JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of the

UNITED ARAB EMIRATES

Mission report:
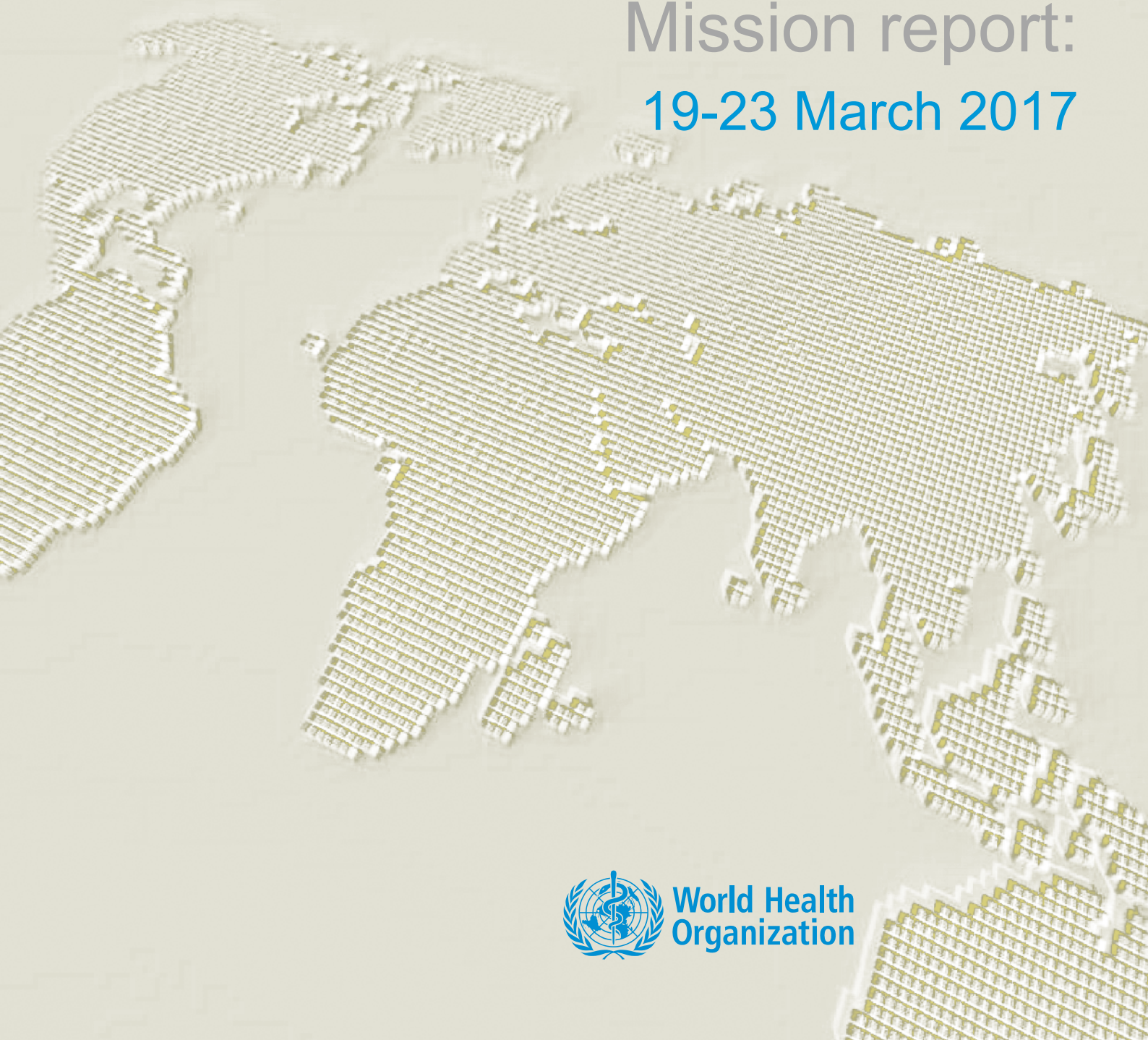### 19-23 March 2017

World Health Organization

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Contents

ACKNOWLEDGEMENTS

Abbreviations

ADFCA	Abu Dhabi Food Control Authority
AMR	antimicrobial resistance
ASP	antimicrobial stewardship programme
BSL	biosafety level
CAP	College of American Pathologists
CBRN	chemical, biological, radiological and nuclear (risk mitigation)
CCHF	Crimean–Congo haemorrhagic fever
CVRL	Central Veterinary Research Laboratory
DCL	Dubai Central Laboratory
EET	External Evaluation Team
EOC	emergency operations centre
FANR	Federal Authority for Nuclear Regulation
FAO	Food and Agriculture Organization
FETP	Field Epidemiology Training Programme
GCC	Gulf Cooperation Council
GLASS	Global Antimicrobial Resistance Surveillance System
HAAD	Abu Dhabi Health Authority
HCAI	health care-associated Infection
IAEA	International Atomic Energy Agency
IATA	International Air Transport Association
IHR	International Health Regulations (2005)
IPC	infection prevention and control
ISO	International Organization for Standardization
JCI	Joint Commission International
JEE	Joint External Evaluation
MCCE	Ministry of Climate Change and Environment
MERS-CoV	Middle East respiratory syndrome coronavirus
MHP	Ministry of Health and Prevention
MMR	measles, mumps and rubella (vaccine)
NCEMA	National Crisis and Emergency Management Authority

NFP	National Focal Point
NPP	(Baraka) Nuclear Power Plant
OIE	World Organisation for Animal Health
PFGE	pulsed-field gel electrophoresis
PHEIC	public health emergency of international concern
PoE	point(s) of entry
RVF	Rift Valley fever
SOP	standard operating procedure(s)
UAE	United Arab Emirates
WHO	World Health Organization

Executive summary

Findings from the Joint External Evaluation

The United Arab Emirates (UAE) has established capacity in all 19 technical areas relevant for the International Health Regulations (2005) (IHR), and has many excellent practices in place. Especially impressive is the level of preparedness and coordination capability maintained between the different sectors at the different administrative levels. However, in parallel to its strengths and good practices in public health, the World Health Organization (WHO) Joint External Evaluation (JEE) process identified a few gaps and processes to address for full compliance with the IHR. The main findings are summarized as follows.

The UAE is strongly committed to implement fully the IHR. Legislation is periodically revised and necessary modifications are implemented. Decrees and administrative procedures provide continuous improvement and are seen as interim solutions until broader legislation can be passed. The Emirates has a substantial legal and regulatory framework to support and enable the implementation of IHR.

A functional multisectoral coordination and communication mechanism is established. The mechanism operates under well-defined national legislation, and has been tested through real-life events, with the lessons learnt incorporated into standard practice. Updates on the status of IHR implementation are shared regularly with the different stakeholders across all relevant sectors.

A National Action Plan on Antimicrobial Resistance has been developed to optimize and coordinate efforts across the Emirates. The plan includes a roadmap to eliminate health care-associated infections. Monitoring and surveillance of antimicrobial resistance are successfully implemented at the hospital, Emirate/Authority, and national level. A National Action Plan on Antimicrobial Stewardship Programmes is in place, along with an Antibiotic Stewardship Policy.

The National Committee for Zoonotic Diseases has clear terms of reference, with multidisciplinary human resources available at national and intermediate level. Contingency plans exist for priority zoonoses in both the human and animal health sectors. However, a mechanism for coordination, cooperation communication among key stakeholders under the One Health approach, and advocacy and communication among sectors, needs further strengthening.

The National Food Safety Committee is in place, along with a strong coordination mechanism among all relevant stakeholders. A national outbreak response team has been established with representatives from all sectors. Both active and passive surveillance programmes are supported by accredited testing in a food safety laboratory. Whole genome sequencing needs to be established in the UAE to carry out bacterial isolates for pulsed-field gel electrophoresis (PFGE) fingerprinting.

While regulation for biosecurity exists, there is more to do in terms of full compliance by laboratories and updates to the regulations to ensure they fully meet IHR requirements. Also, more work is necessary on containment measures and records for biosecurity in addition to training personnel on biosecurity practices in all laboratory sectors. Mandatory licensing of all health laboratories is in place and conformity to a national quality standard is required; however, there is not yet mandatory laboratory accreditation to international quality standards.

The high level of support and commitment to immunization within the Government, with sustainable funding, has led to many years of high coverage of measles, mumps and rubella (MMR) and other childhood vaccinations. There are pockets of the population where coverage of MMR is low enough for outbreaks to occur; several efforts are ongoing to improve the quality of coverage data. UAE has systems in place to maintain a high level of vaccine access and delivery. However, the national immunization authority needs to have full access to data on the immunization cold chain for private providers.

The national laboratory system is capable of conducting at least five of the ten core tests; however, coordination between the human, animal and food safety laboratory networks should determine where the sectors could expand collaboration around shared practices, standards, and systems. A system is in

place to transport specimens to/from other laboratories in the region, funded from the national budget; however, there are some difficulties communicating with peripheral laboratories. There is a network of reference laboratories with distinct capabilities; construction of a central public health reference laboratory with biosafety level 3/4 will increase consolidated testing and expand capabilities at the national level.

UAE has a strong, functional system of surveillance for priority diseases and syndromes. However, since event-based surveillance is relatively new, it is not yet systematically implemented in the country and will require training of all stakeholders. Systematic reporting with a dedicated team for data analysis and risk assessment is in place at both district and Emirate level. UAE also has a syndromic surveillance system in place for priority diseases where clinical diagnosis for suspected cases is utilized for reporting. An electronic notifiable infectious disease reporting system is in place in Abu Dhabi and Dubai, although it is currently only used for human health. Opportunities exist to unify the national electronic surveillance system.

UAE has demonstrated its ability to identify a potential public health emergency of international concern and file a report within 24 hours; the same applies to reporting relevant zoonotic diseases to the World Organisation for Animal Health. However, further preparedness activities related to chemical and radiation events need to be carried out in order to improve timely reporting of potential events.

A developed education system and an evolving workforce strategy exists for the development of staff in the public health sector. This strategy needs to be more regularly reviewed, updated and consistently implemented, and should be expanded to cover the entire public health workforce. Multidisciplinary human resource capacity is available at different levels of the public health system, although this capacity depends on professionals from overseas with a high turnover of expatriates, which remains a challenge.

Strategies and plans exist to mobilize resources from national and intermediate levels to support local response action, and a national public health emergency preparedness and response plan is in place. A national risk profile and resources are regularly assessed and supported by legislation and policy-makers' commitment.

Dedicated and trained emergency operations centre staff can activate a response within 2 hours. Roles and responsibilities are clearly defined, and case management, patient referrals, and transportation of potentially infected patients are well implemented.

Strong collaboration between the public health and security sectors and the legal system in the country allows the public health sector to call for the support of the security sectors.

UAE manages robust domestic systems for the development, stockpiling, distribution and dispensing of medical countermeasures, as well as the deployment of federal public health and medical personnel when and where they are needed. The country needs to develop a plan, procedure or legal provision to distribute animal countermeasures.

There is a formal and fully operational national system for risk communication with a multi-hazards approach in the UAE, including standard operating procedures and multisectoral and multi-stakeholder involvement. In addition, a system exists for integrating lessons learnt from national drills into the revision of national plans for continuous improvement and strengthening of the risk communication system. Resources are regularly allocated to maintain and expand the system. Effective, regular and inclusive communication coordination exists among partners and stakeholders. Communication with communities and populations who do not speak or understand Arabic or other common languages needs further enhancement.

IHR capacities at points of entry were, as far as could be assessed, adequately developed even though there is always room for improvement and further development in view of a rapidly expanding economy. Mechanisms should be put in place to ensure that these capacities are maintained under the continued attention of responsible authorities.

A number of national stakeholders are involved in the management of chemical risks and events. Numerous plans and legislative frameworks support the potential for a strong enabling environment for the management of chemical risks and events. However, some of these plans need to be consolidated and formalized. More formalized multisectoral coordination would allow for more effective prevention, detection and response to chemical risks and events.

UAE is embarking on nuclear technology: the Baraka Nuclear Power Plant is under construction and the first of four planned units will be operational at the end of 2018. In this connection, UAE is working closely with the International Atomic Energy Agency to ensure safe use of nuclear technology. Preparedness and response to radiological and nuclear emergencies is an integral part of the plan. The Federal Authority for Nuclear Regulation is the sole entity regulating the application and safety of radiation sources and safety of nuclear industry. Other agencies contribute to the response to any radiation emergencies as per the established national regulations, policies and plans.

