam has a whole-of-nation risk communications structure to respond promptly to health emergencies.
- MOH, via its Corporate Communications Unit, has strong links with communications teams in other government agencies.
- Clearly defined communication roles and responsibilities are outlined in the NaSOP.

Areas that need strengthening and challenges

- A system is needed for regular development of communication response plans, working together with internal partners and stakeholders in risk communications.
- Shared resources, including budgetary and human resources for communications responses, need to be established.
- There is a need for regular communications training, including the strategic use of new and emerging media technologies, to ensure high competency among all communication teams.

R.5.3 Public communication for emergencies - Score: 4**Strengths and best practices**

- A trained communications team manages all aspects of public communication and engagement.
- A diverse communications platform is used to reach a broad audience to address public concerns and rumours.
- MOH has well-established relationships with local communities that can be used for swift dissemination of information.
- MOH has positive media relationships and connections that can be used to broadcast timely and accurate information during emergencies.
- Communication is done in local languages, following a whole-of-nation approach, using media guided by preferences expressed in audience surveys.

Areas that need strengthening and challenges

- More dynamic monitoring of media and social media is needed to address misinformation.
- Communications strategies need to be more proactive, rather than reactive, in targeting communications messages to specific audiences.

R.5.4 Communication engagement with affected communities - Score: 3**Strengths and best practices**

- Social mobilization and community engagement are included in the NaSOP.
- Training and information-sharing is done regularly by community engagement experts, volunteers from schools and community leaders.
- Messages are developed according to the needs of at-risk communities.

Areas that need strengthening and challenges

- Communication with stakeholders during emergencies is government-driven and would benefit from further community engagement and the involvement of a wider range of stakeholders.
- There is a need for ongoing and functional feedback loops between at-risk or affected communities and the appropriate response agencies.
- There is a need to strengthen baseline social data, intelligence and analysis around factors that may affect population risk from hazards.

R.5.5 Addressing perceptions, risky behaviours and misinformation - Score: 4

Strengths and best practices

- There is a national online portal and hotline (Talian Darussalam 123) where the public can report, get clarification on fake news and other misinformation.
- A whole-of-nation approach to risk communication allows agencies to correct misinformation on a variety of platforms.
- Communication responses—including the ability effectively to address perceptions, risky behaviour and misinformation—are evaluated regularly.

Areas that need strengthening and challenges

- More regular information sharing is required among all stakeholders regarding people's perceptions, unfounded beliefs, risky behaviours and misinformation. Strategies to address them are needed.
- Standard operating procedures are required for responding to people's perceptions, unfounded beliefs, risky behaviour and misinformation.

Recommendations for priority actions

- Enhance the risk communication system for emergency preparedness and response through regular staff development across multiple agencies, and provision of sustainable resources for activities and materials.
- Conduct regular joint After Action Reviews and evaluations of risk communication strategies in partnership with relevant sectors, and document lessons to share with other sectors and for use in communications planning and assessing impact on behaviour change.
- Develop guidance on the use of various communication channels in monitoring, documenting and responding to misinformation, fake news, and people's risk perceptions, including on the strategic use of new and emerging communication technologies.

IHR-RELATED HAZARDS AND POINTS OF ENTRY

POINTS OF ENTRY

INTRODUCTION

All core capacities and potential hazards apply to “points of entry” (PoE), and thus enable the effective application of health measures to prevent international spread of diseases. States Parties are required to maintain core capacities at designated international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings), which will implement specific public health measures required to manage a variety of public health risks.

Target

States Parties designate and maintain core capacities at international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings) that implement specific public health measures required to manage a variety of public health risks.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Brunei Darussalam has robust procedures for managing health security issues at points of entry (PoE). The country shares land borders with Malaysia and has nine legal entry and exit points. For air transport, there is the Brunei International Airport; for sea transport, there is Muara Port, Serasa Ferry Terminal, Putat Control Post and Kuala Belait Wharf; and by land, there is Sungai Tujoh Control Post in Belait District, Kuala Lurah Control Post in Brunei-Muara District, Labu Control Post in Temburong District, and Ujong Jalan Control Post in the Temburong District.

Of these, two are designated points of entry (PoE) under the IHR (2005): the Brunei International Airport, regulated by Department of Civil Aviation (DCA); and the Muara Port, regulated by Maritime and Port Authority Brunei Darussalam (MPABD). MOH is the competent authority responsible for implementing public health measures under the IHR (2005), through close collaboration with all relevant agencies active at points of entry.

At Brunei International Airport, MOH nurses are stationed at the airport clinic for the initial assessment of sick passengers. Further diagnostic and treatment services are provided at RIPAS Hospital, the main tertiary referral hospital, which is located less than 15 minutes from the airport. The Port Health Unit of the Environmental Health Division, MOH carries out surveillance activity to prevent entry of infectious disease into Brunei Darussalam. Water and food sampling, food premises inspection and vector surveillance and management programmes are also conducted regularly. Multi-sectoral agencies are convened via a regular airport facilitation meeting that takes place several times a year. All restricted

and controlled goods imported into Brunei Darussalam are subject to customs inspections prior to clearance. Several scenario exercises are held at airports each year, involving all stakeholders to ensure existing safety and security systems, and the capacity thereof, are continually improving.

At Muara Port, the Environmental Health Division, MOH carries out routine environmental inspections of the premises to ensure the area is free from any environmental health issues and vectors of public health concern. Muara Health Centre is located just five minutes away from the main entry point of Muara Port and is available for initial assessment of patients. A committee consisting of multi-sectoral agencies directly involved with daily operations at Muara Port and Serasa Ferry Terminal holds regular meetings, which are hosted by the MPABD at Serasa Ferry Terminal. Port health personnel are trained and have the authority to release Ship Sanitation Control Exemption Certificates (SSCEC) that verify a ship is free of animal vectors, potential disease reservoirs, or ill humans. All restricted and controlled goods imported into Brunei Darussalam are subject to customs inspection prior to clearance.

Existing SOPs incorporate clear processes and agency involvement for responding to potentially infectious passengers at designated PoE. A variety of tabletop exercises to test and demonstrate the effectiveness of public health response have been conducted at the Airport: activation, emergency response, isolation, and screening have all been tested.

Indicators and scores

PoE.1 Routine capacities established at points of entry – Score 4

Strengths and best practices

- Designated points of entry have access to medical services—including diagnostic and treatment facilities for prompt assessment, treatment and care of sick travellers—at nearby health facilities. Brunei International Airport has an on-site, nurse-led airport clinic equipped with essential medications and equipment.
- Vector surveillance and control programmes, environmental sanitation, food and water sampling and food premises inspection are conducted routinely at designated PoE facilities by the Department of Environmental Health Services.
- Port Health officers are trained to issue Ship Sanitation Control Exemption Certificates.

Areas that need strengthening and challenges

- Routine public health capacities require strengthening at other PoE.
- There is a need for more regular exercises at PoE, in order to evaluate and improve multi-sectoral coordination and response, taking an all hazards approach.

