

JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of the

FEDERATED STATES OF MICRONESIA

Mission report:
13-17 August 2018



World Health
Organization

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WHO/WHE/CPI/2018.34

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Layout by Genève Design

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ACKNOWLEDGEMENTS

The Joint External Evaluation (JEE) Secretariat of the World Health Organization (WHO) would like to acknowledge the following, whose support and commitment to the principles of the International Health Regulations (2005) have ensured a successful outcome to this JEE mission.

- The Government and national experts of the Federated States of Micronesia for their support of, and work in, preparing for the JEE mission.
- The governments of Australia, Canada, New Zealand and the United States, for providing technical experts for the peer-review process.
- The following WHO entities: The WHO Regional Office of the Western Pacific, the WHO Regional Office of the Americas and the WHO Health Emergencies Programme at the WHO headquarters.
- The Global Health Security Agenda Initiative for its collaboration and support.

Acronyms and abbreviations

AMR	Antimicrobial resistance
BSL	Biosafety level
CHC	Community Health Centre
DDM	Data for Decision Making
DHS	Department of Health Services
DHSA	Department of Health and Social Affairs
ESBL	Extended Spectrum Beta-Lactamases
EOC	Emergency Operation Center
EQA	External Quality Assessment
FAO	Food and Agriculture Organization of the United Nations
GPHL	Guam Public Health Laboratories
HCAI	Healthcare-associated infection
HIV	Human immunodeficiency virus
HPHL	Hawaii Public Health Laboratory
IHR	International Health Regulations
NFP	National IHR Focal Point
INFOSAN	International Network of Food Safety Authority Network
ISO	International Organization for Standardization
ISO/IEC	International Organization for Standardization and International Electrotechnical Commission
JEE	Joint External Evaluation
MMR	Measles, mumps and rubella vaccination
MRSA	Methicillin-resistant Staphylococcus aureus
OIE	World Organization for Animal Health
PHHEP	Public Health and Healthcare Emergency Preparedness
PoE	Points of entry
PPE	Personal protective equipment
RND	Department of Resources and Development
US	United States
US CDC	United States Center for Disease Control and Prevention
SOP	Standard operating procedure
WHO	World Health Organization

Executive summary

Introduction

The International Health Regulations (2005) (IHR) are the legal framework for global health security with all States Parties required to develop minimum core capacities 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 (APSED) has been developed as a common regional framework to guide Member States in implementing the IHR. More recently, APSED has been updated to include public health emergencies (Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies [APSED III]). In the Pacific region, which comprises 21 countries and areas, Healthy Islands is the unifying theme for health security and health promotion in the Pacific, with IHR (2005) core capacity implementation the key driver in achieving health security goals.

Pacific island countries and areas face unique health system challenges in implementing the IHR (2005), such as small population size, geographic isolation, and limited human and financial resources. Pacific island countries and areas also face a very high degree of disaster risk from extreme weather, coastal erosion and inundation, floods, droughts, volcanoes, earthquakes and tsunamis, some of which are predicted to increase in the future because of climate change.

The Joint External Evaluation (JEE) is one of the core components of the IHR monitoring and evaluation framework (IHRMEF) designed to examine the implementation of IHR core capacities. The JEE uses a standard tool to review national capacities across 19 technical areas related to health security. The JEE is a multisectoral process and is performed as a peer-to-peer collaboration between national and international experts.

This report is the product of the JEE in the Federated States of Micronesia in 2018, which was the first JEE conducted in the Pacific. The assessment considered the context of Small Island Developing States in implementing and sustaining capacities to facilitate the application of the IHR. This included ensuring that capacities were fit for purpose and relevant to the Federated States of Micronesia context, that regional mechanisms, such as the Pacific Public Health Surveillance Network, and services provided by nearby countries, such as laboratory testing, were considered as country level capacities. The Federated States of Micronesia was the first country from the World Health Organization (WHO) Western Pacific Region to make an IHR notification when, in 2007, the National IHR Focal Point notified the WHO of an outbreak of Zika in Yap state.

The Federated States of Micronesia has a federal system of government, comprising the four states of Chuuk, Kosrae, Pohnpei and Yap. JEE preparations commenced in July 2017 with an orientation workshop held for all four states and national representatives. Self-assessment reports were then developed in each of the four states, which fed into the national JEE report. From 13 to 17 August 2018, a multi-sectoral team of international and national experts jointly conducted a review of the Federated States of Micronesia's IHR core capacities in the 19 technical areas using the JEE tool. This report summarizes the findings of the JEE in the Federated States of Micronesia and provides recommended priority actions for each the 19 technical areas.

Findings from the joint external evaluation

The JEE team was impressed with the Federated States of Micronesia's efforts in implementing the IHR core capacities. Many of the technical areas were considered fit for purpose and appropriate for this small island setting.

The JEE team found many strengths across the 19 technical areas, particularly:

- A well-established emergency preparedness and response system at the national and state level with relevant emergency operation centres at national, state and health levels. These response systems are routinely tested through exercises, with after action reviews feeding into revisions of the system.
- Good working relationship within and between state and national levels.
- Multi-disciplinary EpiNet team structure for the detection, investigation and response with linkages between the states and national levels.
- Integrated IBS and EBS from multiple sources to produce weekly surveillance bulletins disseminated within the Federated States of Micronesia and internationally.
- Cultural context allows for good surveillance, communication and involvement of the community in response.

The overarching recommendations of the JEE team were to:

- Embed multi-sectorial coordination and oversight of IHR activities into the existing structures and mechanisms at national and state level and strengthen the IHR National Focal Point.
- Develop and implement a comprehensive national workforce plan to recruit, retain and develop staff to implement, sustain and advance activities to comply with IHR provisions.
- Develop coordinated training plans and monitor to ensure staff at all levels within relevant sectors are appropriately trained and incentivised on a regular basis.
- Document existing practices and store on a common information management system.
- Advocate and work towards sustainable funding to conduct IHR-related work.

Conclusions

The Federated States of Micronesia have made good progress on implementing the capacities to facilitate the application of the IHR, applicable to their small island status. The priority actions identified in this joint assessment should be used to develop a national action plan for health security, using APSED III as a framework. Continued strengthening of the relationship between state and national levels will assist in implementing the recommendations of this JEE report.

As JEE is a process for evaluation and continuing improvement, we encourage the Federated States of Micronesia to conduct a JEE in five years. Continued investment in preparedness is essential to minimise morbidity and mortality, social disruption and economic impact.

The JEE team has appreciated the peer-to-peer learning process and the open and transparent interaction with our Federated States of Micronesia colleagues. The JEE experience in the Federated States of Micronesia will be used to inform the JEE process in other Pacific island countries and other Small Island Developing States. In closing, the JEE team wishes to thank the Federated States of Micronesia for their preparation and active participation throughout this evaluation

The Federated States of Micronesia JEE scores

Technical areas	Indicators	Score
National legislation, policy and financing	P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR (2005)	3
	P.1.2 The State can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with IHR (2005)	3
IHR coordination, communication and advocacy	P.2.1 A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR	3
Antimicrobial resistance	P.3.1 Antimicrobial resistance detection	4
	P.3.2 Surveillance of infections caused by antimicrobial-resistant pathogens	4
	P.3.3 Health care-associated infection (HCAI) prevention and control programmes	1
	P.3.4 Antimicrobial stewardship activities	1
Zoonotic diseases	P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens	2
	P.4.2 Veterinary or animal health workforce	2
	P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases are established and functional	3
Food safety	P.5.1 Mechanisms for multisectoral collaboration are established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases	2
Biosafety and biosecurity	P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities	2
	P.6.2 Biosafety and biosecurity training and practices	3
Immunization	P.7.1 Vaccine coverage (measles) as part of national programme	3
	P.7.2 National vaccine access and delivery	4
National laboratory system	D.1.1 Laboratory testing for detection of priority diseases	4
	D.1.2 Specimen referral and transport system	4
	D.1.3 Effective modern point-of-care and laboratory-based diagnostics	3
	D.1.4 Laboratory quality system	2
Real-time surveillance	D.2.1 Indicator- and event-based surveillance systems	4
	D.2.2 Interoperable, interconnected, electronic real-time reporting system	2
	D.2.3 Integration and analysis of surveillance data	4
	D.2.4 Syndromic surveillance systems	4
Reporting	D.3.1 System for efficient reporting to FAO, OIE and WHO	3
	D.3.2 Reporting network and protocols in country	2

Technical areas	Indicators	Score
Workforce development	D.4.1 Human resources available to implement IHR core capacity requirements	3
	D.4.2 FETP ¹ or other applied epidemiology training programme in place	3
	D.4.3 Workforce strategy	2
Preparedness	R.1.1 National multi-hazard public health emergency preparedness and response plan is developed and implemented	5
	R.1.2 Priority public health risks and resources are mapped and utilized	2
Emergency response operations	R.2.1 Capacity to activate emergency operations	4
	R.2.2 EOC operating procedures and plans	4
	R.2.3 Emergency operations programme	4
	R.2.4 Case management procedures implemented for IHR relevant hazards.	2
Linking public health and security authorities	R.3.1 Public health and security authorities (e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological event	2
Medical countermeasures and personnel deployment	R.4.1 System in place for sending and receiving medical countermeasures during a public health emergency	5
	R.4.2 System in place for sending and receiving health personnel during a public health emergency	4
Risk communication	R.5.1 Risk communication systems (plans, mechanisms, etc.)	2
	R.5.2 Internal and partner communication and coordination	2
	R.5.3 Public communication	3
	R.5.4 Communication engagement with affected communities	3
	R.5.5 Dynamic listening and rumour management	3
Points of entry	PoE.1 Routine capacities established at points of entry	3
	PoE.2 Effective public health response at points of entry	2
Chemical events	CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies	1
	CE.2 Enabling environment in place for management of chemical events	2
Radiation emergencies	RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	1
	RE.2 Enabling environment in place for management of radiation emergencies	2

¹ FETP: field epidemiology training programme

PREVENT

National legislation, policy and financing

Introduction

The International Health Regulations (IHR) (2005) provide obligations and rights for States Parties. In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even if a 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 in a more effective manner. 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 States Parties to support and enable the implementation of all their obligations, and rights to comply with and implement the IHR (2005). New or modified legislation in some States Parties for implementation of the IHR (2005). Where new or revised legislation may not be specifically required under the State Party's legal system, States may revise some legislation, regulations or other instruments in order to facilitate their implementation and maintenance in a more efficient, effective or beneficial manner. States Parties ensure provision of adequate funding for IHR implementation through the national budget or other mechanism.

The Federated States of Micronesia level of capacities

The Federated States of Micronesia became a member of the WHO by acceptance on 14 August 1991. Under the WHO Constitution (Article 22), WHO Member States had until 15 December 2006 to file reservations or reject the International Health Regulations. As the Federated States of Micronesia did neither, on 15 June 2007, all the provisions of the IHR became legally binding on The Federated States of Micronesia.

The Legal Information System of The Federated States of Micronesia website lists legislation, codes and other legal instruments at the national and state level (<http://www.fsmlaw.org>). The Constitution defines the jurisdiction of each of the level of governments and allocates their respective powers, duties, obligations, and responsibilities. Specifications of these responsibilities, duties and functions are incorporated under the various titles of the Federated States of Micronesia Code. Several of these are tasked to the Secretary of the Department of Health and Social Affairs (DHSA), or her designee to regulate, reinforce and monitor.

Title 41: Public Health safety and welfare includes the Disaster Relief Assistance Act of 1989 (Chapter 7) which provides for a permanent, orderly program of the National government to assist the States and local governments in conducting their responsibilities to alleviate suffering and damage. Sections 705-707 provide their responsibilities.

The Federated States of Micronesia National Disaster Response Plan (2016), prepared under the Disaster Relief Assistance Act, although recently updated, includes the minimum requirements for state disaster response plans that must be approved by the President. The Federated States of Micronesia National Disaster Response Plan is an all-hazard plan and must include standard operating procedure (SOPs) for

every government department, committee, team and working group or centre that will operate under the plan. The plan acknowledges and provides for the receipt of relief and recovery assistance from international organisations during and following disasters.

Other relevant chapters of Title 41 of the Federated States of Micronesia Code include Chapter 6, the National Sanitation Act, Chapter 4, the Immunization of School Children Act which mandates immunisation for school enrolments and Chapter 10, the National Food Safety Act.

Title 25 of the Code is the Environmental Protection Act that covers the protection of the environment, human health, welfare, and safety through the control of pollution and contamination of air, land, and water including measures undertaken to prohibit or regulate the testing, storage, use, disposal, import and export of radioactive, toxic chemical, or other harmful substances.

The existing legal framework in the Federated States of Micronesia allows for the implementation of a broad range of IHR provisions. Though not explicitly required by the IHR, the revision or adoption of new national legislation may further facilitate their implementation. For example, several IHR States Parties have institutionalized the functions of the National IHR Focal Point through legislation.

Each state has its own Constitution, State Code and State Disaster Response plan similar to the national structure. The powers and duties of principal departments are included in the State Code. Accordingly, the state Department of Health Services (DHS) has the following roles: (a) conducts a comprehensive public health services program, including medical and dental services; (b) operates and maintains the State hospital and outlying dispensaries; and (c) oversees sanitation practices (Section 5.202). This includes responsibility for public health surveillance and response and quarantine orders such that the Director of DHS may order isolation or quarantine of a person who is suffering from, or has been exposed to, a contagious disease (Section 12.1106).

The Compact of Free Association between the Federated States of Micronesia and the United States of America (US) provide for US economic assistance (including eligibility for certain US federal programs) defence and security, and other benefits in exchange for US defence and certain other operating rights in the Federated States of Micronesia, denial of access to the Federated States of Micronesia territory to other nations, and other agreements. The current Compact will expire in 2023.

The Federal Programs and Services Agreement between the Government of The Federated States of Micronesia and the US Government, provides funding arrangements for disaster assistance, managed by the United States Agency for International Development. The US government provides 68% of the revenue for the National Government and 75% of revenue for the state governments. During the discussions with the Federated States of Micronesia experts the possible advantage of creating a specific budget line for IHR implementation was raised.