The External Evaluation Team extends its warmest regards to the national health authorities and all engaged sector representatives and teams for their support and openness during the mission, which reflect the spirit of the WHO Eastern Mediterranean Regional Committee Resolution EMRC 62.3 and resolution of EMRC 63.1 of independence and transparency in the external evaluation of IHR capacities. The strong support of the WHO Representative to the United Arab Emirates is highly appreciated.

Introduction

The United Arab Emirates (UAE) is to be commended for its strong commitment to meet the core capacities required by the IHR. Prior to the arrival of the External Evaluation Team, the Government of UAE completed a self-assessment based on rigorous preparatory work to compile data and information in the JEE assessment tool. The results of the self-assessment for all 19 technical areas were presented and discussed in detail with the External Evaluation Team at the start of the external assessment. The External Evaluation Team and host country experts then participated in a series of facilitated discussions to jointly assess UAE's strengths and best practices; areas that need strengthening or challenges; and scores. For each technical area, 3–5 priority actions were recommended, and supporting information provided to the External Evaluation Team.

The UAE is a federal state established in December 1971 and consisting of seven emirates: Abu Dhabi, Dubai, Sharjah, Umm al Qaywayn, Ajman, Al Fajayrah and Ras al Khaymah. The Supreme Council, comprising the rulers of these emirates, is the highest constitutional authority. It is also the highest legislative and executive authority; it draws up the general policies and approves federal legislation. Corresponding to the federal institutions are the local governments of the seven emirates. Varying in size, they have evolved along with the country's growth. However, their mechanisms differ among emirates depending on factors such as population, area and degree of development.

The total population was 9.4 million at the end of 2016.[1] UAE has the one of highest Human Development Index in the WHO Eastern Mediterranean Region, and is ranked at 42 out of 187 countries globally. The country has invested heavily in educating its citizens with good progress in mainstreaming female education at all levels, including the tertiary level. In its education strategy of 2010–2020, the Ministry of Education emphasizes teacher training and development, focusing on the nationalization of the teaching pool and reducing the dependence on foreign skills.

Health care is provided free for all nationals, as mandated by Article 19 in the Constitution, and laws have been instituted to ensure mandatory health insurance for non-nationals.[2] The health sector is administered by different authorities. At the federal level there are two entities: the Ministry of Health and Prevention (MHP) (responsible for regulating the public health sector) and the Emirates Health Authority (responsible for service delivery). At the emirate level there are also two entities: the Abu Dhabi Health Authority (HAAD) and the Dubai Health Authority (DAH). The MHP and health authorities have developed policies and strategies for health development with the aim of further improving the quality of health care and access to required primary, secondary and tertiary care. The care delivery system is based on the primary health care approach, with the first contact being the primary health centre. The planned staffing of these centres includes specialist physicians, general practitioners, pharmacists, dentists, nurses, technicians and orderly attendants.

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1   WHO Global Health Observatory data repository, population data
    (http://apps.who.int/gho/data/view.main.POP2040ALL?lang=en, accessed 5 April 2017).
2   Country Cooperation Strategy for WHO and the United Arab Emirates, 2012–2017
    (http://apps.who.int/iris/bitstream/10665/113226/1/CCS_UAE_2012_EN_14947.pdf, accessed 5 April 2017).

United Arab Emirates 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	5
	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	5
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	5
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 prevention and control programmes	4
	P.3.4 Antimicrobial stewardship activities	4
Zoonotic diseases	P.4.1 Surveillance systems are in place for priority zoonotic diseases/pathogens	5
	P.4.2 Veterinary or animal health workforce	3
	P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases are established and functional	4
Food safety	P.5.1 Mechanisms for multisectoral collaboration are established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases	5
Biosafety and biosecurity	P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities	3
	P.6.2 Biosafety and biosecurity training and practices	3
Immunization	P.7.1 Vaccine coverage (measles) as part of the national programme	5
	P.7.2 National vaccine access and delivery	5
National laboratory system	D.1.1 Laboratory testing for detection of priority diseases	4
	D.1.2 Specimen referral and transport system	5
	D.1.3 Effective modern point-of-care and laboratory-based diagnostics	5
	D.1.4 Laboratory quality system	4
Real-time surveillance	D.2.1 Indicator- and event-based surveillance systems	4
	D.2.2 Interoperable, interconnected, electronic real-time reporting system	3
	D.2.3 Integration and analysis of surveillance data	5
	D.2.4 Syndromic surveillance systems	4
Reporting	D.3.1 System for efficient reporting to FAO, OIE and WHO	5
	D.3.2 Reporting network and protocols in country	5
Workforce development	D.4.1 Human resources available to implement IHR core capacity requirements	4
	D.4.2 Field Epidemiology Training Programme or other applied epidemiology training programme in place	4
	D.4.3 Workforce strategy	3

Technical areas	Indicators	Score
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	5
Emergency response operations	R.2.1 Capacity to activate emergency operations	5
	R.2.2 Emergency operations programme operating procedures and plans	5
	R.2.3 Emergency operations programme	5
	R.2.4 Case management procedures implemented for IHR relevant hazards	5
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	5
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	5
Risk communication	R.5.1 Risk communication systems (plans, mechanisms, etc.)	5
	R.5.2 Internal and partner communication and coordination	5
	R.5.3 Public communication	5
	R.5.4 Communication engagement with affected communities	4
	R.5.5 Dynamic listening and rumour management	5
Points of entry	PoE.1 Routine capacities established at points of entry	5
	PoE.2 Effective public health response at points of entry	5
Chemical events	CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies	4
	CE.2 Enabling environment in place for management of chemical events	4
Radiation emergencies	RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	4
	RE.2 Enabling environment in place for management of radiation emergencies	5

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

PREVENT

National legislation, policy and financing

Introduction

The IHR provides obligations and rights for States Parties. In some States Parties, implementation of the IHR 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 and operations within the State Party. It can also facilitate coordination among the different entities involved in its implementation.[3] 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.

UAE level of capabilities

Legislation refers to the broad range of legal, administrative or other governmental instruments available for the UAE. Such instruments include federal laws, federal executive decrees, ministerial decrees, guidelines, policies and standard operating procedures (SOP) that support IHR implementation and govern public health surveillance and response. These include but are not limited to legislation that guarantees full IHR implementation in the areas of infectious diseases, food safety, zoonoses, chemical and radionuclear hazards, and environmental safety.

Assessments of relevant legislation, regulations and decrees are conducted periodically to evaluate their compliance with IHR implementation and to identify any need for adjustment, and amendments have been made to align them with IHR functions. An example is the amendment of the Control of Communicable Diseases Law (Federal Law No. 27 of 1981) which was replaced by Federal Law No. 14 in 2014 on the control of communicable diseases.

Several efforts have been made to ensure cross border safety and prevention of multiple health risks and hazards. Guidelines and SOPs have been developed accordingly for the Gulf Cooperation Council (GCC) countries. The focus of these guiding documents is to enhance access to unified health measures at ground crossings; increase health security by facilitating cross-border collaboration to implement IHR at the country and regional level; enhance surveillance for the early detection and rapid response to public health events; exchange information between the GCC concerning public health events of potential national, regional and global concern, including preparedness measures to be put in place in the country related to any event.

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3   Detailed guidance on IHR (2005) implementation in national legislation can be found at
    www.who.int/ihr/legal_issues/legislation/en/index.html.

The National Committee for Implementation of the International Health Regulations and Combatting Health Pandemics has been established in line with Ministerial Decree No. 326 of 2015. The following sectors and stakeholders are responsible for collaborating to implement the IHR: Ministry of Health and Prevention; Health Authority of Abu Dhabi; Dubai Health Authority; Sharjah Health Authority; Ministry of Interior; military forces; National Crisis and Emergency Management Authority (NCEMA); General Authority for the Security of Ports, Borders and Free Zones; Federal Customs Authority; Federal Transport Authority – Land and Maritime; Ministry of Climate Change and Environment; National Media Council; Federal Authority for Nuclear Regulation; Abu Dhabi Food Control Authority; and any other authority in the country concerned with implementation of the IHR. A National IHR Focal Point (NFP) has been designated by ministerial decree and focal points have also been assigned in different concerned sectors.

The MHP can also request the support and resources of other sectors during a response to public health events through the NCEMA.

A unique standing IHR Office within the MHP has been established and approved through a decree; this designation provides a dedicated team and sustained functionality for IHR work in the Emirates. A budget line is available and updated annually for all emergencies within the government national budget. UAE is fully committed to implement the IHR. Legislation is revised periodically and necessary modifications are implemented. Decrees and administrative procedures are issued for continuous improvement and seen as an interim solution until broader legislation can be passed. The Emirates have substantial legal and regulatory frameworks to support and enable the implementation of IHR.

Recommendations for priority actions

- Conduct advocacy activities to promote awareness of IHR among legal advisors of the different sectors.
- Establish a mechanism to monitor the implementation of targeted national legislation.
- Continue to review existing legislation, develop new legislation, and amend existing legislation, when necessary, to ensure sustainability of the developed IHR capacities.

Indicators and scores

P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR (2005) – Score 5

Strengths/best practices

- UAE is committed to implementing the IHR; in addition to this JEE, an IHR assessment mission took place in the country including assessment of national legislation, particularly those related to points of entry.
- A substantial legal framework exists for all technical areas under IHR and its implementation.
- A systematic review and update mechanism for legislation exists in the country with the capacity to produce interim solutions until new laws are passed, if needed.

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 5

Strengths/best practices

- A well-established legal framework supports all sectors relevant to implementation of the IHR.
- An IHR Coordination Office facilitates the coordination needed between the different sectors to expedite implementation of IHR capacities.

- UAE participates in agreements on cross-border collaboration with other GCC countries. It is an active member in developing guiding documents to enhance cross-border collaboration, particularly for IHR requirements on surveillance and response to public health events.

- The legal framework in the country facilitates alignment of implementation of legislation between the different sectors.

Areas that need strengthening and challenges for both indicators

- Awareness of IHR and its implementation needs to be strengthened among the legal advisors of the different sectors in the country.

PREVENT

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.

UAE level of capabilities

The IHR NFP has a designated office within the MHP, which is overseen by the Assistant Undersecretary of Health Centres and Clinics of MHP. The IHR NFP has nominated individuals to carry out the responsibilities of IHR functions in the seven UAE emirates. The contact information of the IHR NFP has been provided to WHO and is continuously updated and annually confirmed. The IHR NFP, or acting staff, is accessible at all times to communicate with WHO and with all focal points from the relevant sectors and stakeholders in the country.

A national high-level IHR multisectoral and multidisciplinary committee to implement the IHR was established by Ministerial Decree No. 326 in 2015. The decree details the roles and responsibilities of the IHR NFP, and all concerned sectors and stakeholders are responsible to collaborate in implementing IHR and federal laws relevant to IHR. This mechanism works to ensure the rapid communication of information and coordination within the legal and regulatory frameworks across the different sectors in the UAE. The Committee meets at regular intervals and on an ad hoc basis for urgent public health events. In addition, a Public Health Law will be ratified in 2017 under which the MHP, in coordination with the concerned authorities, will be responsible for overseeing the implementation and follow-up of all procedures required by IHR, including strengthening of the IHR core capacities.

Members of the Committee represent the public health and health-care system, political sectors related to emergency response, departments of animal health, food safety, trade, transport and points of entry, radiation and chemical hazards and any other authority as the need arises. Within the political sector, the NCEMA functions as a command and control centre with different stakeholders during an emergency response.

Communication and coordination between the IHR NFP, NCEMA and other stakeholders takes place daily in the form of "two-way communication". Every morning, all sectors report on events of global and national relevance to public health. The information is aggregated at the Central Preventive Medicine Department of the MHP, and the compiled report is then disseminated back to all sectors and stakeholders. This process is overseen by the IHR NFP, who is ultimately responsible for the daily report. This process occurs through well-described procedures. Coordination and communication between the public health sector, the animal sector and points of entry (PoE) have been tested through real-life events (such as cases of Middle East respiratory syndrome coronavirus, MERS CoV). In order to enhance functional communication between

the IHR NFP and focal points in the relevant sectors, a National Protocol of Communication Pathway for Reporting Acute Public Health Event(s) was published in 2017.