PoE.2 Effective public health response at points of entry – Score 4

Strengths and best practices

- Mechanisms are in place for rapid sharing of information between all important agencies at PoE, with emergency plans and SOPs developed to detect and respond to threats occurring at PoE.
- Tabletop and simulation exercises involving multiple agencies are conducted regularly at PoE.
- Public health infectious disease SOPs are developed and disseminated to all relevant PoE stakeholders.
- After Action Reviews (AARs) are developed and shared with relevant agencies following exercises.

Areas that need strengthening and challenges

- There is a need to enhance multi-sectoral coordination and mechanisms further during peacetime.
- Sharing of information at, between and with all PoE should be more regular.

Recommendations for priority actions

- Maintain a written all-hazard public health emergency contingency plan, including infectious disease and other health emergencies, for designated points of entry, supported with routine review and evaluation.
- Test unlikely and unexpected events and/or scenarios at designated points of entry, involving multi-sectoral staff at all levels.
- Enhance multi-sectoral communication, coordination and effectiveness during peacetime.

CHEMICAL EVENTS

INTRODUCTION

Timely detection and effective response of potential chemical risks and/or events requires collaboration with other sectors responsible for chemical safety, industries, transportation and safe disposal. This would entail that State Parties need to have surveillance and response capacity to manage chemical risk or events and effective communication and collaboration among the sectors responsible for chemical safety.

Target

States Parties with surveillance and response capacity for chemical risks or events. This requires effective communication and collaboration among the sectors responsible for chemical safety, industries, transportation and safe disposal, animal health and the environment.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

As the third largest oil producer in Southeast Asia, Brunei Darussalam has exposure to significant public health risk from potential chemical events in the petrochemical sector. Consequently, the country has put in place legislative and planning structures to enable the prevention, mitigation, and management of potential chemical events.

Chemical safety and security are managed by several government agencies, including the Prime Minister's Office, Ministry of Energy (Energy and Manpower) and Industry (MEMI), Ministry of Home Affairs, Ministry of Defence, MOH, MPRT, and Ministry of Development including the Department of Environment, Parks and Recreation. MOH has oversight of poisons, medicines, consumer and cosmetic products, processed and imported foods, and water safety. Established in 2018, the Safety, Health and Environment National Authority (SHENA) is a new statutory body set up under the Safety, Health and Environment National Authority Order 2018. Reporting directly to the Minister of MEMI, SHENA is responsible for surveillance of industrial chemical sources, incident reporting, and regulation of workplace safety cases. DOAA has oversight of registration of agrochemical imports, and Ministry of Development overlooks air, water, and soil sampling.

There is no integrated National Chemical Inventory, but various government agencies maintain their own lists of priority chemicals; for example, MOH maintains a list of priority chemicals under the Poisons Act Cap. 114, which is regularly reviewed.

Every major accident hazard facility is required to submit a safety case to SHENA that outlines the facility's safety management system, including onsite and offsite emergency response plans, an annually updated inventory of hazardous substances kept in the facility, a risk assessment and a risk communication strategy. SHENA requires these facilities to have onsite emergency response teams to provide initial onsite response, and to report all workplace incidents to the SHENA, which facilitates the immediate sharing of such information with other government agencies. SHENA also assesses emergency response capability during its facility inspections, and occasionally participates as an observer during exercises and After Action Reviews.

During a chemical event, the Fire and Rescue Department's HAZMAT team is responsible for assisting the facility emergency response team in the initial response. Standard Operating Procedures are in place to guide safe approaches, environmental sampling, and response management; the international Emergency Response Guide is used as a standard reference for site assessments. If an event is assessed to have the potential for, or is reported to have resulted in, serious impacts to health or the environment,

the level of response is escalated to NDMC for multi-sectoral coordination and response from the relevant health departments in MOH, Ministry of Defence, Royal Brunei Police Force and other agencies.

MOH's laboratory services, including the environmental health, pharmacy and toxicology laboratories, have the capacity to detect poisoning or chemical intoxication, as well as chemical contamination of humans and the environment; laboratory services beyond these capabilities are referred to identified overseas laboratories.

The MOH conducts trainings on hospital decontamination procedures.

International guidelines for managing poisoning cases are available at all times.

Several exercises have been conducted to assess the coordination and response mechanisms of relevant agencies in responding to large-scale chemical incidents in the country, with scenarios including an explosion at Brunei International Airport and a major oil spillage into Brunei Darussalam's waters that tested the National Oil Spill Contingency Plan (NOSCOP). Following these exercises, a multi-sectoral workshop or meeting conducts an After Action Review to identify strengths and improve identified areas of weakness.

Indicators and scores

CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies – Score 4

Strengths and best practices

- Brunei Darussalam has several laws, regulations, and guidelines for safe chemical management.
- Brunei Darussalam uses international guidelines from WHO, US CDC, and other regional guidelines for clinical management of intoxication and poisoning cases. The main tertiary hospital in Brunei Darussalam has some capacity to diagnose and treat chemical poisoning cases.
- A surveillance system is in place for reporting occupational health events associated with workplace chemical exposures.
- The NDMC has developed a mobile phone application to provide guidance to the public on responding to disaster events.

Areas that need strengthening and challenges

- The NOSCOP currently serves as a proxy base plan to be used for chemical event responses other than oil spills, until a more comprehensive chemical response plan is developed.
- Although NDMC can provide multi-sectoral response coordination functions, there is no predesignated multi-sectoral coordination mechanism specific to chemical events in the country that has clearly identified leadership, or clear roles and responsibilities for each relevant stakeholder in information sharing.
- Brunei Darussalam has no medical toxicologists, and there is a deficit of manpower with subject matter expertise in dealing with chemical emergencies in all relevant agencies.
- There is no poison centre in the country.

CE.2 Enabling environment in place for management of chemical events – Score 4

Strengths and best practices

- Various legislation and regulations are in place to ensure safe chemical management. These cover areas including hazardous site registrations, emergency plans, transport and disposal of hazardous waste, incident reporting, and investigation and public communications.
- A national oil spill contingency plan exists and is exercised on a regular basis, focusing on the highest chemical risk in the country.

- A multi-hazard PHEOP is available that considers relevant public health-specific functions in a crisis, such as definition of roles and responsibilities, risk assessment, communication strategies, use of protective equipment, and evacuations.
- A whole-of-nation approach to disaster management exists under the leadership of the NDMC, and has the overarching authority to mobilize, coordinate, and manage the chemical response efforts of multiple sectors in the absence of a national chemical response plan.
- Brunei Darussalam has conducted periodic exercises to enhance multi-sectoral coordination and communication and strengthen response management for chemical events.
- Individual agencies maintain lists of priority chemicals.

Areas that need strengthening and challenges

- Although individual agencies maintain their own lists of priority chemicals, there is no integrated multi-sectoral national chemical profile.
- Due to the absence of a national chemical profile, Brunei Darussalam's strategic national risk assessment has not fully accounted for all potential chemical threats to public health, nor has there been any review to determine whether any updating of case management guidelines is warranted.
- No comprehensive national multi-sectoral chemical emergency response plan exists.