A Review of the Current Health Protection Practices in the Federated States of Micronesia: Laws, Regulations and Policy Regimes was conducted by DHSA. An independent legal consultant reviewed the existing health laws at both the national and state levels to ascertain whether new legal regimes were required to support new health challenges currently facing the nation. The report summarises the current laws and code for the Federated States of Micronesia DHSA and State DHSs and provides recommendations for legislation review. This review was focused on the legislation that governs all DHSA work, not specifically on public health surveillance and response or the rights and obligations set out in the IHR.

Recommendations for priority actions

- Identify, draft and adopt the appropriate legal instrument (e.g. regulations, executive order) to institutionalize the functions of the NFP.
- Enhance the Federated States of Micronesia Legal Information System by ensuring that all IHR-relevant public health legislation (including regulations) is easily retrievable.
- Following a review of existing budget lines, consider establishing a specific budget line for IHR implementation.

Indicators and scores

P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government – Score 3

Strengths/best practices

- The Federated States of Micronesia is highly committed to implementing the IHR and has a good understanding of its rights and obligations under the Regulations, including the role of the National IHR Focal Point.
- The Federated States of Micronesia's current legal framework enables it to implement IHR provisions.
- The Federated States of Micronesia has conducted a review of public health legislation and has an electronic platform for national legislation.

Areas that need strengthening/challenges

- Legal reviews/assessments to date do not specifically address IHR.
- Mutual understanding of roles between national and state governments in relation to the enforcement of laws and regulations remains a challenge.

P.1.2 The State can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with the IHR (2005) – Score 3

Strengths/best practices

- The National Disaster Response Plan was updated in 2016 and takes an all-hazards approach to response.
- The Federated States of Micronesia identifies national resources for disasters prior to requesting external support.

Areas that need strengthening/challenges

- The sustainability of current government funding for health, including IHR implementation, could be a challenge beyond 2023 (when the current Compact agreement with the US expires).

IHR coordination, communication and advocacy

Introduction

The effective implementation of the IHR requires multisectoral/multidisciplinary approaches through national partnerships for efficient and alert response systems. Coordination of nationwide resources, including the designation of a national IHR focal point, which is a national centre for IHR communications, is a key requisite for IHR implementation.

Target

Multisectoral/multidisciplinary approaches through national partnerships that allow efficient, alert and responsive 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 (2005) communications which is a key requisite for IHR (2005) implementation – that is accessible at all times. States Parties provide WHO with contact details of national IHR focal points, continuously update and annually confirm them.

The Federated States of Micronesia level of capacities

The National IHR Focal Point (NFP) is represented by the Secretary and Assistant Secretary of DHS and is housed within the Public Health and Healthcare Emergency Preparedness (PHHEP) unit which acts as the NFP Secretariat. The NFP carries out several mandatory functions, including being accessible at all times for communications with the WHO IHR Contact Point for the Western Pacific Region. Five persons within PHHEP have access to and receive information on acute public health events and emergencies through the WHO Event Information Site for National IHR Focal Points. The NFP also coordinates and manages mandatory State Party Annual Reporting to the World Health Assembly and is responsible for the voluntary components of the IHR Monitoring and Evaluation Framework – Joint External Evaluations, After Action Reviews and/or Simulation exercises.

The Federated States of Micronesia was the first country in the Western Pacific Region to notify a potential public health emergency of international concern for the 2007 Zika outbreak in Yap state. They also reported cases to the regional WHO IHR Contact Point during the 2009 influenza pandemic. The Federated States of Micronesia NFP functions are exercised annually through participation in the IHR Exercise Crystal conducted by the WHO Regional Office of the Western Pacific.

Although no formal protocol is established, the NFP can communicate directly to the Secretaries/Ministers of other national departments or agencies and can write directly to the heads of State agencies for routine matters. For major substantive matters, communication is between the President to the Governors of the States.

An annual PHHEP Summit is held between the PHHEP unit, the Directors of the DHS and those involved in the PHHEP program at the national and state level to discuss the annual workplan. EpiNet teams at the national and state level share a group email for updates and reporting of notifiable diseases.

Recommendations for priority actions

- Strengthen and formalize existing coordination mechanism(s) between all sectors at the national and state level.
- Establish a duty officer roster for 24/7 accessibility of the National IHR Focal Point for effective and efficient communications with the regional WHO IHR Contact Point and with state public health officials.

Indicators and scores

P.2.1 A functional mechanism established for the coordination and integration of relevant sectors in the implementation of IHR – Score 3

Strengths/best practices

- The National IHR Focal Point is well-established and functional at the national level and plays an important coordination role for annual reporting and the voluntary components of the IHR Monitoring and Evaluation framework, as well as in preparedness planning and response.
- The existence of a protocol for communications between the NFP with Secretaries/Ministries of the line department or agencies of the Federated States of Micronesia government.

Areas that need strengthening/challenges

- Ensuring that the NFP Secretariat and relevant technical staff are technically competent in subject areas from the national and state levels of government.
- Absence of an IHR duty officer roster to ensure accessibility at all times for communications between the NFP and the regional WHO IHR Contact Point and with state public health officials.

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

Support work coordinated by FAO, OIE and WHO to develop an integrated global package of activities to combat antimicrobial resistance, spanning human, animal, agricultural, food and environmental aspects (i.e. a One Health approach). Each country has: (i) its own national comprehensive plan to combat antimicrobial resistance; (ii) strengthened surveillance and laboratory capacity at the national and international levels following international standards developed as per the framework of the Global Action Plan; and (iii) improved conservation of existing treatments and collaboration to support the sustainable development of new antibiotics, alternative treatments, preventive measures and rapid point-of-care diagnostics, including systems to preserve new antibiotics.

The Federated States of Micronesia level of capacities

There are five hospitals in the Federated States of Micronesia – a State Hospital in each state and a private hospital in Pohnpei. Each of the states has community health centres (CHC) – four on the main island of Yap, two in Kosrae, three on the main island of Chuuk and one in Pohnpei. There are also 95 dispensaries in the outer islands of Yap (17), Chuuk (68) and Pohnpei (10), staffed by health assistants that provide basic antibiotics.

There are no laboratories for animals and very few, relatively small, commercial farms in the Federated States of Micronesia. There is backyard poultry and pig farming. There is no current testing of animals for AMR and no plans for surveillance of AMR pathogens in livestock.

Detection and surveillance for AMR is conducted as all specimens (pus, urine, blood cultures, ear/nose and throat swabs, body fluids etc) that are cultured at the State Laboratories are tested for antimicrobial sensitivity. SOPs for testing antimicrobial agents align with Clinical Laboratory and Standards Institute (CLSI) standards. The antibiotic sensitivity data is reported to the national coordinator for AMR and is included in the annual *Federated States of Micronesia Microbiology Summary*. Methicillin-resistant *Staphylococcus aureus* (MRSA) and Extended Spectrum Beta Lactamase Producing Bacteria (ESBL) are also reported weekly through the state and national weekly surveillance reports.

Recommendations for Priority Actions

- Develop and implement national and state plans for health care associated infections including infection, prevention and control.
- Develop and implement national and state plans for AMR stewardship, aimed at frontline health care providers.
- Enhance laboratory capacity/capability to test and undertake surveillance for additional pathogens.

Indicators and scores

P.3.1 Antimicrobial resistance (AMR) detection – Score 4

Strengths/best practices

- All four state hospital laboratories conduct antimicrobial resistance detection for bacterial pathogens from all specimens submitted. Results are reported in the Laboratory Information System, with the data published in an annual report. The private laboratory also conducts antimicrobial resistance detection for bacterial pathogens.
- Training has been conducted and there are SOPs for conducting antimicrobial sensitivity testing.
- Multidisciplinary EpiNet teams at state and national levels integrate both epidemiology and laboratory testing results into AMR surveillance activities.

Areas that need strengthening/challenges

- There is no AMR detection in the animal or food sectors.
- Further enhancement of microbiology skills is required in all laboratories.

P.3.2 Surveillance of infections caused by antimicrobial-resistant pathogens – Score 4

Strengths/best practices

- Antimicrobial sensitivity reports for all clinically significant isolates are reported nationally and are published in an annual report.
- MRSA and ESBL are reported weekly through the state and national weekly surveillance reports.

Areas that need strengthening/challenges

- There is no surveillance of AMR in fastidious organisms in human health, however, there is a mechanism to refer these isolates to specialist regional laboratories.
- There is no surveillance of AMR pathogens in animal health.

P.3.3 Health care-associated infection (HCAI) prevention and control programmes – Score 1

Strengths/best practices

- The *Federated States of Micronesia Infection Control Guidelines*, updated in 2017, provide healthcare administrators and healthcare workers with a framework to prevent and control the transmission of infectious pathogens within, from or to the healthcare setting, to patients, healthcare workers and the community alike. The guidelines provide information on protection of healthcare workers.
- All four state hospitals have isolation rooms.
- There have been some HCAI prevention activities at state hospitals.

Areas that need strengthening/challenges

- Although there are some HCAI prevention activities, there is no national plan for HCAI programs.
- The availability of PPE in laboratories and hospitals is not sufficient to manage patients for more than one or two days.
- There is no surveillance for high risk groups (e.g. diabetic, surgical patients).

P.3.4 Antimicrobial stewardship activities – Score 1

Strengths/best practices

- A national program for AMR stewardship is currently being developed with AMR committees to be formed in each state and an AMR program to be developed.
- There are some antimicrobial stewardship activities conducted at state hospitals.
- The recently published *Antibiotic Resistance guidelines* provide clinicians with recommendations for the diagnosis and treatment of bacterial infections based on local antimicrobial resistance patterns and consensus recommendations on optimal use including cost.
- There have been no surveys conducted on antibiotic usage, however, there is currently a pilot study underway in Pohnpei Hospital on the duration of therapy for three target antibiotics to gather baseline data.
- Some patient educational activities are conducted in the hospitals.

Areas that need strengthening/challenges

- There is no legislation prohibiting over-the-counter sales of medications. In general, a prescription is required from a doctor for antibiotic use in humans. However, health care assistants who work in remote dispensaries can prescribe certain first line antibiotics, based on specific clinical criteria consistent with bacterial infections.
- Antibiotic use in animals is not regulated and a prescription is not required for antibiotics. Antibiotic use in animals is controlled by the relevant animal health agency at the state level.
- There are no Infectious Disease Specialists in the Federated States of Micronesia; access to subject matter experts to advise on complicated cases is required.

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 is of animal origin; and approximately 60% of all human pathogens are zoonotic.

Target

Adopted measured behaviours, policies and/or practices that minimize the transmission of zoonotic diseases from animals into human populations.

The Federated States of Micronesia level of capacities

Due to the small range of animals in the Federated States of Micronesia, i.e. pigs and poultry, with small numbers of cattle on Pohnpei island, there is no One Health mechanism. Estimates of the animal population are conducted every five years with a census of all households to determine the number of each type of animal. *Aedes aegypti* and *Aedes albopictus* are both found in the Federated States of Micronesia. There have been documented outbreaks of zika, dengue, chikungunya and imported malaria cases. Leptospirosis in humans is one of the laboratory-confirmed Notifiable Diseases in the Federated States of Micronesia. Testing for Leptospirosis in humans is conducted on island by a serum or urine rapid test.

Although there is no formal surveillance system for animal populations, backyard farmers can call the relevant animal health agency in each state for assistance in animal husbandry and to report sick animals. The agency sends a team member to visit the farm, survey the location, provide advice for treatment and administer antibiotics if appropriate. Each visit is recorded and reported in monthly reports used for internal monitoring. If there is any concern, or impact on human health, the DHS would be notified by phone. There are some informal relationships between human and animal health at the local level, and both Departments are members of the relevant State Disaster Response Plan.

The animal health workforce is small in the Federated States of Micronesia, with one visiting veterinarian and small numbers of animal health workers with minimal paravet training in the states. There are no animal health workers in Yap. Most animal health workforce training has been provided from international organisations and is ad hoc.

A zoonotic outbreak in humans would most likely be detected through the event-based surveillance system in the state, and the response would be led by the EpiNet team with routine reporting to the national EpiNet team (See D.2 Real-time surveillance and R.2 Emergency Response Operations). Outbreaks in animals would most likely be detected through farm inspections that result from farmer reporting, and if the outbreak spreads, or was unable to be controlled by the relevant animal health agency, then the relevant State Disaster Response Plan would be activated. If the state could not control the outbreak, or required additional resources, then they would request this from the Federated States of Micronesia DHSA who would arrange national and international level assistance (see R.2 Emergency Response Operations).

Recommendations for Priority Actions

- Improve state vector management programs and conduct mosquito surveys; ensure survey results are widely disseminated across health, environmental, agriculture ministries and other relevant stakeholders.

- Consider strengthening relationships and collaboration between animal health and human health sectors, including engagement in joint cross-training and exercise or preparedness opportunities.
- Include veterinarians and veterinary technicians in the public health workforce plan.

Indicators and scores

P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens – Score 2

Strengths/best practices

- The one priority zoonoses in humans is leptospirosis, which is notifiable and laboratory tests are conducted on-island.
- There are mechanisms for reporting animal health issues through the relevant livestock authorities.

Areas that need strengthening/challenges

- Communication between human and animal health workers is minimal.
- A review of priority zoonotic diseases/pathogens by FAO of OIE, in conjunction with Federated States of Micronesia human health and animal health sectors, would be beneficial.

P.4.2 Veterinary or animal health workforce – Score 2

Strengths/best practices

- There are only a small number and range of animals in the Federated States of Micronesia and therefore a large animal health workforce is not required.

Areas that need strengthening/challenges

- There is minimal animal health workforce in the Federated States of Micronesia, and no animal health workers in Yap.
- The level of training of animal health workers is limited to short paravet courses.