A dedicated IHR website within the MHP serves for communication and advocacy. Regular IHR-related news is disseminated to all stakeholders, who also receive an annual update on the status of IHR implementation.

UAE has a functional multisectoral mechanism, and annual updates on the status of IHR implementation across all relevant sectors are issued. The mechanism operates under well-defined national legislation. Multisectoral coordination and communication mechanisms have been tested through real-life events, and the lessons learnt incorporated into standard practice. Updates on the status of IHR implementation are shared regularly with the different stakeholders.

Recommendations for priority actions

- Develop sustainable training and planning methods for IHR implementation programmes.
- Strengthen self/internal assessment for IHR implementation through the use of drills and simulations, and incorporate lessons learnt.

Indicators and scores

P.2.1 A functional mechanism established for the coordination and integration of relevant sectors in the implementation of IHR – Score 5

Strengths/best practices
- The IHR NFP has been designated and its functions, roles and responsibilities are clearly defined. A national high-level, multisectoral, multidisciplinary IHR committee has been established.
- The IHR NFP and the high-level IHR committee liaise regularly with NCEMA.
- Coordination and communication with other stakeholders is well developed and tested through real-life events.
- The Sustainable Development Goal (SDG) indicator of IHR is part of the UAE National Core Indicators and Action Plan 2017–2021. The country therefore regularly reports on progress to accelerate implementation and ensure sustainability of IHR capacities with an allocated budget.

Areas that need strengthening and challenges
- Self/internal assessment on IHR implementation needs to be strengthened through the use of drills and simulations, and incorporation of lessons learnt.

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 (AMR) 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.

UAE level of capabilities

In April 2014, the MHP established the UAE Higher Committee for Antimicrobial Resistance, which was re-established in 2017 as the UAE National AMR Committee. The National Action Plan on AMR has been developed for the human sector, and subcommittees are working on AMR surveillance, infection prevention and control (IPC) and antimicrobial stewardship programmes. Recently, the Ministry of Climate Change and Environment (MCCE) appointed a National Focal Point who will join the National AMR Committee and nominate experts to form subcommittees for AMR surveillance and antimicrobial stewardship programmes for the animal sector.

Human laboratories in each authority (more than 150 labs in UAE) have the capacity to identify and do susceptibility testing for all priority AMR pathogens listed by WHO (Escherichia coli, Klebsiella pneumoniae, Staphylococcus aureus, Streptococcus pneumoniae, Salmonella spp., Shigella spp., Neisseria gonorrhoeae, Acinetobacter baumanii) and many more. Sixteen competent labs covering different parts of the country are established as national AMR surveillance sites, all testing minimal inhibitory concentration VITEK®2 plus antimicrobial susceptibility test S/I/R-interpretation (Clinical & Laboratory Standards Institute). Most laboratories are accredited and successfully participate in external quality assurance schemes. Designated facilities have matrix-assisted laser desorption/ionization time-of-flight mass spectrometer (MALDI-TOF MS) and Multiplex-polymerase chain reaction to speed up microbiological identification. An AMR reference laboratory has not yet been identified, but proposed functions and required methods have been agreed on, and a feasibility study has been conducted. For the animal sector, all AMR priority pathogens can be detected in designated and accredited veterinary laboratories.

Ongoing surveillance of AMR pathogens, based on routine clinical sampling, is conducted and reported (using WHONET, a web-based database for the management and analysis of microbiology laboratory data) to the concerned authorities and to the National Subcommittee for AMR Surveillance. In several

hospitals, AMR surveillance has been established for more than 10 years. At emirate level, comprehensive AMR data are available for Abu Dhabi Emirate. In 2014, UAE reported to WHO data collected in 2012, contributing to the first Global Report on AMR Surveillance. A national standard for AMR surveillance has been drafted. The 16 laboratories acting as national AMR surveillance sites will enrol in the Global Antimicrobial Resistance Surveillance System (GLASS) as soon as all staff are trained. There is presently no systematic AMR surveillance in animal populations or agricultural sectors, except data available on E. coli (2013–2015) and antimicrobial residues in animal source foods.

Joint Commission International (JCI) hospital accreditation mandates the implementation of an IPC programme. A National Steering Committee for the Prevention of Health Care-Associated Infections (HCAIs) coordinates efforts across the UAE. A checklist has been developed to audit implementation of IPC guidance and accreditation standards in order to identify and address gaps and to establish a national surveillance system for HCAIs. Most major hospitals implement multimodal interventions and quality improvement projects in the field of IPC with active cooperation between the Quality Office and Infection Control Unit. In Abu Dhabi, the Health Authority monitors all hospitals for HCAIs. An "Employee Health Programme" is integrated in all IPC programmes. The country has many highly trained professionals in infectious diseases and IPC. UAE does not offer extensive training courses for postgraduate or masters diplomas in IPC, although training courses for certificates in IPC are available from the Certification Board of Infection Control and Epidemiology.

A national antimicrobial stewardship programme subcommittee of experts from MHP, local health authorities and public and private hospitals, has been established to coordinate ASP implementation. A national action plan including a policy on ASP has been developed. Currently ASPs are implemented at various levels in health-care facilities across the UAE. As per MHP decree, antibiotics are classified as prescription-only medicine, yet over-the-counter dispensing is still practised.

In Abu Dhabi, antimicrobial stewardship programmes are mandatory for all hospitals since March 2016. A robust mechanism has been put in place to analyse antibiotic prescribing data for in- and outpatients utilizing Abu Dhabi health insurance claim (eClaim) data. Periodic antimicrobial stewardship training sessions for selected health-care professionals and facilities have been conducted over the past years. Some hospitals can be considered centres of excellence, where dedicated antimicrobial management teams have put in place prescription guidelines and solid policies, and implement advanced computer decision support systems, with evidence of a significant decrease in overall and broad-spectrum antimicrobial use.

In the animal sector, some efforts have been made and scarce data are available. A World Organisation for Animal Health (OIE) assessment on AMR has been conducted. The central laboratory in Abu Dhabi has observed that E. coli developed resistance to the antibiotics (ampicillin, cotrimoxazole, enrofloxacin, oxacillin, tetracycline) used by veterinarians according to laboratory data from 2013, 2014 and 2015. Therefore, HAAD developed a surveillance proposal, to be implemented in 2018. The Dubai municipality has drafted an AMR plan for the animal sector and its Veterinary Services Section controls the antibiotic use patterns in the three veterinary clinics and livestock markets under its control. It also monitors antibiotic use in six commercial animal production farms. Regulation mandates prescription of antibiotics for livestock, although the significant and increasing consumption of colistin in the sector is alarming. All veterinary products have to undergo a safety and residue evaluation (European Union regulation) and antibiotic use for growth promotion is prohibited in the UAE.

The UAE used the Antibiotic Awareness Week (14–20 November 2016) as an opportunity to raise awareness: posters and messages were uploaded in all social media platforms of MHP, lectures on antimicrobial stewardship were conducted, and on 26 November 2016, a one-day symposium `The WHY of Antibiotic Stewardship` was organized with good attendance.

Recommendations for priority actions

- Integrate the animal sector in the National AMR Action Plan.

- Establish a national AMR laboratory.

- Enrol in GLASS.

- Mandate antimicrobial stewardship programmes implementation across all facilities.

- Audit implementation of IPC guidance and accreditation standards to identify and address gaps and establish a national surveillance system for HCAI.

Indicators and scores

P.3.1 Antimicrobial resistance detection – Score 4

Strengths/best practices

- The National Action Plan on AMR has been developed to optimize and coordinate efforts across the UAE.

- In the UAE, all licensed hospitals and laboratories are capable of identification and antimicrobial susceptibility testing of all priority pathogens. Most laboratories are accredited and participate in external quality assurance schemes. For the animal sector, all AMR priority pathogens can be detected in designated and accredited veterinary laboratories.

Areas that need strengthening and challenges

- A national reference lab for AMR has not yet been identified.

- At the time of this mission, the UAE Action Plan on AMR only covers the human health sector.

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

Strengths/best practices

- Monitoring and surveillance of AMR (using WHONET) are successfully implemented at hospital level, Emirate/Authority level, as well as at the national level.

- At Emirate level, Abu Dhabi AMR surveillance data from 16 hospitals from both public and private sectors, and 83 ambulatory health-care facilities are collected and analysed.

- In 2014, UAE reported to WHO data collected in 2012, contributing to the first Global Report on AMR Surveillance.

- Sixteen competent labs are established as national AMR surveillance sites with the aim to participate in WHO-GLASS.

Areas that need strengthening and challenges

- A national reference lab for AMR has not yet been identified.

- There is a need for integrated AMR surveillance (One Health approach).

- Participation is needed in methodical AMR data communication on a regional (GCC, WHO Eastern Mediterranean Region) and global (WHO-GLASS) level.

P.3.3 Health care-associated infection (HCAI) prevention and control programmes – Score 4

Strengths/best practices

- The National AMR Action Plan includes a Roadmap to eliminate HCAI.

- In the Emirate of Abu Dhabi, all hospitals are monitored for HCAI by HAAD.

PREVENT

Areas that need strengthening and challenges

- Although JCI hospital accreditation mandates the implementation of an IPC programme, availability of the basic components, as well as the degree of compliance with basic standards of IPC practice, need to be assessed.

P.3.4 Antimicrobial stewardship activities – Score 4

Strengths/best practices

- A National Action Plan on antimicrobial stewardship, including an antibiotic stewardship policy, has been developed.

- In Abu Dhabi, antimicrobial stewardship programmes have been mandated for all hospitals (March 2016) and a robust mechanism put in place to analyse antibiotic prescribing data for in- and outpatients utilizing Abu Dhabi health insurance claim (eClaim) data.

- Antibiotic use for growth promotion is prohibited in the UAE.

- All veterinary products have to undergo a safety and residue evaluation (European Union regulation).

- Awareness campaigns on AMR have been conducted.

Areas that need strengthening and challenges

- Currently antimicrobial stewardship programmes are implemented at varying levels in health-care facilities across the UAE, some of which have advanced programmes while others are still in the initial stages.

- As per MHP decree, antibiotics are classified as prescription-only medicine, yet over-the-counter dispensing is still practised.

- Consumption of colistin in livestock is increasing.

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 transmission. Approximately 75% of recently emerging infectious diseases affecting humans are 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.

UAE level of capabilities

Changes in ecology, microbial adaptation and evolution, human demographics and behaviour, international travel and trade, intensity of agricultural practices, technology and industry, all facilitate the emergence of zoonotic diseases. The risk of introduction into, and emergence of zoonoses in UAE are significant because of major international hubs (airports, and seaports) through which large movements of people, livestock and wildlife (and their products) occur. UAE is import-dependent for most of its animal source foods.

According to estimates of the Food and Agriculture Organization (FAO) in 2014, UAE has 400 000 camels, 87 000 cattle, 2.15 million sheep, 1.92 million goats, and 22.5 million chickens (FAO-STAT, 2016). UAE has identified the following priority zoonoses: bovine spongiform encephalopathy, bovine tuberculosis, brucellosis, Crimean–Congo haemorrhagic fever (CCHF), rabies, and Rift Valley fever (RVF). UAE did not list MERS-CoV among its priority zoonoses: it has dealt with MERS-CoV outbreaks seriously and managed to control the spread using the One Health approach in detection, prevention and response. However, UAE does not believe that it has the potential to become a public health emergency of international concern (PHEIC).

Coordination mechanisms between human and animal health authorities are generally established. A command-and-control set-up is in place with the support of local competent authorities in order to detect outbreaks in time for appropriate prevention and response for zoonotic events.

UAE has well-organized national veterinary authorities under the MCCE and local veterinary authorities, the Dubai Municipality Veterinary Services, and the Abu Dhabi Food Control Authority (ADFCA). The latter hosts the Animal Health Division, which collaborates with other relevant agencies in managing zoonotic diseases.

The country has huge laboratory capacity for zoonoses, most of which is accredited. Among the significant laboratories are: the Central Veterinary Research Laboratory (CVRL), with tremendous capacity on zoonotic diseases (publications and microbank for record bacterial, viral and fungal strains); Dubai Central Laboratory (DCL) for Food Safety; and the ADFCA, specialized in food safety and quality, in animal diseases, and designated OIE reference laboratory for camel diseases.