Recommendations for priority actions

- Develop a national chemicals profile, and integrate existing relevant chemical inventory data into a national priority chemicals inventory with a regular update schedule.
- Develop an updated national inter-agency response plan for chemical events that builds on the responsibilities contained in the multi-hazard National Standard Operating Procedure (NaSOP), and which establishes a clear chain of command for managing chemical emergencies.

RADIATION EMERGENCIES

INTRODUCTION

To counter radiological and nuclear emergencies, timely detection and an effective response towards potential radiological and nuclear hazards/events/emergencies are required in collaboration with sectors responsible for radiation emergency management.

Target

States Parties should have surveillance and response capacity for radiological emergencies and nuclear accidents. This requires effective coordination among all sectors involved in radiation emergencies preparedness and response.

BRUNEI DARUSSALAM LEVEL OF CAPABILITIES

Although Brunei Darussalam has not yet experienced any radiation emergencies within the country, it has expanded its capacity to manage such emergencies through the recent establishment of the Safety, Health and Environment National Authority (SHENA). Radiation Department of SHENA regulates, controls and monitors all sources of radiation usage in Brunei Darussalam through the issuance of radiation permits and radiation licenses, and by serving as the focal point for radiation-related events. All facilities that handle radioactive materials are required to submit their radiation protection plan to SHENA.

SHENA is in the process of recruiting more officers and inspectors to enhance its manpower.

SHENA and the RBAF CBRe Defence Unit have some capacity to detect radiation in the environment.

Although Brunei Darussalam has adopted a whole-of-nation approach to disaster management through the establishment of NDMC and has identified roles for various agencies through the NaSOP, neither has been tested in the context of radiological or nuclear emergencies. Response training for the CBRe Defence Unit in managing radiological emergencies has been at tactical level only.

Brunei Darussalam has been an International Atomic Energy Agency (IAEA) member state since 18 February 2014, and through IAEA it has access to regional and international expert assistance. Under the leadership of the National Security Council under the Prime Minister's Office, Brunei Darussalam has also participated in several recent projects with the European Union's CBRN Centre of Excellence to improve response capacities and is in the process of developing a CBRN National Action Plan.

Indicators and scores

RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies – Score 2

Strengths and best practices

- Emergency responders have received some limited trained in dealing with hazardous materials and transport and decontamination procedures relevant to responses to radiation emergencies.
- Event-based surveillance is in place using established reporting mechanisms.
- There is some limited capacity to detect radiation in the environment.

Areas that need strengthening and challenges

- There is a lack of trained manpower for responding to large-scale radiation emergencies.
- There is no national response plan for radiation emergencies.
- There is a deficit of radiation detection equipment both at points of entry and for first responders.
- There is no designated health care facility to treat radiation exposures.
- There is limited laboratory capacity to monitor and assess human or environmental contamination and radiation exposure.

RE.2 Enabling environment in place for management of radiation emergencies – Score 2

Strengths and best practices

- The Radiation Protection Order 2018 exists to control and regulate all aspects of radiation safety and security in the country.
- A whole-of-nation approach to disaster management is led by the NDMC, which has authority to direct all relevant agencies to take action when needed in a radiation emergency.
- Brunei Darussalam has access to subject matter experts through the IAEA and the EU CBRN Centre of Excellence, if consultation is needed during emergencies.

Areas that need strengthening and challenges

- There has been no baseline public health assessment of radiation safety in Brunei Darussalam.
- No large-scale multi-sectoral exercises have been conducted to test national response capacities in radiation emergencies.
- Although regulatory staff at SHENA can provide technical consultations, adequate manpower and relevant radiation emergency competencies are lacking.
- There is a need for more and better training on radiation emergencies for first responders and health professionals.
- No multi-sectoral coordination mechanism currently exists for radiation preparedness and response management. It is unclear which organization has responsibility for the leadership of multi-sectoral response activities, and detailed task responsibilities for relevant stakeholders do not exist.

Recommendations for priority actions

- Develop a national inter-agency response plan for radiation emergencies that builds on the responsibilities contained in the NaSOP, and which establishes a clear chain of command for managing radiation emergencies.
- Identify sources of additional radiation-relevant subject matter expertise for surge staffing and establish mechanisms to access such staff during emergencies.
- Procure radiation detection and monitoring equipment to meet the needs already identified for points of entry and first responders.

ANNEX: JEE BACKGROUND

Mission place and dates

Bandar Seri Begawan, Brunei Darussalam, 28 October-1 November 2019

Mission team members:

- Peter Rzeszutarski, US Centers for Disease Control and Prevention (US CDC)—Team Lead
- Karen Nahapetyan, WHO Regional Office for the Western Pacific—Team co-lead
- Joy Rivaca Caminade, WHO Country Office for the Independent State of Papua New Guinea
- Adrian Coghill, Australian Government Department of Agriculture and Water Resource
- Li Dexin, Chinese Center for Disease Control and Prevention (China CDC)
- Anthony Eshofonie, WHO Regional Office for the Western Pacific
- Maleeka Glover, US Centers for Disease Control and Prevention (US CDC)
- Mary Gordoncillo, Food and Agriculture Organization of the United Nations (FAO)
- Zhou Lei, Chinese Center for Disease Control and Prevention (China CDC)
- Mark Nunn, independent editor and writer

Observers

- Paison Dakulala, National Department of Health, Papua New Guinea
- Panuel Esorom Daoni, National Department of Health, Papua New Guinea

Objective

To assess Brunei Darussalam's capacities and capabilities relevant to the 19 technical areas of the JEE tool, and thereby to provide baseline data to support Brunei Darussalam's efforts to reform and improve its public health security.

The JEE process

The JEE process is a peer-to-peer review. The entire external evaluation, including discussions around the priority actions, the strengths, the areas that need strengthening, best practices, challenges and the scores are collaborative, with JEE team members and host country experts seeking full agreement on all aspects of the final report findings and recommendations.

Should there be significant and irreconcilable disagreement between the external team members and the host country experts, or among the external experts, or among the host country experts, the JEE team lead will decide the outcome; this will be noted in the final report along with the justification for each party's position.

Limitations and assumptions

- The evaluation was limited to one week, which limited the amount and depth of information that could be managed.
- It is assumed that the results of this evaluation will be publicly available.
- The evaluation is not just an audit. Information provided by Brunei Darussalam will not be independently verified but will be discussed and the evaluation rating mutually agreed to by the host country and the evaluation team. This is a peer-to-peer review.