P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases established and functional – Score 3

Strengths/best practices

- The Land Grant Agency at the College of Micronesia is responsible for the six-monthly reporting to OIE. For each report the relevant animal health agency is contacted in each state to ask about cases in the previous six months. All recent OIE reports have been null reports for all diseases. Zoonoses outbreaks in humans would be responded to as for all human outbreaks, i.e. by the EpiNet team at the state and national levels as required.
- For large scale outbreaks, the State Disaster Response Plan can be activated with a multi-sectorial response ensuing.
- The Federated States of Micronesia has a goal of eliminating filariasis by 2022 with two rounds of mass drug administration in 2015 and 2017. Sentinel and spot check surveys will be conducted on two islands.

Areas that need strengthening/challenges

- Outbreaks in animals may not be detected or reported, and there are limited response mechanisms in animal health.
- There are no joint human and animal health response plans for zoonotic diseases.

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

Surveillance and response capacity among States Parties for food- and water-borne disease risks or events by strengthening effective communication and collaboration among the sectors responsible for food safety, and safe water and sanitation.

The Federated States of Micronesia level of capacities

The Federated States of Micronesia is a member of the International Network of Food Safety Authority Network (INFOSAN) and uses Codex Alimentarius as their standard. *The National Food Safety Act* (Chapter 10 of Title 41 of the *Federated States of Micronesia Code*) and the six regulations attached to the Act provide the main regulatory framework for food safety. At the national level, food safety falls primarily within the jurisdictional responsibilities of DHS.

Routine food inspections are conducted by Sanitation Officers from the Sanitation section of DHS in three states; in Pohnpei they are conducted by staff from the Environmental Protection Agency (EPA). Inspections are conducted on a quarterly basis of all supermarkets, restaurants and takeaway stores as per the *Standard Operating Procedures for State Food Inspection*. However, there are not enough food safety officers to inspect all establishments, particularly the takeaway stores, on a regular basis.

Food safety emergencies and outbreaks of foodborne diseases are managed at the individual state level by the state EpiNet teams, which use standard epidemiological investigation methodology. This includes the interviewing of cases using a standard questionnaire, collection of appropriate specimens, followed by hypothesis generation and subsequent inspections of potential sources (e.g. restaurants, markets) conducted by the Food Safety Inspectors and Environmental Health officers. All investigation and response activities conducted by the state EpiNet teams are reported to the national EpiNet team and are included in both the state and the national weekly surveillance reports.

Recommendations for Priority Actions

- Consider mechanisms, as part of an overall workforce strategy, to hire and train personnel in food safety, including food safety officers and laboratory food analysts.
- Enhance the capabilities and capacity of the food laboratory, including integration with the public health surveillance system.

Indicators and scores

P.5.1 Mechanisms for inter-sectoral collaboration established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases – Score 2

Strengths/best practices

- Use of *Codex alimentarius* as the standard, with relevant legislation and regulations in place to support food safety.
- Established multidisciplinary EpiNet teams at state level, with good connectivity and coordination with the EpiNet team at national level investigate foodborne disease outbreaks.
- The Federated States of Micronesia *SOPs for Imported Food Control* describe general processes and procedures that national food inspectors must use when conducting inspections of imported food.
- Food recalls have been conducted in Pohnpei, for example a recall of an imported canned meat product.
- A national food laboratory has recently been established and is currently in the process of establishing its testing capabilities and capacity, including hiring personnel.
- Lessons learnt from an outbreak in 2010 were incorporated into a similar outbreak response in 2016.

Areas that need strengthening/challenges

- There is a shortage of trained food safety personnel, including food safety officers and food laboratory analysts.
- There is a need for continuing education/training for food safety personnel, including food safety officers and food laboratory personnel.
- There is a need to enhance the integration between the food laboratory and public health surveillance and outbreak response activities.

Biosafety and biosecurity

Introduction

It is vital to work with pathogens in the laboratory to ensure that the global community possesses a robust set of tools – such as drugs, diagnostics, and vaccines – to counter the ever-evolving threat of infectious diseases.

Research with infectious agents is critical for the development and availability of public health and medical tools that are needed to detect, diagnose, recognize and respond to outbreaks of infectious diseases of both natural and deliberate origin. At the same time, the expansion of infrastructure and resources dedicated to work with infectious agents have raised concerns regarding the need to ensure proper biosafety and biosecurity to protect researchers and the community. Biosecurity is important in order to secure infectious agents against those who would deliberately misuse them to harm people, animals, plants or the environment.

Target

A whole-of-government national biosafety and biosecurity system with especially 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.

The Federated States of Micronesia level of capacities

There are no dangerous pathogens or toxins stored or processed in the Federated States of Micronesia. There is also no whole-of-government biosafety and biosecurity system in place for human, animal and agriculture facilities in the Federated States of Micronesia.

Current funding for biosafety oversight activities is provided from a US CDC grant, however, this funding expires in March 2019 and is not sustainable.

There is no mechanism for licensing laboratories in the Federated States of Micronesia. The *Federated States of Micronesia National Medical Laboratory Policy* states that laboratories comply with Biosafety Level 2 standards and not perform any activities that require greater than BSL 2. Therefore, viral culture and culture of mycobacteria is not performed; detection of rifampicin resistance is performed using the GeneXpert machine. No high-risk pathogens are stored.

The *Biosafety Laboratory Manual* details the waste management policy. The *Baseline Study for the Pacific Hazardous Waste Management Project 2014* observed significant healthcare waste management issues and provided recommendations for improvement. This assessment led to the purchase of new, functional incinerators for Pohnpei State Hospitals.

There is some PPE available in the state laboratories, but not in sufficient quantity. If there was an event requiring PPE for many personnel or for a long duration, PPE would be requested from the national PPHEP program. If there was no supply at the national level, a request would be made to international organisations such as the US CDC and WHO.

The *Federated States of Micronesia Infection Control Guidelines* include an Incident Report template; post-exposure prophylaxis treatment SOPs; vaccination recommendations for Hepatitis B for all health personnel and tuberculosis vaccination for those working with this agent.

The *Shipping Protocol for all Infectious Disease Testing for the US-Affiliated Pacific Island Laboratories* details the methods for transport of infectious and diagnostic substances. Carriers will not accept consignments unless they are IATA compliant (see D.1 National Laboratory System).

Recommendations for Priority Actions

- Continue to streamline vendors used for reagents and laboratory equipment, to ensure similar working equipment and allow for resource sharing across state laboratories.
- Ensure collaboration between Department of Resources and Development (quarantine and agriculture) and DHSA to ensure a comprehensive biosafety/biosecurity system is implemented.

Indicators and scores

P.6.1 Whole-of-government biosafety and biosecurity system in place for human, animal and agriculture facilities – Score 2

Strengths/best practices

- None of the four State Hospital Laboratories house any dangerous pathogens or toxins.
- Good partnerships with laboratories in Guam, Hawaii and CDC with sample testing agreements in place.
- The *Biosafety Laboratory Manual* provides guidelines on biosafety for hospital and public health laboratories in the Federated States of Micronesia. The manual includes guidelines for high consequence pathogens, e.g. Ebola virus. The guidelines were implemented with a one-week competency-based training conducted by the National Laboratory Biosafety Officer in each State hospital. Annual biosafety audits are conducted of government health laboratories.
- Each state laboratory has a Hospital Laboratory Quality Manual that outlines the quality processes and procedures designed to meet quality laboratory standards. There have been no biosafety incidents reported at the state hospital laboratories. Areas that need strengthening/challenges
- There are no whole-of-government biosecurity systems.
- None of the laboratories are accredited, although the two State Hospital Laboratories are working towards ISO 15189 accreditation. Laboratory staffing is challenging, with many current staff at hospital laboratories not certified.

P.6.2 Biosafety and biosecurity training and practices – Score 3

Strengths/best practices

- There is a National Biosafety Officer at the National Food Safety Laboratory that conducts training and inspections for biosafety at the State Laboratories.
- The *SOP for Biosafety Risk Assessment* outlines the procedures and tools to conduct a risk assessment.
- In 2017, PIHOA conducted a biosafety audit of the government health laboratories. An improvement plan is in place and corrective actions are being performed.
- The *Hospital Laboratory Quality Manual* outlines maintenance checks and cleaning SOPs per the manufacturer's recommendations. Laboratory quality issues are addressed in *Medical Laboratories – Requirements for Quality and Competence and National Standards for Health Laboratories*.

Areas that need strengthening/challenges

- Insufficient sustainable funding to conduct all necessary maintenance in the laboratories with limited local capacity to conduct maintenance. Regional contractors need to be utilized at relatively high cost as there is no local capacity/immunization

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.

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.

The Federated States of Micronesia level of capacities

The Immunization Program in the Federated States of Micronesia operates at the national level and is wholly funded by US CDC with supply of all vaccines to DHSA for distribution to the states. Vaccination is free and voluntary, although childhood vaccinations are mandated for school enrolment. The Vaccination Schedule covers 14 diseases included in the WHO Global Vaccine Action Plan: measles, mumps, rubella, tetanus, diphtheria, pertussis, hepatitis B, tuberculosis, polio, pneumococcal meningitis, Haemophilus influenzae type B disease, influenza, human papilloma virus causing cervical cancer and rotavirus infection.

In each state, immunization clinics are run routinely at all state hospitals, some CHCs and dispensaries on a daily, weekly or monthly basis. Outreach clinics and community-based immunisation sites are utilised several times a year. There are no vaccination clinics in many of the outer islands due to transport and logistic issues. Once or twice a year when there are planes or ships available an immunisation team will visit. The outer islands that have a regular plane service are visited when there is a large enough number of children requiring vaccination. Coverage is reduced in the outer islands due to the difficulties in reaching them when there is not a boat available. Current vaccine coverage for the measles, mumps and rubella vaccination (MMR) at 12 months ranges from 73% in Chuuk to 95% in Kosrae, with the coverage for the Federated States of Micronesia of 76%.

There are *National SOPs for Immunization Cold Chain* that outline the system for ensuring continuous cold chain during delivery from Pohnpei international airport to all four states and throughout each state. There is a well-established system for the transport of vaccines throughout the states and to the outer islands which includes using insulated containers and fridges with built-in thermometers that are temperature monitored and rotational use of ice packs. Outer island dispensary staff mobilise all children to be present on arrival of the boat for swift vaccine administration.

In each state, the Immunization Program Co-ordinator is responsible for ordering vaccines and other essential supplies monthly from the National Immunization Program. The amount of vaccine is based on what has been used, what is in stock in the state and how many children are due for vaccination (using the birth cohort data on WebIZ). Immunization vaccines and supplies are then ordered and funded through the US CDC. There have been no stock-outs of vaccinations, however sometimes the full monthly order cannot be accommodated.

Recommendations for priority actions

- Review financing mechanism for the immunization programme and consider implementing a phased approach to increase national funding contributions.
- Enhance immunization coverage in low coverage areas through increased efforts to reach remote and vulnerable populations by strengthening collaboration with communities and the role of dispensaries and improving quality of denominator data.
- Strengthen the cold chain management system by improving infrastructure and developing staff capacity.

Indicators and scores

P.7.1 Vaccine coverage (measles) as part of national programme – Score 3

Strengths/best practices

- The vaccination program in the Federated States of Micronesia is well-established with committed staff and legislation requiring vaccination for school entry.
- The vaccine program is monitored through a national immunisation database - WebIZ. Each birth cohort and all vaccinations administered are recorded in the system. The system is used to follow-up vaccinations that are due or have been missed, and for vaccine coverage calculations.
- The Immunization Programs at DHSA and State DHSs monitor vaccine coverage annually and provide the data to the National Statistics Office. *The Federated States of Micronesia Immunisation Report to WHO, 2017* and the *Federated States of Micronesia Subnational immunisation coverage data 2017* provides data on the immunisation program.
- Vaccination is free with the overall coverage rate for MMR at 12 months of 76%. This is higher in Kosrae and Yap States (95% and 82% respectively).
- The programme has repeatedly demonstrated the ability to mount successful mass vaccination campaigns in response to outbreaks, most recently in October 2017 in Kosrae for a mumps outbreak. Public perceptions of immunization are monitored and addressed.

Areas that need strengthening/challenges

- Vaccination coverage is unevenly distributed and in some areas is below 70%. Improved strategies are needed to strengthen vaccination programs in the outer islands of Chuuk and Yap which are hard to reach due to logistics and limited opportunities to travel to these islands.
- Data quality management to address issues of denominator reliability.
- Migration is an issue for high coverage due to large population movement in and out of the states; these people may not be removed from the denominator in the immunisation system.
- Coverage of the second measles dose can be increased.

P.7.2 National vaccine access and delivery – Score 4

Strengths/best practices

- The immunization program is supported by US CDC who supply all vaccines for the routine vaccination program.
- There is good vaccine availability and cold chain management. A well-established system of vaccine delivery, including outreach activities to support vaccination delivery in remote areas and outer islands, provides access to vaccines.
- Vaccine stock-outs are rare and are usually the result of difficulties in delivering vaccines through limited transport options.

There is little vaccine refusal, although this is more common for the human papillomavirus vaccine. Immunization programs advertise the importance of vaccination through messages on government radio and through community awareness programs. There are some incentives used in different states, including small gifts.

Areas that need strengthening/challenges

- Having the programme financially sustainable beyond the current donor that supports the programme, by initiating and then gradually increasing government funding.
- Continual improvement in cold chain management and access through improved infrastructure to reduce the potential for vaccine spoilage and vaccine failure from occasional power outages and geographic location of the population.
- Improving overall access and vaccination coverage through improved strategies to reach remote areas and populations such as those in the outer islands of Chuuk and Yap where transportation is difficult.
- Routine vaccination is hindered by logistical issues. Vaccine distribution to remote islands without airfields is costly and challenging.

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

Real-time biosurveillance with a national laboratory system and effective modern point-of-care and laboratory-based diagnostics.

The Federated States of Micronesia level of capacities

There are four State Hospital Laboratories in the Federated States of Micronesia and one national Food Safety Laboratory. The CHCs can perform some simple, point-of-care testing but refer most testing to their state hospital laboratories. There are no in-country reference laboratories. Most infectious disease testing not done in the Federated States of Micronesia is referred to Hawaii Public Health Laboratory (HPHL) or Guam Public Health Laboratories (GPHL), who may also refer specimens further to US CDC laboratories. At the national level there is a National Laboratory Coordinator and National Biosafety Officer.