UAE is encouraged to look into coordination, cooperation and communication issues among key identified stakeholders in animal production, animal health and public health sectors, and embrace the One Health approach in addressing zoonoses. The identified stakeholders include MCCE, MHP, local veterinary authorities and health authorities, environmental agencies (wild animals), and NCEMA for crisis management. Some

stakeholders such as CVRL have capacities built over 30 years, that are rare even in the region, and that could be well integrated into zoonoses control capacities at national level. The surveillance and contingency plans for the priority diseases need to be refined in the holistic approaches of the One Health umbrella.

Another identified challenge is the implementation of unified health policy (in all sectors) for priority zoonoses throughout the Emirates. The situation of infrastructure and the level of workforce is not the same in all the Emirates, and needs to be harmonized to meet agreed international standards. Notable challenges for UAE are the skyrocketing number of travellers and goods through air and sea, the shortage of trained workforce in animal health systems, and increasing demands in view of the forthcoming EXPO 2020; expansion plans warrant adjustments in priority areas, which are summarized in the following sections.

Recommendations for priority actions

- Develop mechanisms to strengthen the One Health approach to address zoonoses, by enhancing coordination and communication among all stakeholders (public and private sectors) in the human–animal–wildlife interface.

- Enhance the animal health workforce by increasing field veterinarians and para-veterinarians to improve veterinary services in the field.

- Improve laboratory diagnostic capacity and capabilities in the country for priority zoonoses.

- Establish a unified electronic notification system.

Indicators and scores

P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens – Score 5

Strengths/best practices

- An established National Committee for Zoonotic diseases meets on a quarterly basis or as frequently as required at times of zoonosis events of special concern.

- Well-established laboratories (CVRL, ADFCA, DCL, etc.) provide the necessary research and diagnostic services for zoonosis and food safety threats.

- Zoonoses are covered in a legal framework

- Major stakeholders for zoonoses are identified.

- A command-and-control mechanism is in place to launch rapid response teams from animal and human health sectors when a zoonotic event strikes as a public health concern allowing immediate coordinated detection, prevention and responses with the support of competent local authorities.

- Reporting of zoonotic events and sharing of information through email, social media or phone calls is mandatory.

- Procedures or mechanisms exist for zoonotic diseases reporting to FAO, OIE and WHO.

- A list of priority zoonoses is available.

- Unified surveillance, awareness and contingency plans for priority zoonoses are in place, e.g. joint investigation for CCHF, RVF, MERS-CoV, avian influenza and brucellosis with test-and-slaughter policy followed.

- Real zoonotic events have been tackled, e.g. brucellosis, CCHF and MERS-CoV.

Areas that need strengthening and challenges

- A real-time surveillance system is needed for zoonotic diseases in the animal–human–wildlife–ecosystems interface for effective and timely response.

- A mechanism is lacking to collect and share data quickly among key stakeholders in electronic forms: functional links should thus be established among public health and animal health laboratories for real-time information sharing.

- A skilled workforce should be reinforced in surveillance and response for zoonoses in key sectors.

- The possibility of underreporting of some zoonotic events cannot be ruled out due to limited veterinary workforce in the field.

P.4.2 Veterinary or animal health workforce – Score 3

Strengths/best practices

- Multidisciplinary human resources are available at national and intermediate level.

- Undergraduate education is offered in the Department of Veterinary Medicine of the UAE University; veterinary graduates will contribute towards filling the workforce gap.

- A National Zoonotic Committee is available.

- Applied epidemiology training in other countries is available through an existing agreement.

Areas that need strengthening and challenges

- There is a shortage of field veterinarians and para-veterinarians in remote areas.

- In-service training (continuing education) is lacking.

- A joint course should be established (for staff from relevant sectors) on epidemiology, disease control, surveillance and One Health.

P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases established and functional – Score 4

Strengths/best practices

- Contingency plans exist for priority zoonoses in both health and animal sectors.

- Timely exchange of information takes place among surveillance units of the MHP and MCCE.

- Rapid, coordinated response to zoonotic events of potential national or international concern is over 90%.

- Coordination mechanisms are in place at national, emirate and local levels through a zoonotic focal point network.

Areas that need strengthening and challenges

- A mechanism for coordination, cooperation and communication among key stakeholders should be strengthened (public and private sector entities) under the One Health approach, and coordination, advocacy and communication sustained among different sectors.

- Integrated training should be arranged among stakeholders for rapid response teams from different sectors in real zoonotic events or joint exercises for preparedness.

- Joint meetings among health sectors should be enhanced to sustain information sharing.

- Existing legislation and regulations in human and animal health sectors should be revisited to accommodate emerging issues.

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 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.

UAE level of capabilities

UAE has a well-established system to detect, prevent and control foodborne disease outbreaks and emergencies, including medical response to exposed individuals. The country has identified stakeholders for food safety, namely: the MHP; Dubai Municipality and other Municipalities; MCCE; ADFCA; Ministry of Economy; NCEMA; Gulf Cooperation Council; Emirates Authority for Standardization and Metrology; Health Authority Abu Dhabi (HAAD); Dubai Health Authority (DHA); and Abu Dhabi Quality and Conformity Council.

At national level, food safety is a shared responsibility between the preventive service departments of MHP, MCCE and the Dubai municipality. Clear roles and responsibilities are identified and documented with strong coordination mechanisms among the parties through focal points nominated by each sector, and email and phone links between these focal points. UAE is working to systematize this coordination through the establishment of a Federal Rapid Alert System for Food by 2018.

The Abu Dhabi Food Control Authority was established through Law No. 2 (2005) to guarantee the quality of food for human consumption in addition to research and studies on safe food. An amendment (Law No. 5) in 2007 authorized ADFCA to issue rules, regulations and standards to streamline food items sold or offered for human consumption. The Authority aligned the food regulatory system with international standards and best practices, which contributed to quality of life and ensured a fine balance between consumer protection and commercial dynamism.

Municipalities have well-developed departments. Dubai Municipality, for example, has the Food Control Department that ensures the safety of imported, locally manufactured and prepared foods in the Emirate. It also has the DCL – represented by the Food and Environment Laboratory Section – which is responsible for testing food samples and conducting surveys and studies in coordination with the Food Control Department. The veterinary service section of the Public Health Service Department controls the primary animal production activities including animal feed. These departments assume their duties in collaboration with different strategic partners (MCCE, Emirates Authority For Standardization and Metrology, local food control authorities, universities, Roads and Transport Authority, and DHA). The labs follow International Standards of GCC and Codex Alimentarius.

UAE has a risk-based regulatory framework for food safety. Food regulatory authorities in each Emirate maintain this framework in line with NCEMA, with a federal coordinating committee managing harmonization. The authorities also coordinate with GCC on food control and safety issues.

UAE has a federal food safety policy on notification procedures in case of foodborne pathogens and outbreak detection. A functioning foodborne disease investigation and surveillance system, established in 2010, was made possible from collaboration and coordination with WHO, the United States Centers for Disease Control and Prevention, MPH, MCCE, DHA and other authorities. National Framework and Guidelines are used to enhance the surveillance of foodborne pathogens. UAE hosted a meeting on the Regional Plan of Action for Food Safety (2017–2022).

Over the years, UAE has worked hard to develop an integrated food control system to ensure the safety of imported food as well as foods manufactured or prepared within the country. It has food safety strategies taking advantage of its accumulated experience and adopting best international practices. State-of-the art food safety laboratories exist, such as DCL at the Dubai Municipality, ADFCA, and national laboratories distributed among different ministries and agencies.

Risk profiling of food safety problems would help identify opportunities for authorities to implement appropriate risk management strategies. The country needs to establish a functioning communication mechanism among all food safety stakeholders, including the sharing of laboratory findings.

Recommendations for priority actions

- Improve food safety inspections and control: electronic inspection, tracing back and recalls.

- Develop a national training programme for the health-care sector in management of food outbreak cases.

- Build capacity of the food safety workforce, especially food outbreak responders through continuing education.

- Enhance good agricultural and hygienic practices via food safety systems based on international standards.

Indicators and scores

P.5.1 Mechanisms for multisectoral collaboration established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases – Score 5

Strengths/best practices

- The National Food Safety Committee was re-established by Ministerial Decree No. 773 in 2016.

- A high level of medical capability exists in line with UAE decision to build a model food safety system: staff are qualified; relevant stakeholders have been identified, the roles and responsibilities of MHP and MCCE are identified and documented; and a strong coordination mechanism is in place among relevant parties.

- A national outbreak response team exists based on a nomination from each sector working on food safety. Outbreaks are traced and food sources identified through epidemiological studies.

- Sustainable training for members of the Food Safety Committee is available under the guidance and supervision of the MHP and nongovernmental organizations. In addition, educational and awareness-raising information is shared along the food chain via different media channels, websites, formal letters, meetings, and workshops.

- State-of-the art infrastructure includes laboratories and instruments; food safety laboratories have accredited tests, SOPs, guidelines, regulations, procedures, food safety alerts, circulars, and forms.

- UAE has both active and passive surveillance programmes, which document results of their studies.

- UAE has active membership in the International Network of Food Safety Authorities (INFOSAN), PulseNet, and the National, the Gulf, and the European Rapid Alert System for Food and Feed.

- Competent staff carry out epidemiological and environmental investigations.

Areas that need strengthening and challenges

- The National Food Safety programme needs to be strengthened.

- The Federal Manual for Foodborne Disease Investigation and Surveillance should be published.

- Collaboration, interaction and exchange of information should be strengthened in all Emirates.

- Whole genome sequencing should be established in UAE, rather than sending bacterial isolates to Oman.

- Laboratories or investigation teams should be linked with hospitals using an electronic reporting system (e.g. expand the use of Panorama software). Technology-based solutions are also needed to be able to predict foodborne illnesses.

- The lack of a laboratory investigation facility continues to be a challenge. For example, while single-source, large outbreaks can be traced back, sporadic cases still cannot be linked as pathogens are not typed nor sequenced.

- Not all hospitals perform stool culture tests and isolate pathogens.

- A unified system of laboratories with clear mandate and competencies among those responsible for food control is needed.

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.

UAE level of capabilities

UAE has national legislation addressing biosafety and biosecurity. In addition, a National Biosecurity Committee has representation from all relevant stakeholders. The MHP also has compulsory laboratory licensing that includes national standards, checklists and routine external audits. The Health Authorities of Abu Dhabi and Dubai have separate laboratory standards and requirements that exceed the UAE national laboratory licensing standards. These include biosafety requirements, policy and practice, and involve regular supervisory visits. There is also almost universal external accreditation of hospital clinical laboratories, most of which use Joint Commission International, although JCI hospital accreditation is not equivalent to the laboratory accreditation programmes of the College of American Pathologists (CAP), JCI or the International Organization for Standardization (ISO). Many clinical laboratories have achieved laboratory accreditation through CAP or ISO, and the national strategy aims to have 100% accreditation of clinical and veterinary laboratories within five years. All the reference laboratories performing national public health functions in the areas of human and animal health and food safety have external laboratory accreditation, which represents peer review of basic practices in the area of biosafety.

There is regulation for biosecurity, although there is more to do in terms of full compliance by laboratories and updates to the regulations to ensure they fully meet the IHR requirements. More work is also necessary on containment measures and records for biosecurity in addition to training personnel in biosecurity practices in all laboratory sectors (health, animal, food). Most dangerous pathogens have been consolidated in the UAE government reference laboratories and most clinical, animal and other laboratories would not normally retain dangerous pathogens when detected. Records exist for pathogens stored in each reference facility, but no comprehensive inventory and searchable database of pathogens and laboratories are available. Extensive diagnostic methods are used to minimize the culture of dangerous pathogens. The

UAE has adequate funding to support the comprehensive national biosafety and biosecurity system.

While all laboratories have some level of secure access, further steps are needed to audit laboratory compliance externally with enhanced security measures for access and personnel, especially in the government reference laboratories that store dangerous pathogens.

UAE has trained and certified staff who pack and ship samples, meeting the requirements of the International Air Transport Association (IATA). Further training and certification is necessary to ensure that the same or similar standards are met for the majority of test referrals that involve ground transport between laboratories within the UAE. Most clinical and animal laboratories are biosafety level (BSL)1 and BSL2 with personnel trained in biosafety practices. UAE is in the process of certifying a BSL3 reference laboratory, for which specific training will be needed in BSL3 practices for the major animal and human reference laboratories.