Key host country participants and institutions

Ministry of Health

- | | |
|---|---|
| • Mr Abdul Manap Othman | Permanent Secretary |
| • Dr Zulaidi Abd Latif | Deputy Permanent Secretary |
| • Dr Pengiran Khalifah Pengiran Ismail | Director-General of Medical and Health Services |
| • Dr Anie Haryani Abdul Rahman | Director, Department of Environmental Health Service |
| • Dr Lailawati Jumat | Director of Hospital Services |
| • Dr Rafidah Gharif | Director, Department of Health Service |
| • Ms Zahrah Hashim | Director, Department of Planning and Policy |
| • Ms Rahimah Hanafi | Director, Department of Scientific Services |
| • Ms Sufinah Serudin | Acting Director, Department of Administration & Finance |
| • Dr Surita Md Taib | Acting Director, Department of Laboratory Services |
| • Mr Wee Shyne Liang | Acting Director, Department of Pharmaceutical Services |
| • Mr Abdul Mu'iz Ibrahim | Department of Medical Services |
| • Dr Rosmonaliza Asli | Department of Medical Services |
| • Dr Natalie Momin | Department of Medical Services |
| • Dr Norazlina Suryani Rahman | Department of Medical Services |
| • Dr Justin Wong | Department of Environmental Health Service |
| • Dr Noraskhin Fadillah | Department of Environmental Health Service |
| • Dr Fathi Alikhan | Department of Environmental Health Service |
| • Dr Yusma Jeffrin Yusof | Department of Environmental Health Service |
| • Dr Pengiran Sirajul Adli Pengiran Jamaludin | Department of Environmental Health Service |
| • Dr Maimunah Mokim | Department of Health Service |
| • Dr Linda Lai | Department of Health Service |
| • Dr Elham Mohd Ismail | Department of Health Service |
| • Ms Naedawati Morsidi | Department of Planning and Policy |
| • Ms Dayangku Suzilawaty Pengiran Ismail | Department of Planning and Policy |
| • Ms Nor Roszafinah Zaman | Department of Administration & Finance |
| • Mr Muhd Firdaus Badar | Department of Administration & Finance |
| • Dr Zainun Zaini | Department of Laboratory Services |

- Dr Nor Azian Hafneh Department of Laboratory Services
- Dr Haziq Momin Department of Laboratory Services
- Dr Kyaw Thu Department of Environmental Health Service
- Dr Nourul Hayati Azrina Haji Jaman Department of Environmental Health Service
- Ms Julita Abd Fata Department of Medical Services
- Dr Nurul Huda Jeludin Department of Environmental Health Service
- Dr Md Hussein Abdullah Department of Environmental Health Service
- Dr Martina Kifrawi Department of Environmental Health Service
- Dr Lena Matsalleh Department of Environmental Health Service
- Ms Nadiatul Hanna HJ Zulkifli Department of Scientific Services
- Ms Rosmah Mohamad Shah Department of Pharmaceutical Services
- Mr Mohd Khairul Aminuddin Abu Bakar Department of Environmental Health Service
- Ms Siti Khadizah Abd Latiff Department of Environmental Health Service
- Mr Muhammad Ali Hamzah Kasmat Department of Environmental Health Service
- Ms Pengiran Nur Halimatussaadiah
Pengiran Alias Department of Environmental Health Service
- Dr Pengiran Ali Pengiran Anak Rosledzana Department of Environmental Health Service
- Dr Alia Shazli Department of Environmental Health Service
- Mr Faisal Ahmad Department of Environmental Health Service
- Dr Pengiran Md Khairol Asmiee Sabtu Secretariat, Brunei Darussalam AMR Committee

Prime Minister's Office

- Mr Pengiran Muhamad Sazali Pengiran Yakob Permanent Secretary
- Lt. Col. Mohd Zulkarnain Abdul Wahab National Security Committee
- Mr Ampuan Shazwi Ampuan Sadikin National Security Committee
- Mr Ali Rahim Abdul Rahman Department of Information
- Mr Md Syazwan Nordin Radio Television Brunei Darussalam

Ministry of Home Affairs

- Mr Mohd Amir Hairil Mahmud Permanent Secretary
- Mr Ajman Meludin Deputy Permanent Secretary
- Mr Lim Hock Guan Fire & Rescue Department
- Mr Shahrin Jawie National Disaster Management Centre
- SSFR Noor Aflan Awang Kachi Fire & Rescue Department
- Mr Abdul Hadi Zulfadli Fire & Rescue Department
- Mr Hanafi Hamid Fire & Rescue Department
- Mr Mohamad Adib Metali National Disaster Management Centre

Ministry of Primary Resources and Tourism

- Mr Pengiran Kamalrudzaman Pengiran Ishak Permanent Secretary
- Mr Abdul Halidi Mohd Salleh Deputy Permanent Secretary
- Dr Diana Denis Department of Agriculture and Agrifood
- Ms Hamsiah Mohd Saat Department of Agriculture and Agrifood
- Mr Noor Azri Mohd Noor Department of Agriculture and Agrifood
- Ms Siti Hairani Department of Agriculture and Agrifood
- Sahjarathudor Nurul Mahaani Mohd Aiani Department of Agriculture and Agrifood

Ministry of Defence

- Lt. Col. Dr Azlan Suhaili Royal Brunei Armed Forces
- Lt. Col. (U) Schufin Brahim Royal Brunei Armed Forces
- Ms Ruhawdah Rusli Directorate of Defence Policy

Ministry of Development

- Mr Md Ramzan Rahman Department of Environment, Parks & Recreation
- Ms Nur Naila Athifa Lim Abdullah Department of Environment, Parks & Recreation

Ministry of Energy, Manpower and Industry

- Mr Rosli Mat Serudin Downstream Department
- Mr Jaime Rebelo Safety, Health & Environment National Authority (SHENA)
- Ms Dayangku Nurul Nazirah Pengiran Rahman Safety, Health & Environment National Authority (SHENA)
- Mr Mohd Firdaus Md Shah Safety, Health & Environment National Authority (SHENA)
- Ms Nabilah Murad Safety, Health & Environment National Authority (SHENA)

Ministry of Transport and Infocommunications

- Mr Muhammad Emmy Shamdy Khairul Kadir Department of Civil Aviation
- Mr Fazilah Yassin Muara Port Company Pte Ltd

Ministry of Finance and Economy

- Mr Mohammad Muinuddin Chin Royal Customs & Excise Department

Supporting documentation provided by host country

National legislation, policy and financing

- Financial Regulations 1959
- Quarantine and Prevention of Disease (Animals) Regulations, Cap. 47, 1984
- Terms of Reference for National IHR Committee
- Governance and Implementation Mechanism of the National IHR Committee
- Veterinary Surgeons Order 2005
- Wholesome Meat Order 2011
- Disaster Management Order 2006
- Emergency (Public Health) (Food) Order 1998
- Fisheries Act Chapter 61
- Fisheries (Fish Culture Farms) Regulations 2002 (no. 9)
- Immigration Act Chapter 17
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- Infectious Disease (Quarantine) Regulation (Rg 1, Cap 204)
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- MOH Influenza Pandemic Plan 2006
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- Report for WHO IHR Consultative Workshop 2012
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- National Action Plan for Health Security 2019
- Public Health Emergency Operation Plan
- Radiation Protection Order 2019
- Safety, Health and Environment National Authority Order 2018

IHR coordination, communication and advocacy

- Standard Operating Procedures for the IHR (2005) National Focal Point for Brunei Darussalam
- PVS Gap Analysis 2013 Report
- Reports to WHO on IHR implementation
- IHR Annual monitoring questionnaire
- Field exercises to respond to CBR events.R3
- 5th Draft CBRN National Action Plan
- National Standard Operating Procedures
- Public Health Emergency Operation Plan
- Annual IHR Crystal Exercise Report
- List of appointed IHR Focal Points