There are several small private clinical laboratories, including one attached to the Genesis Hospital. No microbiology is performed in these private laboratories; however, some rapid tests for infectious diseases are performed. Cultures from private patients are referred to the government hospital laboratories. The population residing in remote outer islands do not have access to laboratory services. Health teams visit periodically and bring rapid diagnostics on these field trips.

There is no laboratory for animal testing and therefore no laboratory system for zoonotic diseases.

Due to the remoteness and relatively small population it is not feasible to offer an extensive test menu in the Federated States of Micronesia laboratories. Each of the State Hospital Laboratories ship specimens to HPHL and GPHL using the PIHOA shipping mechanisms and revolving fund (see *Shipping Protocol for all Infectious Disease Testing for the US-Affiliated Pacific Island Laboratories*). The shipping mechanism incorporates contracts with couriers to transfer specimen shipments from destination airport to reference laboratories. All testing performed at HPHL and GPHL is compliant with CLSI standards.

The Medical Laboratories – Requirements for Quality and Competence. National Standards for Health Laboratories is based upon ISO/IEC 17025, ISO 15189 and Clinical Laboratories Improvements regulations to provide the requirements for quality and competence that are required of medical laboratories. It includes both management and technical requirements for the laboratories.

Recommendations for priority actions

- Seek ways to address the workforce challenges for laboratorians, including incentivizing opportunities for younger graduates and linking pay increases to obtaining qualifications.
- Conduct more competency checks on personnel.
- Consider employing a networked laboratory supply management system for consistent laboratory supply and reduced wastage.

Indicators and scores

D.1.1 Laboratory testing for detection of priority diseases – Score 4

Strengths/best practices

- Five of the ten core tests, as well as tests for Dengue, can be conducted at the State Hospital Laboratories or can be sent to regional laboratories for testing.
- All tests, shipping and results are recorded in the Laboratory Information System (LIS), including for those specimens referred off-island. Monthly and quarterly reports of testing are generated in the LIS. The LIS can be accessed at national level by the National Laboratory Coordinator and by all clinicians in the health network. Clinicians who do not have access to LIS are sent hard copies of reports.
- The *Laboratory Handbook* provides information on type of test, specimen required and storage and transport requirements for specimens. The Federated States of Micronesia laboratories are also described in the *PPHSN LabNet Catalogue*.
- Local capacity is available for: influenza polymerase chain reaction (Pohnpei only), HIV serology, tuberculosis microscopy, culture for Salmonella (however typing sera often not available). Dengue Duo rapid test and blood culture testing available in all state laboratories. All other testing with exception of malaria rapid tests are available from HPHL. There are specific algorithms for testing HIV and tuberculosis. Malaria is rarely seen (in imported cases only), therefore it is not viable to maintain stocks of test kits. All health services laboratories have microscopes and GeneXpert analysers for tuberculosis. Point of care equipment is available at community health centers.

Areas that need strengthening/challenges

- Funding for laboratories is limited and some materials are difficult to source.
- Turn-around-times for confirmatory testing is sometimes greater than two weeks. This may impact the effectiveness of outbreak response.

D.1.2 Specimen referral and transport system – Score 4

Strengths/best practices

- Each state has certified IATA shippers and medical technicians and can routinely transport specimens from the state level laboratories to regional laboratories. Across the Federated States of Micronesia there are 13 International Air Transport Association (IATA) shippers with four also being IATA trainers across the four states. The PIHOA revolving fund simplifies the shipping and payment process.
- The document *Specimens Referred to Hawaii Public Health Laboratory: 2017* provides evidence that there is a functioning referral system available.
- There is train the trainer programs for IATA certified shippers in each state.

Areas that need strengthening/challenges

- Despite having IATA trained shippers and the PIHOA revolving fund, there are often delays in shipping due to flight schedules to the islands and results can take up to two weeks to be received.

- Maintenance of cold chain during these long transfers can be difficult.
- Shipping of diagnostic and infectious material is very costly.

D.1.3 Effective modern point-of-care and laboratory-based diagnostics – Score 3

Strengths/best practices

- Point of care testing is available in CHCs and some dispensaries. Health teams visiting remote islands provide regular disease screening utilizing point-of-care testing.
- The feasibility of point of care diagnostics is under review with CHCs being supplied with point-of-care equipment.
- Some dispensaries in the outer islands are stocked with select point-of-care tests. Laboratory-based diagnostics and PPE
- In State Hospital Laboratories, all media and stains are produced with the raw products purchased from either local or regional vendors. Regional agencies supply HIV and STI testing reagents for select patient groups.

Areas that need strengthening/challenges

- Procurement processes are sub-optimal and frequent stock-outs are an issue. Laboratories can be without diagnostic equipment and materials for long periods of time.
- In-country vendors often have very long lead-times on supply of reagents.
- Very low volume testing means testing is relatively expensive.
- Maintaining competency in remote centers is challenging.
- Some PPE is available, but not in sufficient quantities. There is no tracking system for PPE for use in laboratories.

D.1.4 Laboratory quality system – Score 2

Strengths/best practices

- Laboratory guidelines and quality manuals are available at each of the State Laboratories and provide appropriate quality assurance procedures.
- A National Laboratory Quality Manual was prepared in 2010. Each state laboratory has either adopted this manual or customized the manual to make it more site-specific.
- Technical support is available from WHO, CDC and PIHOA.
- The National Food Safety Laboratory Biosecurity Officer conducts routine visits to each State Laboratory to ensure quality assurance.
- The Hospital Laboratories are working towards ISO 15189 accreditation, albeit very slowly. This includes the diploma-level training for staff, reviewing and developing all required documentation and requests for infrastructure refurbishment.
- All government human health laboratories are enrolled in External Quality Assurance (EQA) programs. The Pacific Paramedical Training Centre provides an EQA programme to all government hospital laboratories in microbiology, serology, biochemistry, transfusion medicine, haematology. Participation is mandated in Standards for Quality and Competence for Medical Laboratories.

Areas that need strengthening/challenges

- None of the four state laboratories are accredited and there is no national body in charge of laboratory certification (e.g. using ISO 9001) or laboratory accreditation (e.g. using ISO 15189).

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 biosurveillance effort that facilitates early warning and situational awareness of biological events.

Target

Strengthened foundational indicator- and event-based surveillance systems that are able to detect events of significance for public health, animal health and health security; improved communication and collaboration across sectors and between sectors (local and intermediate), national and international levels of authority regarding surveillance of events of public health significance; improved country and intermediate level regional capacity to analyse and link data from and between strengthened, real-time surveillance systems, including interoperable, interconnected electronic reporting systems. 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 standards.

The Federated States of Micronesia level of capacities

Communicable disease surveillance, assessment and response activities are conducted at national level by the Surveillance Team in the PHHEP Unit of DHSA and the national EpiNet Team. At the state level, the hospital EpiNet teams are responsible for these activities, each having a Surveillance Officer.

The national communicable disease surveillance system works well, considering the logistic and communication challenges, and was demonstrated by the:

- Regular, and in some states daily, communication between hospital-based clinicians and the EpiNet Teams;
- Daily radio surveillance activities to the outer islands;
- Ability to regularly generate state and national weekly epidemiological bulletins;
- Publication of outbreak investigation reports in peer reviewed journals;
- Adaptation of the surveillance mechanisms for the 2018 Micro Games in Yap State;
- Weekly sharing of national sentinel syndromic surveillance data with the Pacific Public Health Surveillance Network (PPHSN); and
- Communications of acute public health events between national authorities and WHO under relevant IHR provisions (e.g. Zika virus disease outbreak, Yap State, 2007), including the ability to conduct acute health event related risk assessment.

It is unclear where in the Code the Federated States of Micronesia is the mandate or regulation for health surveillance. The coordination and monitoring functions in the Constitution for the national level are sub optimally exercised for communicable disease surveillance. Addressing some of these challenges will require maintaining the benefits of the current system, documenting current mechanisms, and sustaining the early warning and response public health functions.

Recommendations for priority actions

- Development of a single national communicable disease surveillance protocol by DHSA, which builds on existing resources and best practices, considers the need to consistently comply with international commitments, and focuses on the national public health early warning function.
- Provision of coordination, monitoring, and technical assistance to the states by DHSA for the implementation of the national communicable diseases surveillance protocol.

Indicators and scores

D.2.1 Indicator- and event-based surveillance systems – Score 4

Strengths/best practices

- The national public health early warning function largely relies on information generated by any type of information source and is captured through both formal and informal channels.
- The inclusion of “unusual health event” in the surveillance system.
- At state level, regular and frequent interactions between public health and remote communities in the outer islands, as well as between public health and clinical staff.
- The EpiNet Teams at the different jurisdiction levels operate in a coordinated manner according to the same principles.

Areas that need strengthening/challenges

- A national communicable diseases surveillance protocol that clarifies how the system operates at the national and state levels.
- Review of the following in the national surveillance protocol: (i) mechanisms to adapt the surveillance system under specific circumstances (e.g. outbreak investigation and response, post-disaster context, mass gathering events); (ii) mechanisms for adding new and novel diseases; (iii) management of national and international contact tracing operations; and (iv) identification of imported cases of disease.
- Revision of the number of sites and conditions reported in the syndromic surveillance system and clarification of the case definitions of the notifiable diseases systems which are currently a mix of both clinical and laboratory criteria.

D.2.2 Interoperable, interconnected, electronic real-time reporting system – Score 2

Strengths/best practices

- There are many communication channels and tools used to support communicable disease surveillance which allows for the timely investigation and response to unusual and acute health events.

Areas that need strengthening/challenges

- Although the paper-based system works well, a simple electronic tool (e.g. MS Excel) for the collation and analysis of aggregated communicable diseases-related surveillance data may strengthen surveillance collation and reporting at national and state levels.

D.2.3 Integration and analysis of surveillance data – Score 4

Strengths/best practices

- The state and national level weekly epidemiological bulletins that include event- and indicator-based surveillance data and the epidemiological situation in the Pacific.

Areas that need strengthening/challenges

- More frequent and regular interactions (e.g. weekly teleconference) between national and state counterparts on public health surveillance matters, which may enhance the ability to detect multi-focal events.
- Further efforts to ensure that the state and national weekly epidemiological bulletins are received by all health care facilities and health professionals that contribute to communicable disease surveillance.
- Consider developing a formal arrangement between the Division of Health Sciences of the College of Micronesia and DHSA to ensure participation of officials from the state and national levels in modules of the Data for Decision Making (DDM) package delivered by the College of Micronesia (see also D.4. Workforce Development).

D.2.4 Syndromic surveillance systems – Score 4

Strengths/best practices

- The current sentinel syndromic system provides an excellent basis for strengthening the national public health early warning function across all hazards as it already allows for the detection of conditions with infectious and non-infectious aetiology.
- The Patient Encounter Form and Weekly Tally Form, used across the country, allow for easy collection and collation of syndromic surveillance data.

Areas that need strengthening/challenges

- The syndromic surveillance component should be extended to all health care facilities in the country.
- The addition of acute jaundice syndrome, acute neurological syndrome, and severe acute respiratory syndrome to the sentinel system.
- The Patient Encounter Form and Weekly Tally Form should be modified accordingly and also include the “unusual health event” entity.

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.

Target

Timely and accurate disease reporting according to WHO requirements and coordination with FAO and OIE.

The Federated States of Micronesia level of capacities

The National IHR Focal Point (NFP) is represented by the Secretary and Assistant Secretary of DHS and is housed within the Public Health and Healthcare Emergency Preparedness (PHHEP) unit which acts as the NFP Secretariat (see P.2 IHR Coordination, communication and advocacy). That the highest health authority has been designated as the NFP of the Federated States of Micronesia is commendable as it signals the high-level commitment of the country vis-à-vis the international community.

Since the entry into force of the IHR on 15 June 2007, the Federated States of Micronesia has demonstrated the ability to use communication channels established according to IHR provisions, related to acute health events with potential international public health implications. Guided by the technical expertise of the PHHEP Unit, between 2007 and 2018, the Federated States of Micronesia has engaged in dialogue with the WHO IHR Contact Point on ten occasions, and was also the first State Party of the WHO Western Pacific Region to notify an event with potential international public health implications under IHR provisions – Zika virus disease outbreak in Yap State in 2007. Additionally, the Federated States of Micronesia has participated in the annual Regional Exercise Crystal organized by WHO Regional Office of the Western Pacific to test the connectivity of the NFPs, and is actively contributing to the Early Warning, Alert and Response System (EWARS) forum set up by the Pacific Public Health Surveillance Network (PPHSN).

The College of Micronesia is the designated focal point for Animal Disease Notification to the World Organization for Animal Health (OIE) and complies with the biannual reporting obligations to OIE (see also P.4. Zoonotic Disease). The National Environmental Health Coordinator at DHS is the designated Focal Point and Emergency Contact Point for INFOSAN. The Federated States of Micronesia is not a member state of the International Atomic Energy Agency (IAEA), nor a party to the IAEA Convention on Early Notification of a Nuclear Accident and no designated National Warning Point for IAEA (see also RE. Radiation Emergencies).

Possibly due to the absence of SOPs for the functioning of the NFP, there are no systematic interactions between the NFP, the National Focal Point for Animal Disease Notification and the INFOSAN Emergency Contact Point. As a result, multi-sectoral risk assessments for acute events are suboptimal, as is the overall awareness of the country's obligations under the IHR across sectors.

Recommendations for priority actions

- Consider adding to the 24/7 contact details of the NFP a generic email address for the PHHEP Office.
- Consider developing SOPs or a checklist, to facilitate compliance with *Article 4 - Responsible authorities of the IHR*, detailing the functions mandated to the NFP.

- Facilitate access to training on procedures and tools for those mandated to comply with international reporting requirements related to acute events (e.g. NFP, INFOSAN Emergency Contact Point, OIE Delegate).

Indicators and scores

D.3.1 System for efficient reporting to FAO, OIE and WHO – Score 3

Strengths/best practices

- The NFP has fluid interactions with the regional WHO IHR Contact Point as demonstrated by exchanges related to the management of real life events and participation in annual regional simulation exercises;
- Through the PHHEP Unit, the country actively contributes to, and proactively uses, the Early Warning, Alert and Response System (EWARS) forum of the PPHSN.