Biosafety training and an associated train-the-trainer programme for biosafety are available. National conferences have also included biosafety workshops provided by international experts. On the other hand, an academic centre is needed to assist with biosafety training, for example, an academic partner to support MHP with biosafety training and updates, including evolving international approaches that emphasize biorisk management in addition to traditional biosafety practices. There are initial efforts to implement biosecurity training, but no train-the-trainer programme.

Recommendations for priority actions

- Carry out a comprehensive review of compliance with the law and regulations to identify gaps for improvement.
- Establish a national training plan for biosafety and biosecurity, including specific training for BLS3, and certification for packaging and shipping potentially dangerous pathogens.
- Prepare national guidelines for biosafety and biosecurity of laboratories (all sectors).

Indicators and scores

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

Strengths/best practices

- All laboratories in the health sector are BLS1 and BLS2, and the Sheikh Khalifa Medical City has purchased and certified a BSL3-level modular laboratory to expand testing services.
- UAE also has a business plan and preliminary approval to construct a central reference laboratory with BSL3 and 4 capabilities for potential testing of any suspected animal or human pathogen.
- Licensing for laboratories in the health sector is well defined and mandates a safety officer for each laboratory.
- A waste management system is well organized across different sectors.
- Infection control measures in health-care facilities are well established, and there is rapid response to control outbreaks.
- There is a regulatory framework in the health sector with standards and licensing of all laboratories in the private and public sector. The licensure requirements involve regular audits by HAAD, DHA or MHP.
- A clinical laboratory guide for biorisk management is under development.
- UAE has started to update records and inventories and monitor compliance of facilities that store or

process dangerous pathogens and toxins. Pathogen control measures with standards for containment, handling and reporting have been finalized.

- UAE employs many diagnostic methods that preclude culturing dangerous pathogens.

Areas that need strengthening and challenges

- National biosafety and biosecurity legislation is needed, along with an oversight monitoring and enforcement mechanism for biosecurity.

- There is a need to develop an inventory/database of all laboratories and associated pathogens by using the current set of records listing pathogens by laboratory.

- The proposed central reference facility with appropriate BSL3/4 containment should be constructed.

- While the majority of dangerous pathogens are currently stored in selected reference laboratories, further consolidation into fewer laboratories needs to be finalized.

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

Strengths/best practices

- The majority of staff in UAE laboratories have professional credentials from core training in biosafety for pathogens that might be encountered in clinical and veterinary settings.

- Training on biosafety and biosecurity has been provided to all staff at some of the facilities that maintain or work with dangerous pathogens and toxins.

- All laboratories are licensed to national standards and are audited on a regular basis.

- UAE has multiple activities in the pipeline to implement and upgrade biosecurity practices and training for both biosecurity and biosafety.

- A train-the-trainer programme is available for biosafety.

Areas that need strengthening and challenges

- The biosafety and biosecurity guidelines are still under development, which prevents training on final requirements, especially for biosecurity.

- There are laboratory records, but no central database that allows a searchable inventory of all laboratories and associated dangerous pathogens. Moreover, academic programmes are needed with specific training for biosafety on dangerous pathogens, along with a central reference lab to deal with them.

- Sample transport biosafety practices are in place but with limited biosecurity.

- Biosecurity training is in an early stage, and a train-the-trainer programme is yet to be implemented.

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 distribution, access for marginalized populations, adequate cold chain and ongoing quality control – that is able to respond to new disease threats.

UAE level of capabilities

There is a high level of support and commitment for immunization from the Government of UAE. This can be seen by the long track record of high vaccination coverage for the many antigens in the extensive National Immunization Programme. The work is guided by a national immunization plan that is aligned with the WHO Global Immunization Plan. Immunization is mandatory through public health legislation, and free of charge for all children irrespective of their nationality; the vaccination card is mandatory for school entry. National immunization practices are coordinated through the programmes at MHP, HAAD and DHA with a vaccine delivery system with nationwide reach, effective vaccine distribution, cold chain monitoring, and ongoing quality control.

There is a need to strengthen data quality both on adverse events as well as on immunization coverage. The national reporting system combines data and monitoring for the six major regions of the country. Immunization coverage is compiled through the administrative method which limits the use of immunization data, since these are not disaggregated by district. Immunization practices are integrated within different sectors of health care and span over many providers of vaccines: public hospitals, public primary health care clinics, school health centres and clinics, and private clinics; there is a particular need to strengthen control over private sector data. That a substantial part of health care is run by the private sector and that many vaccine providers are private, has several implications, such as different reporting pathways of both coverage data and quality delivery.

UAE has a highly dynamic population, with around 70% being immigrant workers. This poses several challenges to the immunization system. Data may be missed when children enter or leave the country. This also makes the administrative method of determining vaccination coverage problematic, since accurate district level coverage data are not possible. UAE also has several best practices, for instance a meticulously kept cold chain and experience from a well-documented, mass vaccination campaign for oral polio vaccine and MMR with very high coverage.

Recommendations for priority actions

- Establish a strong link with licensing departments in each Emirate and generate a validated database on the number of private clinics offering vaccination, to bridge the existing gap regarding private sector data in some emirates.

- Initiate a preparatory plan to conduct an immunization coverage survey by the end of 2018, to estimate national and subnational immunization coverage.

- Establish an electronic unified immunization registry at the level of vaccine service providers, to be used as a tool for periodic recall (auto reminders) of defaulters.

Indicators and scores

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

Strengths/best practices

- The strong support and commitment to immunization within the Government has led to many years of high coverage of MMR and other childhood vaccinations generally in the country.

- Immunization is mandatory by public health legislation: vaccination is free of charge for all children irrespective of their nationality, and the vaccination card is mandatory for school entry.

- There is sustainable funding for the immunization programme.

- A very efficient mass vaccination campaign has been organized to counter yearly measles outbreaks, with 82% coverage.

- A vaccination coverage survey is planned for 2018 to identify gaps in routine immunization.

Areas that need strengthening and challenges

- MMR coverage in pockets of the population needs to be improved to prevent annual outbreaks and reduce the sporadic cases of measles throughout the year.

- The quality of immunization data is not sufficient to clearly map geographic areas or populations of lower vaccination coverage, although extensive plans are under way to address this. Data should be reported from all vaccine services and providers, with focus on the private sector.

- For longer term and consistent improvement of data quality, a unified immunization information system for use by all health-care providers is projected, including a unified identifier to retrieve data for immunization coverage and for defaulter tracking. Periodic data quality self-assessments will also be implemented.

P.7.2 National vaccine access and delivery – Score 5

Strengths/best practices

- UAE has systems in place to maintain a high level of national vaccine access and delivery, including monitoring of vaccine storage temperature, cold chain failures, audits of cold chain inspection and standards for cold chain transportation equipment.

- To ensure a sustained and uninterrupted supply of vaccines, several good practices are consistently maintained, including: forecasting needs; securing budget; timely procurement; reviewing the central and regional stores inventory reports; monitoring vaccine utilization and stocks to avoid shortages and minimize waste; and mutual cooperation between suppliers (MHP, HAAD, DHA) in case of shortage.

- Adequate field monitoring and supervision of health personnel is also maintained.

Areas that need strengthening and challenges

- In UAE there are separate systems of quality control for public and private providers.

- The national immunization authority does not have full access to data on the immunization cold chain for private providers as this is being controlled by the Health Regulation.

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.*

UAE level of capabilities

UAE has significant laboratory capacity in the human, veterinary and food safety sectors and continues to expand and strengthen its public health laboratory services and infrastructure. As noted in a number of the JEE activity reports, UAE plans to construct a central public health reference laboratory to provide sufficient and centralized laboratory capabilities for human and animal health while also ensuring appropriate biosafety (BSL3/4) and biosecurity measures. A key strength of the UAE laboratory system is the large number of professionals and laboratories accredited to international standards, including almost all the major public health reference laboratories.

The UAE health-care sector is divided between public and private providers. Public health-care services are managed and regulated by federal and emirate-level government entities such as MHP, DHA, HAAD, and the Abu Dhabi Health Services Company. There are 461 laboratories distributed between private and public health sectors; municipality public health laboratories in all emirates provide public health services (human, veterinary and food). For human health, the three primary public health reference laboratories are: Al Qassimi Hospital Laboratory (MHP); Sheikh Khalifa Medical City Laboratory (HAAD); and Latifa Hospital Laboratory (DHA). These three reference laboratories are able to conduct the six core tests below (except polio culture, which is referred to a regional laboratory in Oman) in addition to specialized testing such as MERs CoV at Sheikh Khalifa Medical City. All serve as sentinel surveillance sites for AMR.

1. HIV 1 and 2 (serology and nucleic acid testing, NAT)
2. Influenza virus H1N1 and coronavirus (polymerase chain reaction)
3. Tuberculosis (microscopy and culture)
4. Plasmodium species (rapid diagnostic test)
5. Salmonella typhus (culture)
6. Polio culture (at the regional lab in Oman).

There is a plan to construct a central public health reference laboratory with both human and veterinary testing and BSL3 and 4 containment and practices. Sheikh Khalifa Medical City Laboratory (HAAD) has also purchased and certified a BSL3 modular laboratory to increase safety and expand testing services, such as viral cell culture.

In the animal health sector, UAE has significant laboratory capacity for zoonoses, and most public health reference laboratories are accredited. Significant ones are: 1) CVRL, with top class capacity on zoonotic diseases (publications and microbank of bacterial, viral and fungal strains); 2) Dubai Central Laboratory for Food Safety; and 3) the ADFCA, specialized in food safety and quality, and animal diseases, and a designated OIE reference lab for camel diseases. As for human health, there are many private veterinary laboratories.

The UAE food safety laboratories are also state of the art, with molecular typing methods (PFGE) and plans in process to transit to whole genome sequencing methods for outbreak investigation, as is in development in the United States and many European countries. Additionally, all 20 food safety laboratories have international accreditation.

Health sector laboratories also represent considerable progress for monitoring AMR: 16 laboratories test and report different bacterial isolates and levels of drug resistance that form a sentinel network for AMR. Testing of selected pathogens for drug resistance also exists in the animal health sector.

Laboratory systems in the different sectors have very modern facilities, staffing and technologies, and have significant quality standards in the form of laboratory licensure and laboratory accreditation. MHP has compulsory laboratory licensing that includes national standards, checklists and routine external audits. In addition, HAAD and DHA have separate laboratory standards and requirements that exceed the UAE national laboratory licensing standards. All laboratory licensing requirements involve regular supervisory visits. Almost all hospital clinical laboratories have universal external accreditation, most of which use the JCI. Many clinical laboratories have achieved laboratory accreditation through CAP or ISO, and national strategies aim to have 100% accreditation of clinical and veterinary laboratories within five years. Almost all reference laboratories performing national public health functions in the areas of human and animal health, and food safety have external laboratory accreditation.

UAE is able to support comprehensive referral of samples between laboratories due to modern infrastructure and the small geographic area of coverage. Personnel are trained in package and shipping to meet IATA requirements for transport of tests referred to other reference laboratories in the region or elsewhere. Areas for improvement concern compliance with referral and instituting stringent standards for packaging and shipping for ground transport.

UAE public health capacity to detect emerging diseases is strengthened by multiple screening programmes that include clinical examinations and laboratory testing for: premarital screening (e.g. rubella); visa screening (Federal Law 5/2016); pre-employment; school health; neonatal screening; and maternity and child health.

Recommendations for priority actions

- Accredit all clinical laboratories in public/private and agricultural/veterinary sectors to international standards.

- Establish a committee from different laboratory sectors for coordination and communication.

- Establish a national reference laboratory for BLS4 that is linked with all central and peripheral laboratories.

Indicators and scores

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

Strengths/best practices

- UAE has extensive laboratory capability in all sectors, i.e. modern facilities, credentialed staff, molecular and traditional diagnostic methods, and significant levels of laboratory accreditation.

- Three reference laboratories are able to conduct the six core tests (except polio culture), and the required equipment for testing and confirmation of the core tests are available and well maintained.

- Turnaround from receiving specimens at the laboratory to reporting results is within the required time.

- Laboratories in all sectors can conduct many additional tests for emerging and re-emerging pathogens.

- WHO-accredited laboratories exist for measles, rubella and influenza.

- A plan and timeline is in place to construct a central public health laboratory to conduct BSL4 testing within two years for polio and emerging and re-emerging pathogens, and to increase the capability of peripheral laboratories to detect tuberculosis (MHP).