- National Committee on IHR Implementation
- H1N1 Pandemic Influenza Preparedness Plan
- Zika Taskforce (Multi-sectoral Taskforce on Health) 2016
- Joint Multi-sectoral Taskforce on Rabies
- Ministry of Health Infection Prevention and Control Committee
- EVD outbreak in Democratic Republic of Congo memorandum to other relevant ministries
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- National Committee on International Health Regulations
- Joint Multi-sectoral Taskforce on Rabies
- National Action Plan on Rabies
- Standard Operation Protocol for Zoonosis
- Zoonotic framework
- Guideline for Rabies Management and Control
- Dog Bite Registry template
- Zoonotic tabletop exercise After Action Review report
- List of National Exercises documents (RESPOND working group)
- List of Action Plans documents (RESPOND working group)
- DEOC After Action Review report

Antimicrobial resistance

- BDAMRC Terms of Reference
- National Action Plan against AMR
- OIE List of antimicrobial agents of veterinary importance
- Poisons Act Cap. 114
- Veterinary Surgeons Order 2005
- Antimicrobial Consumption Data report to WHO (human health)
- Monitoring of antimicrobial usage in food-producing animals
- National Residue Monitoring Programme (Shrimp) 2019
- Reports for AMR in human health
- Animal Health Plan
- Compartmentalization of Cattle Farm FMD
- Manual of Brunei Darussalam on Good Aquaculture Practices For Shrimp Farms
- Manual Procedures for Avian Influenza
- National IPC Plan
- National Salmonella Control and Eradication Programme
- IPC guidelines for Panaga Health Centre and JPMC hospital
- Manual for Good Animal Husbandry Programme
- Brunei Darussalam Guidelines on Prudent Use of Antimicrobials in Livestock
- Common Infection Treatment Protocol for Primary Healthcare
- Good Prescribing Practice Guidance
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- Medicines (Labelling) Regulations 2010
- National Antibiotic Guidelines
- National Residue Monitoring Programme (Shrimp) 2019
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- Infectious Disease Act Cap.204
- Animal Bite Registry template
- Weekly indicator, syndromic and event-based surveillance
- Manual Procedures for Avian Influenza
- National Action Plan on Rabies
- Joint Taskforce on Rabies
- Minutes of meeting of Joint Taskforce on Rabies
- Zoonotic Disease Framework
- Rabies tabletop exercise slides
- Rabies tabletop After Action review
- National Salmonella Control and Eradication Programme
- PVS Gap Analysis 2013 report
- SOP for zoonosis
- Quarantine and Prevention of Disease Cap. 47
- Ruminant Health Program (Compartmentalisation for cattle farm Foot and Mouth Disease; Foot and Mouth Disease Preparedness and Response Plan)
- Animal Health Plan
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- National Action Plan for Rabies
- Terms of Reference for the Joint Taskforce for Rabies

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- National Residue Monitoring Program (NRMP) and reports to EU
- Case Definition of Food and Water-borne Diseases (FWBD)
- Standard Operating Procedures in Handling Food borne Diseases
- Annexes for Food Poisoning SOP
- Animal Health Plan
- Compartmentalization for Cattle Farm FMD
- Foot and Mouth Disease Preparedness and Response Plan
- Manual Procedures for Avian Influenza
- National Salmonella Control and Eradication Program
- Logo Pemeriksaan Veterinar (Monitoring of best practices slaughterhouse)
- National Food Safety Emergency Response Plan

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- Draft Biosafety and Biosecurity guidelines
- OIE Country PVS Gap Analysis report
- Workplace Safety and Health Order 2009

Immunization

- National EPI Programme
- NVC Report for Measles – 2015
- NVC Report for Rubella – 2018
- Post Verification Measles and Rubella Annual Report – 2019
- NCC Report for Polio - 2019
- WHO Annual Reporting Data on Vaccine Coverages
- SOP for transporting and storing vaccines with cold chain
- SOP for break in cold chain in case of power failure, vaccination centre (health screening)
- Drugs and vaccines procurement process
- HPV coverage data

National laboratory system

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- D1.1 DSS (QM) Department of Scientific Services-Quality Manual Version 4, 22/08/2019
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- D1.1 LI-MIC-NG Identification of Neisseria Gonorrhoeae In Progress
- D1.1 LI-TRL-MGIT Liquid Culture-Mycobacterial Growth Indicator Tube 03/07/2018
- D1.1 LI-TRL-LJ Solid Culture-Lowenstein Jensen Slant Agar 03/07/2018
- D1.1 LI-TRL-AFBSM Acid Fast Bacilli (AFB) Smear Microscopy 27/10/2018
- D1.1 LI-VIR-DFRAPID Laboratory Instruction for Dengue Duo Cassette (SDBIOLINE) 13/05/2019
- D1.1 LP-VIR-EQA Laboratory Procedure for RCPA External Quality Assurance Program 30/07/2019
- D1.1 LI-VIR-MSM Laboratory Instruction for Measles IgM ELISA (EUROIMMUN) 14/05/2019
- D1.1 LI-VIR-RESP21 Laboratory Instruction for Respiratory Pathogens 21 (FAST TRACK DIAGNOSTICS) 21/05/2019
- D1.1 LI-VIR-HIVCOM Laboratory Instruction for HIV Ag/Ab HT (LIAISON XL) 11/05/2019
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- D1.2 MP#8-SSA Procedure for Referred Specimen Laboratory 2/9/2019
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- D1.3 (VIDRL)27/3/2018D1.3DH (EVH)/337 /13/DEP Letter from Director of Environmental Health, Department of Health Services, Ministry of Health RE: Brunei Darussalam Achieved Measles Elimination 8/6/2015
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- D1.4 NA 2018 RCPAQAP enrolment certificate for Molecular Influenza (Participant No. 83001) 6/11/2018
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- Laboratory Certificate of Accreditation by WHO Western Pacific Region 18/11/2015
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- D1.1 VLS-VML-TM-01-ch.01 Isolation and Identification of Salmonella 1/6/2018
- D1.1 LS-MCL-TM-01-ch4 Detection of Salmonella spp 2/1/2018
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- D1.1 VLS-SOP-14 Veterinary Laboratory Services Standard Operating Procedure : Ensuring the validity of results 1/11/2018
- D1.2 NA SOP for Collection, Submission, Storage, Transport and Referral of Biological Materials 2019 Draft
- D1.2 VLS-MBL-LM-01 Molecular Biology Laboratory, Laboratory Manual Vol.1 Ver.1 1/8/2017
- D1.2 VLS-VML-LM-01 Veterinary Microbiology Laboratory, Laboratory Manual Vol.1 Ver.1 1/8/2017
- D1.2 VLS-MCL-LM-01 Microbiology Laboratory , Laboratory Manual Vol.1 Ver. 2 1/8/2017
- D1.2 NA Guidelines for Sample Collection and Submission Animal Diagnostic (ADG) 3rd Edition, 2019
- D1.2 NA Guidelines for Sample Collection and Submission Veterinary Public Health (VPH) 3rd Edition, 2019
- D1.2 NA Guidelines for Sample Collection and Submission Feed and Biotechnology (FB)
- D1.4 LS-SOP-21 Veterinary Laboratory Services Standard Operating Procedure: Improvements 1/11/2018
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Real-time surveillance