Areas that need strengthening/challenges

- To foster intersectoral collaboration, consideration should be given by the PHHEP Unit to the development of an IHR information/awareness raising package to be made accessible to officials in sectors beyond health with IHR related obligations. Similarly, consideration should be given to holding annual or biannual face-to-face intersectoral re-fresher sessions. Material for the development of the information/raising awareness package is available on the WHO Health Security Learning Platform in the Context of the IHR, that can be accessed at: <https://extranet.who.int/hslp/training>.
- The relevant governmental entities mandated to comply with international reporting requirements related to acute events – NFP, INFOSAN Emergency Contact Point, National Focal Point for Animal Disease Notification – should consider contacting the relevant international organizations (WHO for IHR and INFOSAN related notifications) and OIE for animal disease notifications) to make sure that those officials have access to training on the use of relevant tools (e.g. WAHIS online platform hosted by OIE).

D.3.2 Reporting network and protocols in country – Score 2

Strengths/best practices

- The responsible person in the NFP is the Secretary of DHSA, the highest health authority in the Federated States of Micronesia.
- State and national levels regularly generate and disseminate weekly epidemiological bulletins, both within the country and externally.

Areas that need strengthening/challenges

- To ensure that email communication addressed to the NFP is acted upon in a timely manner on a daily basis, consideration should be given to adding to the 24/7 contact details of the NFP a generic email address for the PHHEP Unit. This could also facilitate the establishment of a duty officer system to seamlessly cover the NFP functions (see also P.2 IHR Coordination, communication and advocacy).
- An updated list of users of the secure Event Information Site for National IHR Focal Points (EIS) should be communicated to the WHO Secretariat.
- An SOPs or checklist to facilitate compliance with *Article 4 - Responsible authorities* of the IHR is required. Having this document would also strengthen intersectoral interactions for the management of acute events with health implications. Items elaborated upon in the document include: management of the NFP mailbox; establishing distribution lists; coordination of multi-sectoral risk assessments of events and the reporting process, including the use of Annex 2; use and dissemination of the information posted on the EIS, INFOSAN, and WAHIS platforms.

Workforce development

Introduction

Workforce development is important in order to develop a sustainable public health system over time by developing and maintaining a highly qualified public health workforce with appropriate technical training, scientific skills and subject-matter expertise.

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). A workforce includes physicians, animal health or veterinarians, biostatisticians, laboratory scientists, farming/ livestock professionals, with an optimal target of one trained field epidemiologist (or equivalent) per 200,000 population, who can systematically cooperate to meet relevant IHR and PVS core competencies.

The Federated States of Micronesia level of capacities

Health workforce resourcing and development is critical for health security and emergencies and is one of the biggest issues in IHR implementation in the Federated States of Micronesia. Hiring and retaining staff is difficult and most tertiary education requires attendance abroad. Many local health workers then seek work abroad as the salaries are higher. There are several initiatives and scholarships for study abroad, including study leave from government positions, and leave without pay.

There is no Field Epidemiology Training Program in the Federated States of Micronesia, however the Data for Decision Making (DDM) course has been conducted twice. The DDM is a multi-partner initiative designed to address the deficit in epidemiology and data related skills in the Pacific islands workforce, and to build the data and surveillance systems of Pacific islands health agencies. The DDM program is accredited by Fiji National University for a post-graduate certificate in epidemiology. There have been at least 20 graduates from the DDM courses in the Federated States of Micronesia.

In each of the four states and at the national level, EpiNet teams provide the main workforce for IHR implementation. Each EpiNet team has core members from public health, clinical, medical records/data, laboratory and response; with the addition of Program Managers from all programs of DHS, and all graduates of the DDM course. In all states, the Director of DHS is the Incident Commander and will manage the response to an outbreak. All hospitals have a HAZMAT team for first response to a public health event. There are also HAZMAT teams in the Airport, Aircraft Rescue and Firefighting units that operate as first responders to mass casualty events.

There is no comprehensive national workforce strategy in place, however some of the states are developing state workforce strategies. Mechanisms for training include the Pacific Open Learning Health Net (POLHN), CME training from visiting doctors, WHO fellowship programs and other scholarships.

Recommendations for priority actions

- Assess future multidisciplinary public health workforce needs by mapping existing human resources and include mechanisms for increasing the public health workforce at state and national level.
- Develop and implement a comprehensive national public health workforce development strategy or action plan to recruit, retain, expand and develop staff to sustain implementation and advancement of IHR core capacities.

- Provide stronger advocacy, oversight and coordination for training programmes to reach the goal of an appropriately trained multidisciplinary public health workforce, particularly those with competencies in epidemiology and surveillance, at state and national level.

Indicators and scores

D.4.1 Human resources available to implement IHR core capacity requirements – Score 3

Strengths/best practices

- Multidisciplinary EpiNet teams cover surveillance, public health, clinical, environmental health, epidemiology, laboratory and response functions and work well as the responders to outbreaks and emergencies. The EpiNet mechanism is embedded in the health system at the state and national level.
- HAZMAT teams provide critical emergency response capacity.
- Several global and regional public health partners actively provide training for the public health workforce.

Areas that need strengthening/challenges

- There is a shortage of trained public health specialists such as epidemiologists, physicians, veterinarians, clinicians, infection control practitioners, laboratory technicians, risk communication specialists and other personnel in each state and at national level. Attrition also occurs due to limited career opportunities in-country and overseas opportunities not available locally. A number of approaches to increase capacity at all levels, including providing incentives for current and new staff to gain qualifications, and providing clear career paths, may strengthen this workforce.
- Many trainings are ad hoc, held at short notice and lack follow up. The Federated States of Micronesia should consider increased ownership of capacity building in partnership with academic institutions and others through increased national funding, coordination, design, development and delivery of specialist short courses for national and state level staff.

D.4.2 FETP or other applied epidemiology training programme in place – Score 3

Strengths/best practices

- The DDM applied epidemiology course has provided training in applied epidemiology for state and national level public health staff members.
- Several DDM graduates are using the skills acquired in the course in existing or new positions and have provided valuable contributions to public health emergencies.

Areas that need strengthening/challenges

- The DDM course is not routinely delivered and the number of participants is limited. Plans to institutionalize and sustain the course through partnership with an academic institution in Pohnpei is encouraged.
- There is limited secondary education available, and no tertiary level institutions in the Federated States of Micronesia for training in public health or as epidemiologists. However, several suitable on-line training and education courses to further build capacity of the workforce are available.
- Access to other countries in the region that have Field Epidemiology Training Programmes which may provide an option for additional workforce training.

D.4.3 Workforce strategy – Score 2

Strengths/best practices

- Workforce incentives are in place for certain categories of public health staff to assist the Government in the recruitment, retention and in-service development of staff.
- There are a number of opportunities and support mechanisms available for capacity building through attendance at university courses overseas and continuing medical education at state and national level.

Areas that need strengthening/challenges

- A comprehensive workforce strategy or action plan to address workforce issues and other issues relating to human resource needs at state and national level.
- Attrition of trained public health workforce occurs regularly, and identifying, training and retaining public health staff is extremely challenging in the Federated States of Micronesia.
- A mechanism to track the workforce in the Federated States of Micronesia and introduce structured succession planning as a means to increase the availability of capable employees ready to undertake senior roles as they become available.

RESPOND

Preparedness

Introduction

Preparedness includes the development and maintenance of national, intermediate and community/primary response level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. Other components of preparedness include mapping of potential hazards, the identification and maintenances of available resources, including national stockpiles and the capacity to support operations at the intermediate and community/primary response levels during a public health emergency.

Target

Development and maintenance of national, intermediate (district) and local/primary level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. This covers mapping of potential hazards, identification and maintenance of available resources, including national stockpiles and the capacity to support operations at the intermediate and local/primary levels during a public health emergency.

The Federated States of Micronesia level of capacities

The *Federated States of Micronesia National Disaster Response Plan (2016)*, prepared under the *Disaster Relief Assistance Act of 1989*, is an all-hazard plan. These hazards comprise a wide range of natural and man-made disasters including natural hazards (typhoons, tropical storms); chemical events (environmental pollution, oil and chemical spills); disease outbreaks, epidemics and pandemic influenza; agricultural pests; and plane and boat incidents. The Plan utilises the Incident Management System and specifies that there be SOPs for every government department, committee, team, working group and centre that will operate under the Plan.

The National Disaster Committee, chaired by the President, oversees the operational arrangements of national disaster response. This includes the National Disaster Coordination Team and the National Emergency Operations Centre (NEOC), both having representatives from each Ministry. Once the President declares a national state of emergency then assistance can be requested from the US according to the Compact of Free Association Agreement.

Nationally the DHS *All Hazards Response and Recovery Public Health Base Plan 2017* establishes the organizational framework for the activation and management of DHS activities in response to incidents or events having public health, or health care implications, or that threaten the continuation of DHS services. The Health Base Plan describes the capabilities and resources available to DHS to address various public health hazards and for threats to DHS business continuity.

The *Federated States of Micronesia Pandemic influenza plan* was developed in 2008 in response to avian influenza outbreaks in the region and follows the WHO response phases of that time. This plan requires updating to align with the revisions of the WHO response phases that occurred after the 2009 pandemic.

The national arrangements are replicated at State level, with relevant State Disaster Response Plans providing the roles and responsibilities of state government departments and the State Disaster Coordination Team,

the Disaster Coordination Office and state level EOCs. The State Departments of Health have prepared their own all-hazards and event specific plans, can activate their health EOC and have representatives on the State EOC. If the state level event is a human health emergency, the state DHS will be the Lead Agency, working out of the hospital EOC or the State-level EOC if a larger response is required. Under the State Disaster Response Plans, the Governor can request assistance from the national government (in writing) when the emergency exceeds the states capability to respond.

The Federated States of Micronesia's all hazards disaster risk management, led by national and state agencies, are supported by national and state legislation and are documented in SOPs and plans. These plans should be reviewed at appropriate intervals. Effective coordination exists at national and state level with appropriate governance, departmental representation and incident management teams available. Coordination facilities exist, and an effective incident management system has been implemented. However, several functions are reliant on individuals and the range of sub functions identified in some plans may difficult to resource in a protracted event.

Recommendations for Priority Actions

- Consider developing an all hazards national risk assessment, which includes the future impact of climate change to public health and healthcare, with a methodology that can be replicated to develop state level risk assessments.
- Use the all hazards national risk assessment to prioritise the development, testing and updating of public health emergency preparedness and response plans, at national and state levels.

Indicators and scores

R.1.1 National multi-hazard public health emergency preparedness and response plan developed and implemented – Score 5

Strengths/best practices

- The National and State Disaster Response plans and corresponding health plans have been developed and tested. The plans include key agencies and staff involved in an emergency response, the levels of activation and related response. SOPs for each agency are attached to the plan.
- The *Public Health and Hospital Emergency Preparedness (PHHEP) Multi-Year Training & Exercise Plan 2017-2022* describes the training plan administered by the national PHHEP program. PHHEP personnel at the national and state level, work closely with the state Disaster Control Officers (DCO), Department of Environment, Climate Change and Environment Management training and exercise units and DHS to conduct these trainings.
- Every year the PHHEP program holds an annual summit with focal points from each state and national attending. The outcome of the summit is a set of resolutions that clearly define training and exercising activities for the next year.

Areas that need strengthening/challenges

- Supporting plans, in particular the pandemic influenza plan and national and state mass fatality plans, need to be developed or reviewed at appropriate intervals to ensure they continue to meet domestic need and reflect international context.

R.1.2 Priority public health risks and resources mapped and utilized – Score 2

Strengths/best practices

- Hospital Safety Indexes were conducted in 2015 at the state hospitals.
- Common national hazards are identified in *National Disaster Response Plan* and future challenges have been recognised in *Nationwide Integrated Disaster Risk Management and Climate Change Policy* and supporting state level *Action Plans for Disaster Risk Management and Climate Change*.
- A risk mapping exercise was conducted in Pohnpei prior to the Micronesian Games that were held in Pohnpei in July 2014 - Assessment of Current Syndromic Surveillance System and Risk Assessment for the 8th Micronesian Games. There was a measles outbreak occurring at the time in Pohnpei, and this and other potential infectious diseases were considered in a risk assessment during the preparation phase for the Games.

Areas that need strengthening/challenges

- There has not been a consistent all hazards health risk assessment conducted for public health threats or national hazards.
- Undertaking a national and state level all hazards risk assessment would support better resource allocation and prioritization of the comprehensive PHEPP programme.
- The Hospital Safety Indexes identified a range of urgent requirements, with most of the low and average indicators relating to limited financial resources, lack of appropriate equipment, insufficient supplies or staffing. Response planning should be cognisant of the vulnerability of the health care facilities in a disaster.

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

Country with public health emergency operations centre (EOC) functioning according to minimum common standards; maintaining trained, functioning, inter-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.

The Federated States of Micronesia level of capacities

There are several EOCs throughout the Federated States of Micronesia that support all-hazard and health-specific responses. The National Emergency Operations Centre (NEOC) is managed by the Emergency Management Division of DECCEM and is responsible for all-hazard preparedness and operational response arrangements at the national level. The National Disaster Coordination Team operates through the NEOC.

The Secretary of Health represents the health sector on the National Disaster Committee, with operational liaison provided to the NEOC by the PHHEP team. DHSA and the state DHS operate effective EOCs at both national and state level. The Secretary's Emergency Operation Centre (SEOC), the national health EOC, is co-located with the PHHEP team and WHO country office. Each State has a state-level EOC operated by the Disaster Coordinator Office and health EOCs located the state hospitals. The Disaster Coordinator Officer and Director of DHS the Incident Controller for these EOCs respectively.

Public health outbreak response capacity is provided through EpiNet teams, a Pacific regional approach for the investigation of potential outbreaks. EpiNet teams operate across all four States and at national level and provide the manpower for the health EOCs.