- Extensive national screening programmes in the country increase capacity for disease detection, e.g. for premarital screening programme (e.g. rubella), visa screening (Federal Law 5/2016); pre-employment; school health; neonatal screening; maternity and child health.

- Collaboration exists for testing/confirmation validation among laboratories in different emirates. The reference laboratories in UAE are internationally accredited.

Areas that need strengthening and challenges

- Construction of a central public health reference laboratory with BSL3/4 is a priority.

- Greater coordination is needed between the human, animal and food safety laboratory networks to determine where the sectors can expand shared practices, standards, and systems (e.g. electronic).

D.1.2 Specimen referral and transport system – Score 5

Strengths/best practices

- There is a system in place for specimen transportation from peripheral to referral laboratories.

- A functional system is in place to collect, package and transport clinical specimens, which consistently meets the standards of IATA/International Civil Aviation Organization.

- A budget is dedicated for the transport of highly infectious pathogens not performed in the country to international laboratories defined for these purposes.

- The mandatory licensure and routine auditing of laboratories allow the MHP and emirate authorities to monitor and ensure laboratories are subject to testing by higher level laboratories when required.

Areas that need strengthening and challenges

- All ground transport for referral of potentially dangerous pathogens should meet the same precautions and requirements for packaging and shipping certification as the standards for air transport.

- The difficulties in communicating with peripheral laboratories must be addressed.

D.1.3 Effective modern point-of-care and laboratory-based diagnostics –Score 5

Strengths/best practices

- UAE has extensive laboratory resources in all sectors, namely modern facilities, credentialed staff, molecular and traditional diagnostic methods, and significant levels of laboratory accreditation.

- The sustained laboratory capabilities are not dependent on donor funding.

- The combination of public and private laboratories in both the animal and human health sectors provides extensive service coverage.

- The national screening programmes utilizing an extensive point-of-care diagnostic capacity in the clinical sector for disease detection for: premarital screening (e.g. rubella); visa screening (Federal law 5/2016); pre-employment; school health; neonatal screening; maternity and child health.

- UAE has agreements and protocols for referral of specialized testing to laboratories outside of the country (e.g. polio culture in Oman).

- UAE has a well-established laboratory licensing system in the health-care sector and international quality standards mandatory for all labs, which are licensed to practice based on the regulatory body.

- UAE has accredited labs with ISO, JCI and CAP.

- Many laboratories use vendor-based laboratory information systems (e.g. Cerner, Epic) that report results directly to the provider.

Areas that need strengthening and challenges

- While there is a network of reference laboratories with distinct capabilities, a central public health reference laboratory with BSL3/4 would consolidate testing and expand capabilities at the national level.

- The national reference laboratory for AMR to provide leadership and guidance needs to be finalized.

- Coordination between the clinical, animal and food safety sectors should be strengthened to enable tier-specific diagnostic testing strategies.

D.1.4 Laboratory quality system – Score 4

Strengths/best practices

- UAE has a well-established laboratory licensing system in the health-care sector, and national quality standards are mandatory for all laboratories; many laboratories are accredited to international standards.

- The national level structure is well defined and includes human, animal and agriculture.

- A well-established laboratory quality control system is monitored by the regulatory bodies.

- UAE has many laboratories accredited by ISO, JCI, CAP, United Kingdom Accreditation Service, Accreditation of Canada, and AABB.

- Regular audit checks are carried out as a component of the mandatory laboratory licensure.

- Proficiency testing for most of the core tests is available.

- Inter-laboratory proficiency testing is also used to validate accuracy of testing.

- Corrective action is taken when there is poor assessment.

Areas that need strengthening and challenges

- Accreditation to international quality standards should be mandatory for all human, veterinary and food laboratories using accreditation such as CAP, JCI (laboratory), or ISO.

- The planned central public health reference laboratory should provide opportunities to develop expanded in-country external quality assessment (EQA) (programmes that supplement proficiency testing/EQA required for laboratory accreditation (e.g. CAP, or the United Kingdom National External Quality Assessment Service).

DETECT

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 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.

UAE level of capabilities

UAE has a strong, functional system of surveillance for priority diseases and syndromes. The 58 diseases notifiable by law are categorized under Group A (immediately notifiable) and Group B (reported on a routine basis). Each of the seven Emirates uses the same notifications list. Reporting sites comprise large hospitals and primary health care centres in both the public (38) and private sectors (88). These facilities report to the Emirate Preventive Medicine Departments (in Abu Dhabi, HAAD, and in Dubai, DHA), which then report to the Central Preventive Medicine Department in the Ministry of Health.

Systematic reporting with a dedicated team for data analysis and risk assessment is in place at both district and Emirate levels. Weekly reporting is done, and monthly and annual summaries of the accumulated data are made. Daily reporting is also done through the daily pandemic report mechanism (including report of number of cases). Veterinary reporting is carried out through a separate system: zoonotic diseases are part of reportable diseases, notifications of which are received by the preventive medicine departments at district and emirate levels. District Preventive Medicine Health Authorities surveillance coordinators conduct periodic and ad hoc training on indicator-based surveillance through lectures, circulars and by active staff training during their visits to reporting sites. Coordinators also internally audit the timeliness and completeness of reporting on a weekly basis.

Indicator-based reporting is routine. In addition, UAE has an event-based surveillance system in place. Sources of information can be official (information from government and international organizations), formal (nongovernmental, hospital and medical, clinicians report, schools and civil society organizations) and informal (media, social media and moderated sources such as ProMed). Triage and filtering of signals is done at the district level by the Preventive Medicine Health Authorities surveillance coordinator. Verification and risk assessment is performed at the emirate level by the Preventive Medicine Department.

UAE also has a syndromic surveillance system in place for specific priority diseases, where clinical diagnosis for suspected cases is considered for reporting. The system comprises five syndromes: acute flaccid paralysis, fever and rash illness, severe acute respiratory infection, pneumonia, and acute vomiting and diarrhoea indicative of foodborne illness. Opportunities exist for uniform definitions of syndromes and more systematic

training on both syndromic and event-based surveillance across the Emirates. Opportunities also exist to unify the national electronic surveillance system: a functional electronic notification system is in place in Abu Dhabi, and Dubai is updating its electronic notification system, linking notifiable diseases, outbreak and immunization data. The MPH has plans to integrate these two systems with laboratory notification systems, and expand one electronic surveillance system nationwide covering all Emirates.

UAE has a functioning indicator-based surveillance system with 58 notifiable diseases and focal persons at reporting sites. In addition, UAE has a strong reporting and notification system in place, which is supported by indicator- and event-based surveillance.

Two electronic notifiable infectious disease reporting systems are in place in Abu Dhabi and Dubai, although these are only used for human health and do not include reporting from the animal sector. However, zoonotic diseases are part of the reportable diseases list, and notifications of animal diseases are sent to the preventive medicine departments at district, emirate and central levels. The cases are systematically reported to the concerned human and animal authorities to investigate and take action if needed.

Recommendations for priority actions

- Establish a unified national electronic notification system (comprising Abu Dhabi, Dubai and northern Emirates).
- Develop mechanisms to share surveillance data in real-time between health, veterinary and food safety authorities.
- Pursue the establishment of a public health reference laboratory.
- Strengthen workforce capacity to detect and respond with additional trained full-time equivalents.

Indicators and scores

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

Strengths/best practices
- Indicator- and event-based surveillance system(s) are in place to detect public health threats.
- Results of surveillance data are regularly published (weekly/monthly/annually).
- A legislative framework for surveillance reporting is in place.
- There are clear roles and responsibilities at national, emirate and local level.
- A competent designated surveillance workforce is operational.
- Comprehensive electronic notification systems are in place in Abu Dhabi and Dubai with plans for integration and expansion.
- There is active participation and surveillance coverage from the private sector.
- A high-level coordination and communications network is in place for alert and response to events of public health concern.

Areas that need strengthening and challenges
- Event-based surveillance is relatively new, not systematically implemented in the country and will require training of all stakeholders.
- A unified electronic notification system is not yet in place.
- The public health workforce (e.g. field epidemiology) should be strengthened.
- Standardized documentation and reporting templates should be developed.

D.2.2 Interoperable, interconnected, electronic real-time reporting system – Score 3

Strengths/best practices

- Laboratories and the private sector participate in the surveillance system.

- Many districts collect surveillance data on conditions/diseases that are beyond what is mandated under the regular indicator- and event-based surveillance systems.

- Data from health facilities at district and emirate levels are linked with central surveillance at MPH.

Areas that need strengthening and challenges

- The current system should continue to integrate units using real-time electronic reporting.

- Integration of veterinary, human, laboratory and other related surveillance systems should be increased.

- A training unit should perform needs assessments and manage training locally and nationally (with feedback), particularly related to syndromic and event-based surveillance.

- Surveillance coverage and involvement of the private sector could be increased.

D.2.3 Integration and analysis of surveillance data – Score 5

Strengths/best practices

- Daily, weekly, monthly, and annual reporting of surveillance data is carried out.

Areas that need strengthening and challenges

- Laboratory and veterinary reports need to be integrated into the system.

D.2.4 Syndromic surveillance systems – Score 4

Strengths/best practices

- Syndromic surveillance is in place for five priority diseases. Certain disease data are linked with laboratory reports when available.

- Certain disease surveillance information is shared with concerned stakeholders.

Areas that need strengthening and challenges

- The system for event-based and syndromic-based surveillance needs to be systematically implemented.

- Further integration of the event-based surveillance is needed with the existing surveillance system.

- An influenza like illness/severe acute respiratory infection sentinel surveillance unit should be established.

- Regular updates on policies and guidelines (ICP Circular April 2014; Avian Flu Feb 2015; Seasonal Influenza Circular Feb 2015; Cholera Circular Nov 2015; Yellow Fever Circular (38) 2016; EVD Management guidelines Aug 2014).

- SOPs (Seasonal influenza SOPs; EVD; MERS-CoV).

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 consistent coordination with FAO and OIE.

UAE level of capabilities

Multisectoral coordination is in place to respond to a potential and verified PHEIC, including at points of entry. All sectors report on public health events of global and national relevance each morning through a regular reporting mechanism (Daily Epidemic Report) within the UAE, which is overseen by the IHR NFP. The IHR NFP reports to WHO on public health events that fulfil the IHR reporting criteria in a timely manner. Communication and reporting mechanisms have been tested through actual events in recent years. Examples include cases of MERS CoV as well as a suspected case of Ebola at a point of entry. In order to enhance functional communication between the IHR NFP and focal points in the relevant sectors and subsequent reporting to WHO, a National protocol of communication pathway for reporting acute public health event(s) was published in 2017. All major partners and stakeholders are fully aware of the information exchange mechanisms in place.

Underpinning communication to the IHR NFP and subsequent reporting to WHO, UAE has a good network of epidemiological and laboratory surveillance systems, as well as good mechanisms of communication with all relevant sectors through the IHR Committee (see section on IHR coordination, communication and advocacy). The NFP for OIE (nominated by MCCE) participates in the zoonotic task force developed under the IHR Committee, which ensures timely communication, reporting and coordinated response between human and animal sectors. In addition to reporting requirements to WHO, UAE is obligated to report events possibly constituting a PHEIC through a GCC protocol.

In order to maintain preparedness for reporting events, several tabletop simulation exercises have been performed in additional to real-life events.

UAE demonstrates timely reporting of a potential PHEIC to WHO from district to national and international level and to the OIE for relevant zoonotic disease (based on an exercise or real event); UAE has a sustainable process to maintain and improve reporting and communication capabilities; communication mechanisms are backed by established documentation (e.g. protocols, regulations, legislation).

Recommendations for priority actions

- Upgrade email reporting systems to an integrated electronic platform encompassing national and local levels, as well as human and animal health sectors.
- Institute tabletop simulation exercises for reporting, including on events outside of the human and animal sectors.

DETECT

- Improve the understanding of WHO, OIE, and FAO reporting requirements through multisector stakeholder discussions.

Indicators and scores

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

Strengths/best practices

- UAE has a strong surveillance system and daily reporting of all health hazards from all concerned stakeholders to the MHP and IHR NFP through the Daily Epidemic Report mechanism.

Areas that need strengthening and challenges

- Integration of OIE, FAO and WHO reporting requirements into a single reporting platform country-wide would further strengthen timeliness of reporting across sectors.