- Infectious Diseases Act Cap. 204
- Veterinary Surgeon Order 2005
- Emergency Manual Procedures for Avian Influenza (Emergency Preparedness)
- National Foot and Mouth Disease (FMD) Prevention and Preparedness
- Emergency response for Animal Disease
- SOP for infectious disease surveillance
- Carta aliran kerja bagi proses pengendalian aduan
- MOHEOC SOP
- PHEOC SOP
- DEOC SOP

- Influenza Pandemic Plan (1 April 2006)
- Case Definitions of Food and Waterborne Disease
- DEOC (23.10.2018)
- Flow Chart of Suspected Case of Communicable Disease (Airport)
- Flow Chart of Vaccine Preventable Diseases
- SOP for Suspected Measles Case
- SOP for Vector-Borne Diseases - update
- SOP for Zoonotic Diseases
- SOP in Handling Foodborne Disease
- SOP Kawalan Vektor Malaria
- SOPs for Food and Waterborne Diseases
- Standardised Sexually Transmitted Infections National Guideline
- TB Guideline 2013
- Bru-HIMS Newsletter August 2014
- Weekly epidemiological report
- MANUAL PROCEDURES FOR AVIAN INFLUENZA
- National Salmonella Control and Eradication Program

Reporting

- Standard Operating Procedures For The IHR (2005) National Focal Point For Brunei Darussalam
- Joint Preparedness and Response Framework to Zoonotic Diseases of Public Health Concern
- Folder of Memorandums of Understanding between Ministry of Health and various parties
- After Action Report zoonotic tabletop exercise
- Information sharing (Article 44, IHR) reporting

Health Workforce development (ANIMAL AND HUMAN HEALTH SECTORS)

- Skim Perkhidmatan Kedokteran Bidang Perubatan, Skim Perkhidmatan Kedokteran Bidang Penjagaan Asasi, Skim Perkhidmatan Kedokteran Bidang Kesihatan Awam & Skim Perkhidmatan Kedokteran Bidang Pergigian
- Skim Perkhidmatan Kejururawatan, Kementerian Kesihatan
- Public health personnel list 2019
- Surat Pemberitahuan Jabatan Perkhidmatan Awam Bil: 03/2019 – Skim Latihan Dalam Perkhidmatan Dalam Negeri Bagi Sesi Akademik 2019/2020
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- Surat Keliling Jabatan Perdana Menteri Bil: 27/1988 – Peraturan-Peraturan & Syarat-Syarat Yang Mengawal Mengenai Dengan Latihan Dalam Perkhidmatan Dalam Negeri
- Surat Keliling Jabatan Perdana Menteri Bil: 10/2006 – Syarat-Syarat & Peraturan-Peraturan Yang Mengawal Latihan Dalam Perkhidmatan Seberang Laut (LDPSL)
- Surat Keliling Jabatan Perdana Menteri Bil: 6/2017 - Syarat-Syarat & Peraturan-Peraturan Yang Mengawal Latihan Dalam Perkhidmatan Seberang Laut (LDPSL) Bagi Pegawai/Kakitangan Untuk Mengikuti: A) Program Latihan Jangka Panjang B) Program Yang Ditaja Oleh Pihak Penganjur Atau Badan Lainnya
- Garispandu Untuk Menilai Permohonan Menghadiri Latihan Jangka Masa Pendek & Mesyuarat di Dalam & Luar Negeri

- Continuing Professional Development Record for Nurses & Midwives
- Continuing Allied Health Education (CAHE)
- Public Health Grand Rounds topics
- Postgraduate Advisory & Training Board (PGATB) Terms of Reference
- Maklumat yang diperlukan bagi IHR D4 Human Resource (MPRT Human Resource)
- CAE MPTC Course List Public Safety Health Emergency Management Revised Training Plan Feb - June 2019
- Guidelines For The Health & Safety Of Healthcare Workers In Brunei Darussalam (MOH) (2nd Ed)
- National Joint Rabies Taskforce Terms of Reference
- Environmental Health Services Business Continuity Plan
- PH BST curriculum
- MMED curriculum
- BHSc curriculum
- FETP Frontline handbook

Emergency preparedness

- Disaster Management Order (DMO) 2006
- Infectious Diseases Act Cap. 204
- Fire Safety Order 2016
- Workplace Safety and Health (Risk Management) Regulations 2014
- National Standard Operating Procedure (NaSOP) 2012
- Disaster Management Strategic Framework (DMSPF)
- Strategic National Action Plan (SNAP) for Disaster Risk Reduction 2012-2025
- National CBRN Action Plan (5th Draft 2016)
- CFE-DMHA Brunei Darussalam Disaster Management Reference Handbook 2018
- ARMOR ASEAN Risk Monitor and Disaster Management Review 2019
- News article: 5th National Action Plan Workshop on Chemical, Biological, Radiological and Nuclear hazards.
- National Chemical, Biological, Radiological and Nuclear (CBRN) Action Plan (5th Draft 2016)
- Airport Emergency Plan 2016
- SOP Brunei Fire Rescue Department (BFRD) – Menghadiri Panggilan Yang Melibatkan Bahan Bahaya (Attending to Calls involving Hazardous Materials) (Operasi)
- National Oil Spill Contingency Plan (NOSCOP)
- Public Health Emergency Operation Plan (PHEOP)
- Public Health Emergency Operation Centre (PHEOC) Standard Operating Procedure
- NDC Draft Disaster Management Strategic Policy Framework (April 2019)
- SOP Emergency Response Following Disease Outbreak/Pest Infestation 18 April 2017
- Pelan Respons bagi Kejadian gegaran, Gempa Bumi dan Tsunami (response Plan for Tremors, Earthquakes and Tsunami) Negara Brunei Darussalam (Draft)
- RIPAS Hospital MME Plan
- PIHM Hospital MME Plan
- Major Medical Emergency Plan: Emergency Medical Ambulance Services

- Ministry of Health, Brunei Darussalam Influenza Pandemic Plan
- Brunei Darussalam National Pandemic Influenza Action Plan
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- Draft Departmental Emergency Operations Centre (DEOC) Emergency Preparedness Plan (EPP) - v13.5.2019
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- NDMC List of Assets Consolidated 2018
- BME Inventory Updated 2019
- Hospital Capacity 2019
- NIC PPE Stockpile
- NIC Medical Equipment Inventory
- State Medical Store Wabak (Pandemic) Inventory
- Hospital MME TTX 2015
- Eksesais Perisai Kebangsaan (EPK) 2015
- Referees Evaluation Report ARDEX 2016
- Ministry of Health Medical Coverage Operation Plan for His Majesty the Sultan's 50th Jubilee Celebration 2017.