State EpiNet teams have access to several published and web resources for case management and the SEOC can access resources from the US. However, many of these require contextualization to the local context. For some specific pathogens, case management guidelines have been developed, including the *Zika Case Management guidelines 2016*.

Recommendations for Priority Actions

- Maintain, monitor and evaluate training and exercise programme to ensure effective and efficient EOC operations.
- Assess health EOC capabilities at national and state levels using an appropriate tool.
- Explore mechanisms within the National Disaster Response Plan to declare a national state of emergency for a single state event to access resources.
- Adapt case management guidelines from other countries for IHR related incidents.

Indicators and scores

R.2.1 Capacity to activate emergency operations – Score 4

Strengths/best practices

- The hospital, state and national disaster plans outline activation triggers for the relevant EOC, including the call down of all responders and the procedures for activation.
- All four hospitals are open 24/7 and the hospital EOC can be activated at any time.
- The hospital, state and national EOCs can be operational within two hours.

Areas that need strengthening/challenges

- Several staff members have multiple duties and cannot always respond immediately when an EOC is activated.

R.2.2 EOC operating procedures and plans – Score 4

Strengths/best practices

- The hospital, state and national disaster plans outline the procedures of the EOC, the required roles and the required response. These have been routinely tested through table top and functional exercises.
- During an event, the decision makers are present daily in the relevant EOC.

Areas that need strengthening/challenges

- EOCs are not always fully equipped or resourced e.g. communication equipment is not available.
- Several sub-functional roles are described in SOPs which may be difficult to resource consistently during an ongoing event.

R.2.3 Emergency operations programme – Score 4

Strengths/best practices

- The national PHHEP unit manages a program of exercises and drills for all states.
- There is a culture of conducting after action reviews and using the results to revise plans and SOPs.

Areas that need strengthening/challenges

- There is a lack of certified trainers within the country with a reliance on international trainers and funding.

R.2.4 Case management procedures implemented for IHR relevant hazards – Score 2

Strengths/best practices

- There are case management guidelines available in all states although these are published externally.
- Pathogen specific case management guidelines have been developed as required.

Areas that need strengthening/challenges

- There is a need to plan on how international case management guidance can be rapidly reviewed and contextualized in the event of an emerging infectious disease

Linking public health and security authorities

Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is manmade (e.g. the anthrax terrorist attacks) or naturally occurring (e.g. flu pandemics). 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, multisectoral 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 effective and timely international assistance, such as to investigate alleged use events.

The Federated States of Micronesia level of capacities

There are no formal or documented arrangements between the Department of Public Security (DPS) and DHS at the national and state levels. However, the respective roles and responsibilities of public health and security authorities in the event of a biological event of suspected or confirmed deliberate origin are generally well understood and would operate under the State Disaster Management Plan.

Both the DHS and DPS are part of the *State Disaster Management Plan* with representatives on the State Disaster Coordination Team and State EOC. The Airport Rescue and Fire Fighting (ARF) HAZMAT team are DPS staff and are first responders under the *State Disaster Management Plan*. DPS also provide security to the DHS, upon request from the Director of DHS to the Director of DPS, for security support during program activities such as conducting immunisation programs in the outer islands.

The DHS and DPS jointly participate in the exercises and drills managed by the PHHEP program (see R.1 Preparedness). The ARF and hospital HAZMAT teams complete annual trainings together as first responders. DPS were also included in *The Federated States of Micronesia RSS and POD Operations Full Scale Exercises* by providing security for the delivery of prophylaxis and vaccines (see R.4 Medical countermeasures and personnel deployment).

If there were a suspected biological event, the police (under DPS) would be the first point of contact and would immediately dispatch the ARF HAZMAT team, notify DHS and DCO. DCO would lead the response and would manage the decontamination of the site, whereas DHS would manage human cases, including transport to hospital and isolation of patients in contact with the suspected agent. The national DCO and DHSA would be notified. Depending on the agent, the National Disaster Response Plan may be activated, especially if the State required assistance.

The Emergency Response Handbook for Chemical and Biological Agents and Weapons is used as the guidelines for preparing and responding to potential biological events. It includes the level of risk and how to respond and decontaminate those affected.

The Federated States of Micronesia does not interact directly with international intelligence agencies and relies directly on the US for any intelligence which may be of relevance to either a public health threat and/or consequence management.

Recommendations for Priority Actions

- Consider establishing formal agreements between health and security authorities to clarify respective roles and responsibilities.
- Explore mechanisms to enhance public health access to information that may be relevant to either preparing for potential public health threats and/or consequence management.

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 event – Score 2

Strengths/best practices

- The disaster response framework includes both public health and security agencies with both routinely participating in joint HAZMAT and other multisectoral exercises and drills.
- The US interacts with INTERPOL on behalf of the Federated States of Micronesia.

Areas that need strengthening/challenges

- There are no documented, formal agreements between DHS and DPS.
- Public health does not have formal access to information that may be relevant to either preparing for potential public health threats and/or consequence management.

Medical countermeasures and personnel deployment

Introduction

Medical countermeasures 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 for response.

Target

National framework for transferring (sending and receiving) medical countermeasures, and public health and medical personnel from international partners during public health emergencies.

The Federated States of Micronesia level of capacities

In the Federated States of Micronesia, in-country readiness arrangements focus on supporting the first 72 hours of a response to a sudden onset event. This is due to the geo-demographic characteristics of the country and the Compact of Free Association Agreement with the US.

Although the country has a small stockpile of medical countermeasures on Pohnpei Island, which can be deployed to other islands, the Federated States of Micronesia primarily relies on accessing medical countermeasures through the Strategic National Stockpile of the United States of America (US SNS).

Following the declaration of emergency by the President, the Secretary of the DHS has the authority to request the deployment of medical countermeasures from the US. The PHHEP program manages the US SNS protocols which cover all the steps and aspects of the logistic chain; have been applied to support the response to real life events (e.g. measles and mumps outbreaks); and are exercised every two years. The PHHEP Unit has dedicated resources and staff for the management of medical countermeasures. To date, the US SNS mechanism only delivers medical countermeasures to Pohnpei Island. The fast-tracked importation, registration and waiving the registration of pharmaceuticals and medical devices, needed to support response efforts, are included in the provisions of the Pharmaceutical Act of 2018 that is being enacted.

Internal mechanisms for the deployment of personnel to support response efforts between the states and between the national levels and the states have been activated. Additionally, domestic resources for surge capacity include: the Medical Reserve Corps, managed by Secretary of the DHS, and comprising practicing and retired physicians, nurses and other health professionals, who volunteer to during large-scale response; the National Red Cross volunteers; and the newly established Office for Volunteers.

The Federated States of Micronesia primarily relies on personnel from the US when national capacity is exceeded. The *All Hazards Response and Recovery - Public Health Base Plan 2017* includes orientation materials for incoming health care professionals. Although there are no written protocols or regulations for the expedited registration and licensing of international healthcare professionals by the Medical Licensing Board and by the Nursing Licensing Board, the process to request and receive international health care professionals, especially from the US CDC, has been successful, for example, during measles and mumps outbreaks in 2014 and 2017 respectively.

Recommendations for Priority Actions

- Accelerate arrangements with US Strategic National Stockpile to send supplies directly to the affected location, and not exclusively to Pohnpei Island.
- Accelerate the enactment of the Federated States of Micronesia Pharmaceutical Act of 2018 to fast-track the importation, registration and waiving the registration of pharmaceuticals and medical devices during a response.
- Refine mechanism to request and coordinate the deployment of international health support (e.g. Emergency Medical Teams, professionals from institutions affiliated to the Global Outbreak Alert and Response Network [GOARN]) including expedited registration and licensing of international healthcare professionals.

Indicators and scores

R.4.1 System in place for sending and receiving medical countermeasures during a public health emergency – Score 5

Strengths/best practices

- Arrangements with the US SNS currently in place guarantee access to medical countermeasures, including for pandemic influenza.
- The PHHEP Unit has dedicated resources and staff for the management of medical countermeasures throughout the logistic chain.

Areas that need strengthening/challenges

- Since transport and delivery of medical countermeasures can be challenging, the finalization of arrangements with US SNS should be accelerated for supplies to be shipped directly to the affected location, and not exclusively to Pohnpei Island.
- The enactment of the Pharmaceutical Act of 2018 should be accelerated since it includes provisions encompassing the fast-tracking of the importation, registration and waiving the registration of pharmaceuticals and medical devices which might be necessary to support response efforts.

R.4.2 System in place for sending and receiving health personnel during a public health emergency – Score 4

Strengths/best practices

- Personnel can be mobilized between the states and between the national and state levels to support response efforts.
- Actions to increase the domestic surge capacity have been and are being made.
- The mechanisms for requesting and receiving international personnel are functional, especially for the deployment of US CDC personnel.

Areas that need strengthening/challenges

- Establishing mechanisms for the registration and training of surge personnel identified domestically.
- Regulations and protocols to expedite the registration and licensing of international healthcare professionals being deployed to support response efforts are required. The possible deployment of a large number of international health care professionals needs to be contemplated in these protocols.

Risk communication

Introduction

Risk communications should be a multilevel and multifaceted process which aims at helping 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 the establishment of 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 should be established. In addition, the timely release of information and transparency in decision-making are essential for building trust between authorities, populations and partners. Emergency communications plans should be tested and updated as needed.

Target

State Parties use multilevel and multifaceted risk communication capacity. Real-time exchange of information, advice and opinions between experts and officials or people who face a threat or hazard (health or 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.

The Federated States of Micronesia level of capacities

In most of the states, risk communication for public health is the responsibility of the EpiNet team with the Director of DHS approving the risk communications strategies and messages. The EpiNet team will discuss the risk communication strategy, designate a team member to develop the materials, and distribute them. The EpiNet Lead or a Division Chief will conduct the communications or delegate to another EpiNet team member.

When the NEOC is activated, public/media communications are coordinated through the President's Public Information Officer (PIO), and during a national emergency with public health implications, DHSA is responsible coordinating health-related communication activities. When the NEOC is not active, but the DHSA SEOC has activated, then the DHSA PIO will assume primary responsibility for public communication. The *All Hazards Response and Recovery Public Health Base Plan 2017* includes a Job Action Sheet for the PIO.

When the State Disaster Plan is activated, the PIO in the Governor's Office is responsible for all risk communications, with the Governor approving all communications. If DHS is the Lead Agency, then the EpiNet team, under the guidance of the Director of DHS will continue with risk communication efforts. All state communication systems can be utilised for warning, awareness and emergency operations under the *State Disaster Management Plan*.

The main sources of communication and outreach include Broadcast radio stations, HF radio with outer islands and bulk SMS messaging.

Communication between sectors is mostly through the Weekly Surveillance Report and situation reports which are disseminated to many stakeholders (See D.2 Real-time Surveillance). State EpiNet teams communicate directly with the national EpiNet team, who then distribute communications to the other states, relevant national departments and national and international stakeholders.

During an emergency response, the State Disaster Coordination Team and the National Disaster Coordination Team work from the relevant state or national EOC and therefore communication between the sectors occurs constantly throughout the response. Daily radio surveillance to the outer islands from in Chuuk and Yap can be also used to share information.

Public communication follows the same arrangement – EpiNet teams conduct this for public health events, the Governor PIO for state level responses and the PIO in the President’s Office for national level communications. The Director of DHS, Governor and President approve all public communications respectively. Communication messages to the public include radio broadcast, flyers, bulk text messages, posters and community meetings. Mayors are utilised to determine the needs of the public in each municipality and/or community. During some events, community volunteers share information directly to households. All communications are done in local language or English across the whole island. Some communications are targeted, for example communications regarding the Kosrae mumps supplementary immunization program in October 2017 were targeted at the Department of Education, school principals and communities in the affected areas. Rumours are addressed as they occur, and usually resolved through investigation.

There is no social mobilization, health promotion or community engagement departments, rather communications with affected communities are managed as for public communications. In non-emergency times, community outreach programs and the distribution of information education communication (IEC) materials are conducted by the relevant program within DHS. For example, the Immunization Program will distribute materials about the influenza vaccine prior to the influenza season and Environmental Health distributes materials regarding prevention measures for arboviruses prior to their season. During public health emergencies, this role may be undertaken by the EpiNet team as for public communication.

The state hospitals have a 24/7 telephone line that can receive calls from the public about rumours. The event-based surveillance system also allows for health professionals to report rumours. These are then verified and responded to by the EpiNet teams. If necessary, the rumours will be addressed through public communication messages as determined by EpiNet, with Director of DHS approval.

Recommendations for Priority Actions

- Develop and implement risk communication strategy, including feedback loops and two-way communication.
- Request formal, in-person risk communication trainings for the EpiNet team members, PIOs, and all staff tasked with developing risk communication messages, products, or serving as the focal point for risk communication.
- Formalize and document mechanisms for coordinated communication. These should include hospital and healthcare sectors, civil society organizations, private sector and general public.

Indicators and scores

R.5.1 Risk communication systems (plans, mechanisms, etc.) – Score 2

Strengths/best practices

- There are designated PIOs at the hospital, state and national level for communication during emergencies.
- At the state level, there is a well understood mechanism for developing risk communication materials and utilising community partners.

Areas that need strengthening/challenges

- Although the mechanisms are in place, and the players know their roles, there is no formal arrangements or documentation regarding the risk communication process.
- Risk communications are not evaluated for effectiveness.
- Communicating to the whole population is difficult, especially to those on outer islands that cannot access routine media and in all languages.
- Limited human resources and staff turnover disrupts existing communications plan and content of messages.
- There have been no exercises or drills that specifically test risk communication, but all exercises and drills include risk communication components.

R.5.2 Internal and partner communication and coordination – Score 2

Strengths/best practices

- EpiNet teams are multi-sectorial and can be convened quickly when required. There are clear communication mechanisms between EpiNet teams at state and national level.
- There is a clear process of communication between government departments e.g. formal communications made from one Director to another, as well as informal communication channels.
- Daily radio surveillance to outer islands provides communication with this community.

Areas that need strengthening/challenges

- The communication mechanisms between departments are well established but are not documented.
- There is no budget specifically for communication with external partners and stakeholders, rather it is part of the overall response budget.