D.3.2 Reporting network and protocols in country – Score 5

Strengths/best practices

- The IHR NFP has clearly defined responsibilities for reporting, which all stakeholders are aware of and are required by law to comply with through various legislation. This is operationalized through the Daily Epidemic Report mechanism with all stakeholders.

- A national high-level, multisectoral, multidisciplinary IHR committee has been established with relevant task forces in place to ensure rapid risk assessment and reporting to WHO through the IHR NFP.

- The NFP for OIE is embedded within the IHR Committee, which ensures timely reporting of zoonotic events.

Areas that need strengthening and challenges

- Bilateral, multilateral and regional reporting agreements with neighbouring GCC countries need to be established.

- Further coordination related to chemical and radiation events needs to be carried out in order to improve timely reporting.

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).

UAE level of capabilities

UAE has a developed education system and an evolving workforce strategy for the development of staff in the public health sector. There is a clear commitment from the MHP to engage in long-term training planning to assure an adequate availability of staff for key functions in the system in the future. In addition, relevant health stakeholders in the UAE are involved in public health workforce planning.

Training in public health is managed by the Institute of Public Health, a department within the College of Medicine and Health Sciences. This College along with Gulf Medical University are the main providers of medical education and training in the UAE, and also confers Master of Public Health and doctorate degrees. The Institute of Public Health has expertise in the fields of public health, accident prevention, epidemiology, biostatistics and occupational medicine.

UAE has also developed collaborations with other institutions in the GCC countries, e.g. the Kingdom of Saudi Arabia for the provision of degree programmes in Public Health to UAE nationals. In addition, UAE has partnerships with several US universities such as Loma Linda University School of Public Health, and Johns Hopkins Bloomberg School of Public Health for certificate and diploma programmes and Master and doctorate programmes.

A formal (2-year) Field Epidemiology Training Programme (FETP) will be available through an agreement with King Saud University in the Kingdom of Saudi Arabia. This is currently under discussion to get approval from the GCC. Epidemiologists trained in this programme are fully accredited to work as epidemiologists in UAE. In recent years, the focus has been on in-service and short-course training; however, higher level courses have been highlighted as an area for future development in UAE.

Currently, the UAE has a total of 12 degree certified epidemiologists (most working at the national level covering the population of the country) who supervise other local clinicians working in epidemiology and public health. Many clinicians in the country are also trained on short-course epidemiology programmes either at local level or through certificate programmes at partnering institutions. In addition, other public health personnel have been trained in and are working in UAE such as clinicians, biostatisticians, information systems specialists, and veterinarians.

Recommendations for priority actions

- Evaluate the field epidemiology training available in the local professional qualification requirements.
- Develop incentives for attracting individuals to work as field epidemiologists.
- Draft a plan for workforce and sustainability.

DETECT

- Work with local authorities to start local epidemiology programmes modelled on existing programmes in other countries.

- Unify a workforce plan on a higher strategic level across the country and GCC area.

Indicators and scores

D.4.1 Human resources available to implement IHR core capacity requirements – Score 4

Strengths/best practices

- Multidisciplinary teams work together, within and outside the MHP.

- Staffing levels are adequate, and there is frequent use of short courses to raise skill levels.

- There is continuing strong support within the MHP for training of public health staff.

Areas that need strengthening/challenges

- Training plans, particularly at advanced FETP level, need to be developed.

- The major challenge facing the public health system is the ability to attract and retain quality staff (incentive, career development).

- Multidisciplinary human resource capacity is available as required at relevant levels of the public health system. However, this capacity depends on professionals (epidemiologists, veterinarians and allied public health staff) from overseas with high turnover of expatriates, which remains a challenge.

D.4.2 FETP or other applied epidemiology training programme in place – Score 4

Strengths/best practices

- There is strong cooperation for advanced level epidemiology training with the GCC countries.

- UAE has established strong partnerships with other international academic institutions for short-course training in epidemiology.

- Short-course trainings are also available at the local level for clinicians working in public health.

Areas that need strengthening and challenges

- Overall public health workforce development needs significant and sustained investment over the coming years in order to meet the UAE vision 2021 (world-class health care promoting preventive medicine).

- Higher level FETP courses, modelled on programmes in other countries have been highlighted as an area for development. Two levels of FETP (basic/intermediate and 2-year) or comparable applied epidemiology training programmes are in place (mostly advanced courses) and through an agreement with a regional 2-year FETP in another country.

D.4.3 Workforce strategy – Score 3

Strengths/best practices

- Relevant health stakeholders in the UAE are involved in public health workforce planning.

Areas that need strengthening and challenges

- While the need for additional public health staff (in addition to physicians) has been highlighted, a clear plan to identify the precise needs, areas and means of implementation is lacking.

- No unified body coordinates countrywide educational efforts.

- A health-care workforce strategy exists but is not regularly reviewed, updated or implemented consistently. Currently the strategy only includes physicians; in the future, the strategy will be extended to the entire public health workforce.

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.

UAE level of capabilities

The UAE has a well-developed and tested preparedness system based on a multi-hazard approach at the national level led by the NCEMA where all relevant ministries and stakeholders are represented. At the federal and local level, structures exist to handle incidents in a similar manner. Any incident that causes injuries at the local level or disturbs the delivery of health services in excess of what the local health authority can handle will be taken to MHP as the federal health sector leader. Federal authority resources will then be used to support the incident; if these resources are insufficient, the level of emergency will be raised to national level, and resources of the country will be used to support the response to the incident.

There is around-the-clock preparedness every day of the year, and experts of relevant professions ready on standby to handle emergencies of all types. Available resources are well mapped and updated so that surge capacity can be activated when needed.

Relevant stockpiles and emergency resources, including ambulances that can handle infectious disease patients, are also available. Strategies and plans to mobilize resources from national and intermediate level to support action at local response level, and a national public health emergency preparedness and response plan, are in place.

Recommendations for priority actions

- Automate data transfer between health authorities in the UAE.

Indicators and scores

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

Strengths/best practices

- A national authority responsible for legislation and coordination between all agencies at all levels exists (NCEMA).

- Response plans are in place involving all major responding agencies at national and local levels.

- A national framework defines levels of emergencies and escalation processes plus roles and responsibilities of all sectors.

- Regular testing is carried out of joint plans, capacities and procedures through drills at all levels.

Areas that need strengthening and challenges

- Some data entered manually would benefit from automation between levels.

R.1.2 Priority public health risks and resources mapped and utilized – Score 5

Strengths/best practices

- Risk registries are regularly updated at national, federal and local level. Identified risks are analysed in order to understand them and affect necessary resources and response requirements.

- A directory of experts can be called upon as needed.

- Medicine stockpiling plans are in place.

Areas that need strengthening and challenges

- No specific areas were identified. A national profile of risks and resources is updated every five years and when necessary, and identified needs are addressed.

Emergency response operations

Introduction

A public health emergency operations centre (EOC) is a central location for coordinating operational information and resources for strategic management of public health emergencies and emergency exercises. EOCS 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, multisectoral 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.

UAE level of capabilities

The UAE has EOCs at national, federal and local level. Each operates according to the national concept of operations and emergency levels, and has dedicated and trained staff. They are well equipped and designed, and function 24/7. Dedicated EOC staff have been trained and can activate a response within 2 hours. Roles and responsibilities are clearly defined, and case management, patient referrals and transportation of potentially infected patients are well implemented.

Joint national drills are conducted annually involving all relevant organizations and stakeholders. Available plans describe the procedures of the centres and the training of staff.

Recommendations for priority actions

• Complete the development of an advanced communication network.

Indicators and scores

R.2.1 Capacity to activate emergency operations – Score 5

Strengths/best practices
• Operation centres/rooms are available at national, federal and local levels, working 24/7 with suitable infrastructure.
• Close cooperation and information sharing is conducted among all EOCs and entities at all levels through NCEMA or directly.

Areas that need strengthening and challenges
• None were identified.

RESPOND

R.2.2 EOC operating procedures and plans – Score 5

Strengths/best practices

- A defined incident command system can identify levels of emergencies and decision-making pathways.

Areas that need strengthening and challenges

- None were identified.

R.2.3 Emergency operations programme – Score 5

Strengths/best practices

- EOC is operational 24/7 and the ability to activate a response within 120 minutes has been proven.

Areas that need strengthening and challenges

- None were identified.

R.2.4 Case management procedures implemented for IHR relevant hazards – Score 5

Strengths/best practices

- Case management and transportation of infectious disease patients are implemented according to guidelines.
- Plans and resources regarding management of potentially infectious patients are in place.

Areas that need strengthening and challenges

- None were identified.

Linking public health and security authorities

Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is manmade (e.g. an anthrax terrorist attack) or naturally occurring (e.g. influenza 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.

UAE level of capabilities

UAE has developed and demonstrated capacity to link public health and law enforcement, including the investigation of public health events that may be of local or international concern.

The NCEMA was launched in May 2007 within the structure of the Supervision of the Supreme Council for National Security. Based on a decree by Federal Law No. 2 of 2011, NCEMA aims to realize UAE's policy regarding the required procedures for emergency, crisis and disaster management. It is the major national standard-setting body responsible for regulating and coordinating all efforts in this domain, and for assuring linkages between public health and security authorities. NCEMA has also established the Supreme Intersectoral Committee, a national framework that defines levels of emergencies and escalation processes, plus roles and responsibilities of all sectors.

Recommendations for priority actions

- No specific recommendations, although sustained simulations/drills should be encouraged and maintained in order to test the functionality of the public health and security links.

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 5

Strengths/best practices
- NCEMA is a national organization which coordinates regular reporting between all local and federal organizations, and sets up multisectoral committees to cover specific issues related to disaster management.
- Joint planning occurs between health and security authorities.
- Joint national and federal or local exercises or drills are conducted.

Areas that need strengthening and challenges
- None were identified.

RESPOND

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.

UAE level of capabilities

UAE manages robust domestic systems for the development, stockpiling, distribution and dispensing of medical countermeasures, as well as the deployment of federal public health and medical personnel when and where they are needed. UAE recognizes that no single country can afford to make available the wide variety of medical countermeasures required to prevent or mitigate all potential threats, or ensure that enough qualified personnel are available for multiple, large-scale situations. As a result, the country has built on the expertise available, which can be deployed for public health emergencies. UAE has also developed SOPs for medical countermeasures and personnel deployment within the National Strategic Framework.

Recommendations for priority actions

- Develop SOPs for sending and receiving medical countermeasure and personnel during public health emergencies.
- Develop plans and procedures for distributing animal countermeasures.
- Conduct drills and simulations exercises to test the developed SOPs for medical countermeasures and deployment of personnel.

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

- The country participated in a regional/international partnership that outlined criteria and procedures for sending and receiving medical countermeasures.
- UAE also participated in responses within the past year to practise deployment and receipt of medical countermeasures.
- A formal agreement is in place with manufacturers and pharmaceutical agents, companies and suppliers on providing a strategic medical stockpile.

- Sufficient quantities of a strategic stockpile is maintained at national level for emergency use.

Areas that need strengthening and challenges

- UAE needs to develop a plan, procedure or legal provision for distributing animal countermeasures.

R.4.2 System in place for sending and receiving health personnel during a public health emergency – Score 5

Strengths/best practices

- UAE has a formal agreement with an international organization that outlines criteria and procedures for sending and receiving health personnel.

- A response occurred within the past year to practise deployment.

- Effective coordination and information sharing exist between the MHP parties.

Areas that need strengthening and challenges

- None were identified.

Risk communication

Introduction

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

Communications of this kind promote appropriate prevention and control action through community-based interventions at individual, family and community levels. Disseminating the information through appropriate channels is essential. Communication partners and stakeholders in the country need to be identified, and functional coordination and communication mechanisms established. In addition, the timely release of information and transparency in decision-making are essential for building trust between authorities, populations and partners. Emergency communication 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 well-being) to their survival, is critical 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.

UAE level of capabilities

The country has a well-structured and formal risk communication process with all the assets needed for a robust system. A well-organized National Media Council works in partnership with local media authorities (e.g. the media corporations of Abu Dhabi, Dubai, Sharjah) to manage media in the country. A further strength is that a function for risk communication is integrated in the Media and Public Communication Emergency Supporting Plan within NCEMA, and a Media Response Plan in the MHP. During national level emergencies, NCEMA (Media Cell) takes the role controlling media releases, coordination and cooperation between the lead agency (MHP), National Media Council, and other supporting federal agencies.