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- Disaster Management Order (DMO) 2006
- National Standard Operating Procedure (NaSOP) 2012
- Flow Chart NDMC 2017 (Rangkaian Laporan Kejadian Pusat Pengurusan Bencana Kebangsaan)
- National List of Focal Person for Disaster
- National Disaster Council (NDC) Draft Disaster Management Strategic Policy Framework (April 2019)
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- MOHEOC Layout
- Draft Departmental Emergency Operations Centre (DEOC) Emergency Preparedness Plan (EPP) - v13.5.2019
- DEOC EPP Documentation (v18.5.2019)
- Emergency Operations Plans (EOPs)
- Department of Health Services Emergency Operations Plan (JPK EOP) Draft - v090519
- Public Health Emergency Operations Plan (PHEOP) 2019
- Major Medical Emergencies (MME) Plans
- Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital MME Plan update 9.3.2019
- Suri Seri Begawan Hospital (SSBH) MME NEW DRAFT - 2019-2
- Pengiran Muda Mahkota Pengiran Muda Haji Al-Muhtadee Billah Hospital

- (PMMPMHAMBH) MME PLAN v30 09 2015
- Pengiran Isteri Hajjah Mariam Hospital (PIHMH) MME Plan Aug 2019 updated
- Emergency Medical Ambulance Services (EMAS) MME Plan
- Ministry of Health Medical Coverage Operation Plan for His Majesty the Sultan's 50th Coronation

Celebration

- MPRT List of Legislation in Reference to Biosecurity Enforcement Activities
- 5th Draft National Action Plan CBRN Brunei Darussalam (updated 2018)

Linking public health and security authorities

- Infectious Diseases Act Cap. 204
- Disaster Management Order 2006
- National Standard Operating Procedure (NaSOP)
- National CBRN Action Plan (5th Draft 2016)
- Public Health Emergency Operations Plan (PHEOP)
- Structure of Command at Control Posts
- Airport Emergency Plan 2016
- National Oil Spill Contingency Plan (NOSCOPE)
- Pelan Respons bagi Kejadian Gegaran, Gempa Bumi dan Tsunami (Response Plan for Tremors, Earthquakes and Tsunami) Negara Brunei Darussalam (Draft)
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- QIE Reports
- Meeting Reports from Control Posts
- Meeting Reports for Coordinating Committee at Control Posts 2017 (Laporan Mesyuarat Penyeleraan Pos-Pos Kawalan 2017)
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- Referees Evaluation Report ARDEX 2016
- DCA Safety Emergency Drill 2018
- Brunei Darussalam APEC Counter Terrorism Action Plan 2018
- Flow Chart NDMC 2017
- Hospital MME TTX 2015
- EPK 2015
- Airport TTX 2019

Medical countermeasures and personnel deployment

Legislation and frameworks

- Disaster Management Order (DMO) 2006
- National Standard Operating Procedure (NaSOP) 2012 (Subject 10, page 20; Subject 15, page 28)
- PHEOC SOP 2019 (FINAL) and PHEOP 2019 FINAL
- 5th Draft National Action Plan CBRN Brunei Darussalam (updated 2018)
- Brunei Darussalam CBRN v4 presentation
- Standard Operating Procedure for Regional Standby Arrangements and Coordination of Joint Disaster Relief and Emergency Response Operations (SASOP) - 6th Reprint 2017
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- Catalogue and Brochure of Relief Items Disaster Emergency Logistic System (DELSA) 2016
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- IFRC ASEAN Disaster Law Mapping - Implementation AADMER 2017
- AHA Centre Annual Report 2018 - Breaking New Ground

PPE stockpile

- State Medical Store WABAK Stockpile
- NIC PPE Stockpile

Budget for countermeasures stockpile

- DMO 2006
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- Laporan MMN 8 Mac 2018 (Petang) MS 53
- AHA Centre Annual Report 2018 - Breaking New Ground (pg.9)

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- Brunei Darussalam National Influenza Pandemic Plan (1 April 2006)
- Ministry of Health Guidelines for The Prevention and Control of Zika Virus Infection in Brunei Darussalam 2016
- Mers-CoV and SARI Guidelines 2019 (Brunei Darussalam)
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EMT initiatives

- Eksesais Perisai Kebangsaan (EPK) 2015
- Hospital Major Medical Emergency Tabletop Exercise - presentation 25.8.2015

- ASEAN Regional Disaster Emergency Response Simulation Exercise (ARDEX) 2016
- ARDEX 16 Scenario Development
- Referees Evaluation Report ARDEX 2016
- ARDEX 2018
- AAR-Referee ARDEX 2018 Cilegon (presentation slides)
- ARDEX 18 REPORT
- 3rd ASEAN Member States (AMS) Regional Capacity on Disaster Health Management (ARCH) Training (I-EMT) 28-31 May 2018 Folder
- HYBN Tier 3 Ex-NAGA (Folder) for NGO

Military Involvement

- Mukadimah MPII - MMN 2019 MS 9-10 (for evidence of Military HADR)
- The Effectiveness of Foreign Military Assets in Natural Disaster Response 2008 (Aceh Tsunami – page 102-103)

Real events – sending health personnel

- The Survey on the Current Situation of Disaster-Emergency Medicine System in the ASEAN Region 2015 (page 36)
- The Effectiveness of Foreign Military Assets in Natural Disaster Response 2008 (Aceh Tsunami – page 102-103)
- Brunei Darussalam's Humanitarian Relief in Aceh Picks up Pace (11.1.2005)
- Deputy Sultan Comforts Bruneians Hurt in Bus Crash (23.11.2012)

Regional Exercise– sending health personnel

- ARDEX 2018 Report
- AAR-Referee ARDEX 2018 Cilegon
- Brunei Darussalam Participates in ARDEX-18 at Cilegon (Brunei Sertai Latihan ARDEX-18 Di Chilegon 5.11.2018)

Case Management Guidelines

- Brunei Darussalam National Influenza Pandemic Plan (1 April 2006)
- Ministry of Health Guidelines for The Prevention and Control of Zika Virus Infection in Brunei Darussalam 2016
- Mers-CoV Preparedness Plan 2014 (Brunei Darussalam)
- Ebola Preparedness Plan 2019 (Brunei Darussalam)
- National Standard Operation Procedure (NaSOP) 2012
- IFRC ASEAN Disaster Law Mapping - Implementation AADMER 2017
- Operationalising One ASEAN One Response 2018
- AHA Centre Annual Report 2018 - Breaking New Ground
- 5th Draft National Action Plan CBRN Brunei Darussalam (updated 2018)
- Brunei Darussalam CBRN v4 presentation
- Draft Guidelines for The Control and Management of Rabies and Suspected Rabies in Brunei Darussalam (v11102018)
- Food Poisoning Guideline for MOE
- Guidelines for The Prevention and Control of Viral GE Outbreaks in Daycare Centres (draft 2016)

- Hand, Foot and Mouth disease (HFMD) Guidelines 2016
- Standardised Sexually Transmitted Infections National Guideline
- TB Guideline 2013
- SOP Emergency Response Following Disease Outbreak Pest Infestation 18 April 2017
- SOP for Adaptation to Regional Conditions, Including Pest- or Disease-Free Areas and Areas of Low Pest or Disease Prevalence