R.5.3 Public communication – Score 3

Strengths/best practices

- There are well established mechanisms for public communication including outreach with schools, churches and the outer islands.
- Members of the public are utilised for engagement with affected communities. During the 2014 measles outbreak in Kosrae, school teachers, church and community leaders were used to disseminate messages. The traditional leadership council, which is made up of municipality kings, also had a big influence in organising the community for the mass vaccination campaign. The State DHS's have good relationships with the media and communicate proactively with the public.
- The public has high degree of trust in government leaders, so messages are positively received.
- Existing committees within communities can be utilised for disseminating messages.

Areas that need strengthening/challenges

- All programs within the DHS conduct their own public awareness campaigns; there is no centralised communications role.
- Public communication mechanisms are well established but are not documented.

R.5.4 Communication engagement with affected communities – Score 3**Strengths/best practices**

- Daily radio calls with dispensaries on the outer islands can include health promotion messages.
- Collaboration between state and local government in establishing communication with community.
- Well established relationships with community groups that can assist in community engagement efforts.

Areas that need strengthening/challenges

- Although community engagement is routinely conducted, the procedures have not been mapped and are not documented.

R.5.5 Dynamic listening and rumour management – Score 3**Strengths/best practices**

- Outer island communications in Chuuk and Yap report issues in the community and interventions undertaken.
- Informal networks, e.g. “coconut wireless” (word of mouth), are used for dynamic listening. All state hospitals have a 24/7 information number for the public to report rumours.

Areas that need strengthening/challenges

- There is no system for verifying and responding to rumours.

OTHER IHR-RELATED HAZARDS AND POINTS OF ENTRY

Points of entry

Introduction

All core capacities and potential hazards apply to “points of entry” 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.

The Federated States of Micronesia level of capacities

There are nine designated points of entry (PoE) according to Federated States of Micronesia Code Title 18 Section 2. All vessels and aircraft entering and departing a port of entry are subject to immigration, quarantine, customs, agricultural and other administrative inspections authorized by law.

Airport Rescue and Fire Fighting (ARF) HAZMAT teams, located at each airport, are trained and equipped to respond to ill travellers. International airports have either an isolation unit or can separate cases into separate rooms while they wait for transport to hospital by ambulance. Portable surge capacity shelters are available in all states and can be utilized at the PoEs. PPE is provided, and staff are trained in donning and doffing. If there are ill passengers reported on a boat, the passengers remain on the boat until the routine inspection is conducted and a doctor has cleared the ill travellers. If required, passengers can be transported to hospital. The state airport and seaport regulations broadly describe these procedures.

There are no inspection programs for environmental safety or institutionalised vector control programs at designated PoE facilities and no trained personnel for the inspection of conveyances. However, disinfection of airplanes does occur and the national *Plan of Action – Vector Surveillance Control* has been developed.

The Department of Transportation, Communications and Infrastructure are represented in the National Disaster Committee, National Disaster Coordination Team and the National Emergency Operations Centre and would be the Lead Agency for national level Aircraft and Ship incidents as per the National Disaster Response Plan. Similarly, in each State, the Department of Transport and/or the Port Authority are part of the Governor’s Disaster Committee and State Disaster Coordination Team under the *State Disaster Response Plan* and is the designated Lead Agency for Aircraft and Ship Incidents.

Each state has an Airport Emergency Plan and Seaport Emergency Plan that describes the management of disasters at the airport and seaport respectively. The plan covers plane crashes, disease outbreaks, radiological incidents and nuclear attacks. The responsibilities for all relevant departments are included. The *All Hazards Response and Recovery Public Health Base Plan 2017* includes PoE and covers the relevant public health services required in a response at the PoEs.

Recommendations for Priority Actions

- Develop SOPs for established mechanisms for PoE for assessment and management of ill passengers.
- Implement The *Federated States of Micronesia Plan of Action – Vector Surveillance Control* at PoE, including inspection of conveyances, in conjunction with environmental, sanitation or equivalent agencies.
- Consider ways to implement sustainable training for all airport and seaport personnel.

Indicators and scores

PoE.1 Routine capacities established at points of entry – Score 3

Strengths/best practices

- Regulations for managing ill travellers, including mechanisms to separate and transport them, are in place and practised.
- The Department of Transportation, Communications and Infrastructure is included in state and national disaster management structure.
- The ability to respond to emergencies at the international airports have been exercised.

Areas that need strengthening/challenges

- The mechanisms for managing ill passengers is not well documented.
- Activities and trained staff to ensure a safe environment at PoE, including solid and liquid waste management and measures to ensure water safety, are not in place.
- Vector surveillance and control programs have not been sustainably implemented.

PoE.2 Effective Public Health Response at Points of Entry – Score 2

Strengths/best practices

- The State and National Disaster Response plans include PoE and provide the roles and responsibilities for PoE staff.
- Annual mass casualty exercises are conducted at airports.
- Airport and seaport emergency plans provide general instructions, SOPs and response measures for various emergency situations.
- A full-scale functional exercise conducted in August 2017 at the four international airports demonstrated the role of the PoEs in a State level response. This exercise tested the mechanism and capacity of the country to detect and respond to public health emergencies at the PoE.

Areas that need strengthening/challenges

- There are no fulltime personnel at the POEs to identify and isolate suspected cases. Plans and exercises focus mostly on disasters, not public health issues.

Chemical events

Introduction

Timely detection and effective response of potential chemical risks and/or events require 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 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.

The Federated States of Micronesia level of capacities

The Federated States of Micronesia is a party to the Stockholm Convention on Persistent Organic Pollutants (since 2005) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (since 1995), but not to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. The 2007 *Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants* identified all hazardous, obsolete chemicals in the Federated States of Micronesia with the majority removed.

State regulations provide for the control and registration of pesticides. There is a limited requirement for pesticides in the Federated States of Micronesia due to only small-scale agriculture. The laws and regulations in each state are similar, with the EPA or KIRMA (in Kosrae) being the responsible authority.

The most common chemical risks include waste oil and refined fuel (aviation, petrol and diesel), chlorine, ammonia and residual asbestos hazards. There are no specific guidelines or manuals for the surveillance, assessment and management of chemical events, intoxication and poisoning and no chemical incident surveillance. A multi-sectorial approach is needed to mitigate residual risks.

There is also no environmental monitoring (water, air, soil, sediment) or monitoring of consumer products (e.g. food and goods) for chemical hazards and no procedures for risk assessment to activate a response. There is no laboratory capacity for chemical analysis, although the Federated States of Micronesia is part of a Laboratory Response Network for Chemical Threats, sponsored by the US-CDC, with the Hawaii Public Health Laboratory covering testing for the Federated States of Micronesia.

Response capacity is limited to HAZMAT responder level trained staff within the Airport Rescue Fire services and hospitals within each state, however chemical detection, identification and monitoring capacity is extremely limited. The development of technician level HAZMAT teams would enhance operational decision making and response capacity. Whilst there is 24/7 access to public and clinical advice from the Nebraska Regional Poison Centre, there is a need to develop clinical guidance, supporting protocols and chemical database access to better support clinical and public health response.

There is no specific public health response plan for chemical incidents in the Federated States of Micronesia, rather a response would be conducted by EPA or KIRMA (in Kosrae) and if additional resources were required, then relevant *State Disaster Plan and/or the Federated States of Micronesia National Disaster Response Plan* would be activated. If a national public health response was required, then the *All Hazards*

Response and Recovery Public Health Base Plan 2017 would be activated. EPA/KIRMA would work with the DHS and hospital staff if there were chemical intoxication in humans. There are opportunities to strengthen the development of health risk assessment and public health advice in an emergency.

Recommendations for Priority Actions

- Develop a national chemical incidents surveillance system.
- Undertake a joint risk assessment and mapping of chemical hazards.
- Review hazardous materials annexes, SOPs and guidelines within state and health plans to ensure a coordinated multi-agency response to chemical events.

Indicators and scores

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

Strengths/best practices

- Under the Stockholm Convention, all hazardous, obsolete chemicals were identified and removed from the Federated States of Micronesia.
- State regulations provide for the control and regulation of pesticides, with limited importation of highly hazardous substances into the Federated States of Micronesia.
- The Federated States of Micronesia has access to a Nebraska Regional Poisons centre.
- There is a HAZMAT first responder capacity within each state at the hospital and Airport Rescue Fire services.

Areas that need strengthening/challenges

- There are no specific guidelines or manuals for the surveillance, assessment and management of chemical events, intoxication and poisoning and no chemical incident surveillance in the Federated States of Micronesia.
- There is no laboratory capacity for chemical testing, nor first responder detection, identification and monitoring capacity.
- Mechanisms for better alert and information sharing between response agencies for chemical incidents can be improved as can the sharing of risk-areas with potential for chemical events occurring, such as chemical storage facilities.
- Investigate and access to regional/external organizations for response and control resources and support available for the Federated States of Micronesia.

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

Strengths/best practices

- The State and National Disaster Response plans include chemical events and provide the roles and responsibilities for relevant response staff.
- There have been chemical events responded to under the State Disaster Response plan.

Areas that need strengthening/challenges

- There is limited multisectoral collaboration for chemical events.
- Formal arrangements with regional/international health organizations to enable access to technical advice, equipment and designated health facilities in the region during chemical events.

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 with surveillance and response capacity for radiological and nuclear hazards/events/emergencies. This requires effective communication and collaboration among the sectors responsible for radiological and nuclear emergency management.

The Federated States of Micronesia level of capacities

Radiological sources, including industrial and medical, are not used in Federated States of Micronesia and the Federated States of Micronesia Constitution at the national and state level bans radioactive waste. Therefore, there are no policies, strategies or plans that specifically refer to the detection, assessment and response to radiation emergencies. There is no institute responsible for radiation surveillance/monitoring and no laboratory capacity for radiation. There are no plans for the transport of radioactive material, samples and waste management.

The Federated States of Micronesia is neither a Member State of the IAEA, nor is it a party to IAEA Convention on Early Notification of a Nuclear Accident (see Reporting). It is also not a party to the IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency and has no designated National Warning Point for IAEA.

Whilst the risk of a domestic radiological emergency is highly unlikely, the Federated States of Micronesia may be affected by an international radiological event. If so, the National IHR Focal Point would receive public health and technical advice, however there is no agency with the ability to detect, identify or monitor radiological contamination and no arrangements to access laboratory testing. Therefore, the Federated States of Micronesia could explore mechanisms to develop or access limited response capacity to respond to regional or global events.

In the unlikely event of a radiation emergency, the relevant *State Disaster Plan* and/or *The Federated States of Micronesia National Disaster Response Plan* would be activated. If a national public health response was required, then the *All Hazards Response and Recovery Public Health Base Plan 2017* would be activated. The generic arrangements within these plans to request and coordinate specialist assistance for radiation events could be strengthened.

Recommendations for Priority Actions

- Establish capacity to detect, assess and respond to radiation emergencies as appropriate to the Federated States of Micronesia.
- The Federated States of Micronesia to consider seeking IAEA membership.
- Undertake a risk assessment and mapping of radiological hazards.

Indicators and scores

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

Strengths/best practices

- There is no industrial or radiological radioactive material used in the Federated States of Micronesia and radioactive waste is banned; therefore, the risk of a domestic radiation event is very low.

Areas that need strengthening/challenges

- Mechanisms to enhance HAZMAT and ARF responder capacity to provide an initial response to radiological events.
- A hazard specific response plan for a radiological event including the process to access technical advice from international partners.

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

Strengths/best practices

- Generic response planning provides a framework to develop radiological response capacity.
- The National IHR Focal Point provides an appropriate means to access radiological technical advice if required.

Areas that need strengthening/challenges

- The generic arrangements within the National and State Disaster Response plans to request and coordinate specialist assistance for radiation events could be strengthened.

Appendix 1: JEE background

Mission place and dates

The Federated States of Micronesia; 12 to 17 August, 2018

Mission team members:

- Ms Rhonda Owen, Australia, Assistant Secretary, Health Emergency Management Branch Office of Health Protection, Department of Health (Team Lead).
- Dr Li Ailan, Regional Emergency Director, WHO Health Emergencies Programme, WHO Regional Office for the Western Pacific.
- Dr Babatunde Olowokure, Programme Area Manager, Health Emergency Information and Risk Assessment, WHO Health Emergencies Programme, WHO Regional Office for the Western Pacific.
- Dr Daphne Moffett, United States, Regional Director, Centers for Disease Control and Prevention, Central Asia.
- Dr Howard Njoo, Canada, Deputy Chief Public Health Officer/Chief Medical Advisor, Infectious Disease Prevention and Control Branch, Public Health Agency Canada.
- Mr Charles Blanch, New Zealand, Director, Emergency Management Protection Regulation and Assurance, New Zealand Ministry of Health.
- Mr Fernando Gonzalez-Martin, Technical Officer, WHO Health Emergencies Programme, WHO Headquarters.
- Dr Roberta Andraghetti, Regional Advisor International Health Regulations, PAHO Health Emergencies Department, WHO Regional Office for the Americas.

Observers

- Ms Julia Alfred, Republic of Marshall Islands, Secretary of Health and Human Services, Ministry of Health and Human Services.
- Ms Sherilynn Madraisau, Palau, Director, Palau Bureau of Public Health.
- Ms Ritter Udui, Palau, Palau Bureau of Public Health.

Mission Facilitation

- Dr Eunyong Ko, WHO Country Liaison Officer in Northern Micronesia.
- Ms Michelle McPherson, Independent Consultant.

Objective

To assess the Federated States of Micronesia capacities and capabilities relevant to the 19 technical areas of the JEE tool and to provide baseline data to support Federated States of Micronesia's efforts to improve their IHR core capacity implementation.

The JEE process

The JEE process is a peer-to-peer review. The entire external evaluation, including discussions around the scores, the strengths, the areas that need strengthening, best practices, challenges and the priority actions should be 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, 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.

Preparation and implementation of the mission

In 2017, the Federated States of Micronesia voluntarily requested a JEE as part of their commitment to the monitoring and evaluation of core capacities for IHR. The Federated States of Micronesia, with technical assistance from WHO, conducted a JEE orientation workshop in July 2017 with participants from each of the states. The workshop involved participants from all four states of The Federated States of Micronesia from multiple sectors and partners such as International Organization for Migration, Pacific Community, United Nations Joint Programme, Red Cross and the World Bank. During the workshop all four states requested that the JEE process be conducted at the State level. A Presidential declaration was subsequently made for each state to establish a multi-sectoral JEE committee. The State Governors were then tasked with setting up a JEE committee and starting the internal assessment by using the JEE tool to gather evidence.

The Federated States of Micronesia Department of Health and Social Affairs (DHSA) requested technical assistance from WHO to facilitate the state level JEE assessments. WHO Consultant visited three states – Kosrae, Pohnpei and Chuuk – in November and December of 2017, to collect documentation and collate information for the drafting of the JEE self-assessment report. The same Consultant attended the annual The Federated States of Micronesia PHHEP Summit in Chuuk in April 2018 to collect additional information and work with the State and National JEE committee members to finalise the JEE self-assessment report for The Federated States of Micronesia. The DHSA finalised the JEE self-assessment which was provided to WHO in June 2018.

The JEE mission began on 12 August 2018 with a briefing of the international experts of the JEE team. Between 13 and 16 August 2018, national and international experts jointly reviewed national capacities in the 19 technical areas of the JEE tool. Field visits were conducted on 14 August 2018 and provided an opportunity for more in-depth discussions and verification of capacities. Field sites included Pohnpei State Hospital, Pohnpei State Public Health, community health centers, national food laboratory, Pohnpei EPA, Genesis Private Clinic, the State EOC, DECEM, the College of Micronesia, a dispensary and the national airport and seaport.

The mission concluded on 17 August 2018 with a joint review and consensus on JEE scores, recommendations and priority actions. The results of the assessment and observations of the Federated States of Micronesia's preparedness and response capacities were presented to the Secretary of Health, the Honourable Magdalena Walter.

Limitations and assumptions

- The assessment used the JEE tool but took into account the context of Small Island Developing States in implementing and sustaining capacities to facilitate the application of the IHR.
- 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 publically available.
- The evaluation is not an audit. Information provided by the Federated States of Micronesia 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

Federated States of Micronesia lead representatives

- Mr. Marcus Samo, Assistant Secretary of Health, Department of Health & Social Affairs
- Mr. Moses Pretrick, Chief, Environment & Preparedness, Department of Health & Social Affairs
- Mr. Arthy Nena, Project Director, PHHEP, Department of Health & Social Affairs
- Dr. Joanes Sarofalpiy, Medical Director, PHHEP, Department of Health & Social Affairs
- Dr. Eliaser Johnson, Field Epidemiologist, Department of Health & Social Affairs
- Mr. Carter Apaisam, Chief, Immunization Unit, Department of Health & Social Affairs
- Mr. Mayson Fredrick, Training/Exercise Coordinator, PHHEP, Department of Health & Social Affairs
- Ms. Lisa Kohler, Laboratory Consultant, Department of Health & Social Affairs
- Ms. Margaret Baekalia, Food Laboratory Consultant, Department of Health & Social Affairs
- Mr. Wincener David, National Health Planner, Department of Health & Social Affairs
- Dr. Livinson Taulung, Director of Health Services, Department of Health Services, Kosrae State
- Mr. Kapilly Capelle, Director of Health Services, Department of Health Services, Pohnpei State
- Mr. Julio Marar, Director of Health Services, Department of Health Services, Chuuk State
- Ms. Martina Reichhardt, Director of Health Services, Department of Health Services, Yap State

Participating institutions

Ministries of Health

- Department of Health and Social Affairs, The Federated States of Micronesia National Government
- Department of Health Services, Chuuk State Government
- Department of Health Services, Pohnpei State Government
- Department of Health Services, Yap State Government
- Department of Health Services, Kosrae State Government

Other national ministries and agencies

- Department of Justice, The Federated States of Micronesia National Government
- Department of Finance & Administration, The Federated States of Micronesia National Government
- Department of Transportation, Communication and Infrastructure, The Federated States of Micronesia National Government
- Department of Resources and Development, The Federated States of Micronesia National Government

- Department of Environment, Climate Change, and Emergency Management, The Federated States of Micronesia National Government
- Department of Foreign Affairs, The Federated States of Micronesia National Government
- College of Micronesia - The Federated States of Micronesia

Other state ministries and agencies

- Department of Agriculture, Chuuk State Government
- Department of Agriculture, Pohnpei State Government
- Department of Agriculture, Yap State Government
- Department of Agriculture, Kosrae State Government
- Office of Disaster Management, Chuuk State Government
- Office of Disaster Management, Pohnpei State Government
- Office of Disaster Management, Yap State Government
- Office of Disaster Management, Kosrae State Government
- Port Authority, Pohnpei State Government
- Port Authority, Chuuk State Government
- Port Authority, Yap State Government
- Port Authority, Kosrae State Government
- Department of Public Safety, Chuuk State Government
- Department of Public Safety, Pohnpei State Government
- Department of Public Safety, Yap State Government
- Department of Public Safety, Kosrae State Government

Supporting documentation provided by host country

Materials provided to the external JEE team prior to the mission

- Joint External Evaluation Federated States of Micronesia: Self-Evaluation Report. April 2018.

Presentations to the JEE team during the mission

- Overview of the Federated States of Micronesia's Healthcare System. Marcus Samo, Assistant Secretary of Health, Department of Health and Social Affairs. Powerpoint presentation, 13 August 2018.
- JEE IHR Technical areas 1-19. Individual PowerPoint Presentations. 13 to 17 August 2018.

Documents provided to the JEE team

National legislation, policy and financing

- The Federated States of Micronesia Constitution (1979) and The Federated States of Micronesia Code (Revised in 1997).
- The Federated States of Micronesia Code. Title 41: Public health, safety and welfare. Chapter 6: Sanitation Act (1997).

- The Federated States of Micronesia Code. Title 41: Public health, safety and welfare. Chapter 4: Immunization of School Children (1997).
- The Federated States of Micronesia Code. Title 41: Public health, safety and welfare. Chapter 7: The Federated States of Micronesia Disaster Relief Act (1997).
- The Federated States of Micronesia Code. Title 25: Environmental Protection. Chapter 2: Role of Office (1997).
- The Federated States of Micronesia Code. Title 25: Environmental Protection. Chapter 3: Enforcement (1997).
- The Federated States of Micronesia National Disaster Response Plan 2016.
- Kosrae State Code (2014).
- Compact of Free Association Amendments Act Of 2003. Public Law 108–188—Dec. 17, 2003.
- Compact of Free Association Federal Programs and Services. Agreement between the United States of America and Micronesia, 2003.
- Review of the Current Health Protection Practices in the Federated States of Micronesia: Laws, Regulations and Policy Regimes (2014).

Antimicrobial resistance

- The Federated States of Micronesia Microbiology Summary. 2017 Antibiogram.
- The Federated States of Micronesia Microbiology Summary. 2016 Antibiogram.
- Weekly surveillance reports from the four states and nationally (2018).
- Project to Strengthen and Monitor Antimicrobial Resistance and Microbiology services in the Federated States of Micronesia Hospital Laboratories; 2017 Workshop report.
- The Federated States of Micronesia Infection Control Guidelines (2017).
- Antibiotic Prescribing guidebook (2018).
- Pohnpei SOPs for antimicrobial susceptibility testing (2014).
- Pohnpei report of handwashing Day activities (2017).

Zoonotic diseases

- The Federated States of Micronesia Plant and animal quarantine regulations (1997).

Food safety

- The Federated States of Micronesia Code. Title 41: Public health, safety and welfare. Chapter 10: National Food Safety Act (1992).
- The Federated States of Micronesia Code. Title 41: Public health, safety and welfare. Chapter 6: Sanitation (1997).
- The Federated States of Micronesia DHS Regulation No. 1 - Food Inspectors and Food Analysts (1994).
- The Federated States of Micronesia DHS Regulation No. 2 - General Principles of Food Hygiene (1993).
- The Federated States of Micronesia DHS Regulation No. 3 - Licensing- Important Process, Export and Inter-State Commerce (1993).
- The Federated States of Micronesia DHS Regulation No. 4 - Hygienic Practice for Low _ Acidified Low Acid Canned Foods (1994).

- The Federated States of Micronesia DHS Regulation No. 5 - Labelling and Packaged Foods (1987).
- The Federated States of Micronesia DHS Regulation No. 6 - Quick Frozen Blocks and Mixtures of Fish Fillet and Minced Fish Flesh (1987).
- The Federated States of Micronesia Food labelling law (2005).
- The Federated States of Micronesia SOPs for State Food Inspection (2012).
- The Federated States of Micronesia SOPs for Imported Food Control (2013).
- Kosrae Regulation 1: Food Sanitation and Permit Regulations (1998).
- Chuuk: Notification of outbreak to national PHHEP (2016).
- Chuuk: Mass poisoning after consumption of a hawksbill turtle, Federated States of Micronesia, 2010.
- Pohnpei: EPA Food poisoning investigation form (2018).
- Pohnpei: EPA Food Safety Survey Form (2018).
- Pohnpei: EPA Food Selling Establishment Inspection Report Form (2018).

Immunization

- National Vaccination Schedule (2014).
- The Federated States of Micronesia Code. Title 41; Chapter 4: Immunization of School Children (1997).
- The Federated States of Micronesia immunisation report to WHO (2017).
- The Federated States of Micronesia Subnational immunisation coverage data (2017).
- Pohnpei State Immunisation workplan August (2017).
- National SOPs for Immunization Cold Chain (2017).
- Kosrae Mumps sitrep 5: 18 October (2017).
- Pohnpei state Measles Outbreak sitrep (2014).

National laboratory system

- Chuuk Laboratory Handbook and Pohnpei Laboratory Handbook (2014) (all states have a similar handbook).
- PPHSN LabNet catalogue (2015).
- Shipping Protocol for All Infectious Disease Testing for the US-Affiliated Pacific Island Laboratories (2016).
- Specimens Referred to Hawaii Public Health Laboratory (2017).
- Insights in Public Health: Leveraging Pacific Laboratories to Boost Global Health Security (2016).
- National Medical Laboratory Policy (2015).
- Hospital Laboratory Quality Manual (2010).
- Participation in the Pacific Paramedical Training Centre - Regional External Quality Assurance Programme (REQAP) for the Hospital Laboratories in the Federated States of Micronesia (2016).
- Report of arbo-viral testing referred to Hawaii Public Health Laboratory (2018).

Real time surveillance

- The Federated States of Micronesia Syndromic Surveillance SOPs (2012).
- Chuuk: Patient encounter form for syndromic surveillance (2018).
- Kosrae: Event-Based surveillance SOP (2017).
- Kosrae: Notifiable Disease Surveillance SOP (2017).
- Kosrae: Lab-based notifiable disease surveillance system SOP (2017).
- Kosrae: Hospital-Based Active Surveillance SOP (2017).
- Kosrae: Syndromic Surveillance SOP (2017).
- Kosrae EpiNet Routine Surveillance RRDTs (Roles, responsibilities, deliverables and timelines) (2017).
- Pohnpei: State SOPs for Surveillance systems (2016).
- The Federated States of Micronesia Weekly surveillance report: Week 40 2017.
- Chuuk Weekly surveillance report: Week 42 2017.
- Kosrae: EpiNet Weekly Communicable Disease report – EpiWeek 42, October 16-22, 2017.
- Pohnpei state Weekly surveillance report: Week 42 2017.
- Yap Weekly surveillance report: Week 43 2017.

Reporting

- The Federated States of Micronesia Weekly surveillance report: Week 40 2017.

Workforce development

- Data for Decision Making Workshops. Guam, May 4-15, 2015.
- DHSA Organisation chart (2018).

Preparedness

- Disaster Relief Assistance Act (1989).
- The Federated States of Micronesia National Disaster Response Plan (2016).
- The Federated States of Micronesia All Hazards Response and Recovery Public Health Base Plan (2017).
- The Federated States of Micronesia Pandemic influenza plan (2008).
- The Federated States of Micronesia DHSA – Public Health and Hospital Emergency Preparedness (PHEP/HPP) Multi-Year Training & Exercise Plan 2017-2022.
- Chuuk State Disaster Management Plan and Emergency Operations Centre SOP (2017).
- Kosrae State Disaster Response Plan (2017).
- Kosrae State SOP for Emergency and Disaster Response (2017).
- Pohnpei State Disaster Plan (2017).
- The Federated States of Micronesia Nationwide Integrated Disaster Risk Management and Climate Change Policy (2013).
- Kosrae Action Plan for Disaster Risk Management and Climate Change (2016).

- Yap Action Plan for Disaster Risk Management and Climate Change (2016).
- Assessment of Current Syndromic Surveillance System and Risk Assessment for the 8th Micronesian Games (2014).

Emergency Response Operations

- Investigating an outbreak of acute fever in Chuuk, Federated States of Micronesia (2014).
- Mass poisoning after consumption of a hawksbill turtle, Federated States of Micronesia (2010).
- Kosrae Zika Plan (2016).
- Kosrae Zika sitrep: 21 November 2016.
- Pohnpei Mumps sitrep_4 2017.
- Pacific Outbreak Manual (2016).
- Zika Case Management guidelines (2016).
- The U.S. Department of Health and Human Services (HHS) Region 9: Ebola Virus Disease (EVD) and Other Special Pathogens– Coordination and Transportation Plan (2018).

Medical countermeasures and personnel deployment

- The Federated States of Micronesia Strategic National Stockpile (2017).
- The Federated States of Micronesia RSS and POD Operations Full Scale Exercise report. After-Action Report/Improvement Plan March 7, 2013.

Points of Entry

- The Federated States of Micronesia Code. Title 18 Territory, Economic Zones and Ports Of Entry. Chapter 2 Ports of Entry (§§ 201-210)
- Kosrae Airport Emergency Plan (2017).
- Pohnpei Airport Emergency Plan (2011).
- Pohnpei Seaport Emergency Procedure Manual (2018).

Chemical Events

- The Federated States of Micronesia Environmental Protection Act (2012)