SOPs – transport of potentially infectious patients

- EMAS SOP for responding to 991 Call (2016)
- Flow Chart for Ebola Cases (Airport-Land-Sea PoE)
- Flow Chart for Ebola Cases (Health Centres-MCH-Private healthcare facilities)
- Flow Chart of Suspected Case of Communicable Disease (Airport)
- In Flight Care of Suspected Case of Communicable Disease (2015)
- MERS-CoV Flowchart PHC - revised Sept 2016 (Annex 2-Page 11)
- DCA Airport Emergency Plan 2016 (Folder)
- AAR Rabies TTX on 5.9.2019
- AAR Airport TTX on 19.9.2019

Evidence of training (NDMC, MOH EMAS and MPRT):

- Open Day - CAE Brunei Darussalam MPTC Course Description Audience Handout
- CAE MPTC Course List Public Safety Health Emergency Management Revised Training Plan Feb - June 2019 V1(1)
- EMAS Personnel Training List (updated 2019)
- Biosafety Division Depart. of Agriculture & Agrifood MPRT Slides (2018)
- Newspaper articles
- EU CBRN CoE Project 46 – NLEs Workshop in Brunei Darussalam (27.11.2017)
- EU CBRN CoE Project 46 – Work Package 5 Country Mission – Brunei Darussalam (5-7 Feb 2018)
- CBRN training course commences (BB 10.4.2018)
- Brunei Darussalam holds workshop on Preventing and Mitigating Chemical, Biological, Radiological and Nuclear Risks (9-11 Oct 2018)

Risk communication

- Disaster Management Order 2006
- National Standard Operation Procedure (NaSOP) 2012
- Standard Operating Procedure for regional Standby Arrangements and Coordination of joint Disaster Relief and Emergency Response Operations (SASOP)
- MME Plan MOH EOC
- MME Plan RIPAS Hospital
- MME Plan SSB Hospital
- MME Plan PMMPMHAMB Hospital
- MME Plan PIHM Hospital
- MME Plan EMAS
- Media SOP for emergency event

- Media SOP for emergency response to security threats and disaster
- PHEOP EOC
- PHEOC SOP 2019 Pg 8 Media Relation

Other supporting documents:

- ASEAN Risk Monitor and Disaster Management Review (ARMOR) 2019
- Brunei Darussalam Disaster Management Reference Handbook 2018
- Examples of Training Given to Communication Personnel [Radio Television Brunei Darussalam Trainings]
- Slides on ARDEX 2016 and ARDEX 2018
- News on Plane Crash Simulation Exercises Oct 2015
- News on Limbang/Temburong Boat Accident 2018
- News on Bell 212 Helicopter Crash July 20,2012
- RTB Audience Survey 2017
- Brunei Darussalam WX Application
- NDMC Safety Guide Application
- Health Infographics in Malay and English
- Example of Press Release in Response to Event – Rumour Management
- DEOC Communication Test Report
- MOH Corporate Communication Role
- Community Based Disaster Risk Management (CBDRM) activities
- School Based Disaster Risk Management (SBDRM) activities
- HYBN Tier 3 Ex-NAGA (Folder)
- HYBN TTX Tier 3 Ex-NAGA 14.9.2019
- Hengyi TTX - MOH report 14.9.2019
- HYBN FX Tier 3 Ex-NAGA 17.9.2019
- Hengyi FSX - MOH report 17.9.2019
- DEOC Hengyi AAR 17.9.2019

Points of entry

- Anti-terrorism Order 2011
- Arms and Explosives Act Cap. 58
- Poisons Act Cap. 114
- Customs Order 2006
- Disaster Management Order 2006
- Public Order Act Cap. 148
- Internal Security Act Cap.133
- Workplace Safety and Health Order 2009
- Workplace Safety and Health (Facilities)(Control of Major Accident Hazards), Regulations, amendment 2017
- Workplace Safety and Health (Incident Reporting) Regulation 2014
- Radiation Protection Order 2018
- Safety Health Environment National Authority Order 2018

- National Standard Operation Procedure (NaSOP) 2012
- National Oil Spill Contingency Plan (NOSCOP)
- Environmental Protection and Management Order 2016
- SOP Pelabuhan Muara
- Sanitation Report at PoE
- Vector Surveillance Report PoE
- Brunei International Airport Emergency Plan 2016
- Report on Brunei Darussalam Counter-Terrorism action plan 2018
- Brunei International Airport Public Health Emergency Contingency Plan
- Maritime Declaration of Health
- SOP for the Detection and Response to Mers-CoV and Other Acute Severe Respiratory Infections
- SOP-In flight Care of Suspected Patients with Infectious Disease
- Ship Sanitation Control Exemption Certificate

Chemical events

- Safety, Health and Environment National Authority Order 2018
- Anti-terrorism Order 2011
- Arms and Explosives Act Cap. 58
- Poisons Act Cap. 114
- Environment Protection and Management Order 2016
- Customs Order 2006
- Disaster Management Order 2006
- Hazardous Waste (Control of Export / Import and Transit) Order 2013
- Public Order Act Cap. 148
- Internal Security Act Cap. 133
- Workplace Safety and Health Order 2009
- Workplace Safety and Health (Facilities)(Control of Major Accident Hazards), Regulations, amendment 2017
- Workplace Safety and Health (Incident Reporting) Regulation 2014
- Approved Code of Practice, Workplace Safety and Health (Incident Reporting) Regulation 2014
- National Standard Operating Procedure
- National Oil Spill Contingency Plan (NOSCOP)
- Public Health Emergency Operation Plan
- Public Health Emergency Operation Centre SOP
- Brunei Darussalam Standard on Good Agricultural Practice
- BSM Aviation Safety Case
- MOH laboratory testing – Toxicology services, Environmental Health, Pharmacy
- Reporting on Pollution Incidence Regulations 2008
- Guidelines on Pollution Control
- DEOC Hengyi After Action Review
- EPMO Notification Matrix
- MOH List of Adulterated/Contaminated Consumer Products
- Hengyi Tabletop Exercise – MOH Report

Radiation emergencies

- Radiation Protection Order 2018
- Radiation Safety Handbook for Communication With the Public in a Radiation Or Nuclear Emergency (2018)
- National Standard Operation Procedure (NaSOP) 2012 for disaster response
- Handbook for Communication With the Public in a Nuclear or Radiological Emergency
- Public Health Emergency Operation Plan 2019
- Public Health Emergency Operation Centre SOP 2019
- Guidelines for the Health Safety of Healthcare Workers in Brunei Darussalam
- CBRN National Action Plan (Draft 2018)
- Company Application for the Use of Radioactive Sources, Radiography Equipment or Irradiating Apparatus in Industry
- Application for Registering as a Radiation Worker (Attachment 6 & 7)
- Import Permit Application for Radioactive Materials, Radiography Equipment, Irradiating Apparatus
- Export Permit Application for Radioactive Materials, Radiography Equipment, Irradiating Apparatus
- Radiation Protection Plan
- NDMC Mobile Application



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