The UAE health system has several 'best practice' programmes that seek to engage the community, often based in local hospitals or innovatively linked to social media. However, the diverse and dynamic population of UAE, with a large group of young workers, poses a large challenge on risk communication systems. To be effective, the system must constantly and rapidly establish contact and trust, in many languages. The authorities work actively to introduce evidence-based approaches to communication, and to improve the risk communication process.

There is a formal and fully operational national system for risk communication with a multi-hazard approach, including SOPs and multisectoral, multistakeholder involvement. A system exists to integrate lessons learnt

from national drills into the revision of national plans for continuous improvement and strengthening of the risk communication system. There is regular allocation of resources to maintain and develop the system.

There is effective, regular and inclusive communication coordination with partners and stakeholders, including definition of roles, sharing of resources and joint action plans. The plans and coordination have been tested regularly by simulation exercises and through real health emergencies.

The Government, partners and diverse media outlets are engaged in robust and increasingly responsive collaboration to provide health advice, including on individual concerns and rumours, and address misinformation. Proactive media outreach activities achieve comprehensive geographic coverage in relevant languages.

Stakeholders at intermediate and local levels have been mapped and human resources are in place for engagement involving community and religious leaders. Regular briefings, training and engagement of social mobilization and community teams take place, including volunteers. Mechanisms to harness scale-up capacity are operational. A feedback loop from listening to community engagement activities is operational.

Recommendations for priority actions

- Enhance communication with communities that do not speak or understand Arabic or other common languages.

- Enlarge the media team to include all concerned departments in MHP and other relevant stakeholders.

- Conduct more drills focusing on risk communication in public health emergencies with a broad approach to overcoming challenges in affected communities, e.g. language barriers.

Indicators and scores

R.5.1 Risk communication systems (plans, mechanisms, etc.) – Score 5

Strengths/best practices

- A function for risk communication exists through the Media and Public Communication Emergency Supporting Plan in NCEMA, the Media Response Plan in MHP, as well as in local health authorities.

- There are several stakeholders with defined roles and responsibilities from government agencies, non-profit organizations and the private sector that participate in the Media and Public Communication Emergency Supporting Plan.

- Permanent and surge staff are dedicated to risk communication during emergencies. Medical and health-care professionals are defined by MHP and local health authorities (HAAD, DHA) to respond to public questions and inquiries about risks during emergencies.

- Continuous improvements are made in the response plans of MHP and other agencies and authorities based on experience and outcomes of practical exercises, drills and actual responses. Such a mechanism also exists through lessons learnt from exercises carried out under NCEMA. Communications response staff are made aware of the updates and trained to accommodate them through regular workshops convened by NCEMA.

- Plans and their effectiveness are tested periodically through joint drills among government agencies.

Areas that need strengthening and challenges

- More drills should focus on risk communication in public health emergencies with a broad approach to overcome challenges in affected communities, e.g. language barriers (by end 2018).

RESPOND

R.5.2 Internal and partner communication and coordination – Score 5

Strengths/best practices

- There is a formal mechanism to coordinate communication among civil society organizations and the private sector through the national response framework, in addition to agreements signed by the NCEMA.

- At the MHP, communication with hospitals (government and private) during an emergency is done through the main NCEMA Emergency, Crisis and Disaster Operations Centre as well as through control rooms in hospitals. The same process happens at the local health authorities hospitals of HAAD and DHA. Moreover, coordination with private hospitals is the remit of the local health authorities.

- Coordination and communication with partner organizations are tested yearly through NCEMA exercises and drills with participating agencies.

- NCEMA has responded to real emergency events and thereby tested and learnt from experiences on coordination of communication with concerned partners (e.g. H1N1 pandemic, MERS CoV).

Areas that need strengthening and challenges

- The media team should be enlarged to include all concerned departments in MHP and other relevant stakeholders (by end 2018).

R.5.3 Public communication – Score 5

Strengths/best practices

- All official agencies communicate with the public through Government communication departments, where dedicated teams are formally entrusted with media and social outreach. In case of emergency, communications with the public use many levels and methods, including regular media briefings and updates through mass communication, news, press conferences, television, as well as awareness and educational campaigns.

- Call centres in MHP and local health authorities in Abu Dhabi and Dubai respond to public needs during emergencies.

- There is a list of official and trained spokespersons in MHP and all health authorities, according to sectors of MHP. Messages must be cleared by the federal media agency (National Media Council) in coordination with NCEMA, which specify what information can be delivered through public media.

Areas that need strengthening and challenges

- Enhanced communication with communities and populations that do not speak or understand Arabic or other common languages is necessary to maintain the score (by end 2018).

R.5.4 Communication engagement with affected communities – Score 4

Strengths/best practices

- Both Rapid Response Teams and the Health Education and Promotion Department conduct awareness events and campaigns in collaboration with Medical Districts, e.g. World Health Day campaigns.

- Cooperation and coordination exist between the NCEMA and UAE Red Crescent, through which volunteers are trained on first aid and how to confront emergencies and disasters.

- Messaging is regularly and rapidly used to address audience feedback and questions, by detecting public reactions via different communication channels (i.e. call centres, social media, community outreach programmes, press conferences).

- Lessons were learnt from successfully managing an influenza H1N1 pandemic (e.g. 24/7 call centre) and real-life testing of MHP Emergency management supporting plans to confront specific risks (e.g. MERS CoV, Ebola).

Areas that need strengthening and challenges

- Communication with communities, particularly the non-Arabic speaking communities, should be strengthened. There is a plan to raise and spread community awareness of emergency, crisis and disaster management in coordination with NCEMA (by end 2018).

R.5.5 Dynamic listening and rumour management – Score 5

Strengths/best practices

- A formal communication function monitors and addresses rumours and misinformation through call centres and Government communication departments in MPH and local health authorities.

- The communication response and ability to address rumours and misinformation is regularly evaluated to ensure that actions change behaviour and stop rumours from spreading.

- Social media sites are both scanned regularly and used to communicate messages.

- Social media activity is also measured in order to ascertain how rumours fluctuate for certain subjects.

- A detailed risk communication plan exists which incorporates plans from other departments. The plan has templates for press releases etc., including timelines. For instance it specifies that the first communication after an emergency has been detected should be done within 12 minutes.

- Lessons have been learnt from events, and behaviour change has been evidenced, for instance in managing rumours linking autism and MMR.

Areas that need strengthening and challenges

- There were no areas expressed in texts or discussions during the JEE.

- Cabinet Decree No. 6 (2013) on the organizational structure of MPH.

- Media Response Plan in Ministry of Health 2014 (Internal Plan).

OTHER IHR-RELATED HAZARDS AND POINTS OF ENTRY

Points of entry

Introduction

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

UAE level of capabilities

UAE achieved a modern infrastructure over the past decades and is still investing significant resources in extending and improving it. The country has established 7 international airports, 8 seaports and 2 ground crossings as designated PoE. The infrastructure of PoE and medical facilities are well developed and equipped, with the necessary staff available 24/7 for assessment and care of ill travellers and handling public health emergencies. This includes infectious disease specialists and epidemiologists available 24/7 at emirate level. Legislation is quite recent and well developed. At some levels, contingency planning is integrated with response plans of relevant stakeholders for the control of public health emergencies; integration of these plans into an all-hazard response plan is also ongoing. As far as could be assessed, available staff are well trained and aware of guidelines and procedures. Drills and tabletop exercises are regularly undertaken and evaluated, as are natural occurring disasters such as Ebola. The results of these evaluations are used to improve planning and response services, thus realizing a quality cycle. As a federal body, NCEMA seems well positioned to coordinate public health emergencies as it is well connected to different stakeholders involved in such actions, including at emirate and local level.

Again, as far as could be assessed, ambulance services at designated PoE have adequate capacity, are well equipped, and have agreements with hospitals concerning admission of infectious patients and their contacts. A central computerized patient filing system is operational, enabling easy transfer of medical data from medical services at PoE to a referral centre. At central level (MPH) a modern coordination centre oversees available material and human resources, including the clinical bed capacity needed for admission and treatment of patients involved in public health emergencies at PoE. The latter two capacities could serve as a model for other Member States that have the technological and financial resources to realize and maintain such systems.

Trained personnel for inspecting ships and issuing Ship Sanitation Certificates are available. While vector surveillance is in place at PoE, vector control is outsourced to a private company and monitored by the Government. Veterinary services, laboratory capacity and facilities for assessment and quarantining of livestock and companion animals are available at some airports and major ground crossings.

In general, IHR capacities at PoE seem adequately developed even though there is always room for improvement and continued development in view of a rapidly expanding economy. Mechanisms should therefore be in place to ensure that capacities are maintained, with the continued attention of responsible authorities.

Recommendations for priority actions

- Increase personnel capacity for field epidemiologists, veterinarians and technical hygiene specialists by intensifying the training programme, starting September 2017.

- Develop a national self-evaluation and monitoring tool to ensure the sustainability of IHR requirements at PoE.

- Design and implement an all-hazard national emergency plan by the end of 2018.

Indicators and scores

PoE.1 Routine capacities established at points of entry – Score 5

Strengths/best practices

- The infrastructure at airports, seaports and medical facilities is modern and well developed, including adequately equipped medical facilities and required staff available 24/7 for assessment and care of ill travellers and handling public health emergencies. This includes infectious disease specialists and epidemiologists available 24/7 at emirate level.

- As far as could be assessed, ambulance services at designated PoE have adequate capacity, facilities and trained staff at their disposal for care and transport to nearby hospitals for further assessment and clinical treatment.

- While vector surveillance is in place at PoE, vector control in the form of an integrated vector management system is outsourced to a private company and monitored by Government. Trained personnel for inspecting ships and issuing Ship Sanitation Certificates is available at the different seaports.

Areas that need strengthening and challenges

- No real weaknesses were identified, albeit concern that these IHR requirements can be sustained. IHR capacities need maintenance and continued attention of responsible authorities, and mechanisms should be in place to assure this.

- The number of designated PoEs involves serious investment in staff, infrastructure and maintenance.

- As a whole, UAE still faces a relative shortage of specialist staff including veterinarians, university level epidemiologists and technical hygiene specialists.

PoE.2 Effective public health response at points of entry – Score 5

Strengths/best practices

- Legislation is quite recent and well developed. At different levels, contingency planning is integrated with response plans of relevant stakeholders to control public health emergencies; integration of these plans into an all-hazard response plan is ongoing.

- As a federal body, NCEMA seems well positioned to coordinate (public) health emergencies since it is well connected to stakeholders involved in such action, including at emirate and local level.

- Veterinary services, laboratory capacity, and facilities to assess and quarantine livestock and companion animals before importation are available at some airports and major ground crossings.

OTHER

- Agreements have been made with receiving hospitals concerning referral and admission of infectious patients and their contacts. A central computerized patient filing system is operational enabling easy transfer of medical data from medical services at PoE to a referral centre.

- At central level (MPH) a modern coordination centre oversees available material and human resources, including the clinical bed capacity needed for admission and treatment of patients involved in public health emergencies at PoE.

- Available staff appear well trained and aware of guidelines and procedures. Drills and tabletop exercises are regularly undertaken and evaluated, as are natural disasters such as Ebola. The results of these evaluations are used to improve planning and response services, thus ensuring a full quality cycle.

Areas that need strengthening and challenges

- Even though adequate national health emergency contingency plans for response to public health emergencies at PoE are in place and integrated with the response plans of other sectors and stakeholders, further integration into an all-hazard national emergency contingency plan should be further pursued.

- The country as a whole still faces a relative shortage of specialist staff such as veterinarians, university level epidemiologists and technical hygiene specialists.

- Challenges related mainly to the rapid growth in traveller numbers and trade volume. The infrastructure needed to cope with this, including well-trained staff to guarantee effective public health response at PoEs in an emergency, requires significant investment and continued attention from Government.

- Integrating the fast growing private sector into the national health system, and establishing a national public health reference laboratory to enable fast and reliable diagnosis in case of sick passengers or veterinary diseases, were also mentioned.

- Population dynamics, given its atypical demographic composition with many migrant workers from south and south-east Asia, pose a risk for importation of infectious diseases and a challenge to control them.

- While arrangements are in place, communication between various PoE and stakeholders within PoE on control of public health emergencies including operational coordination could be improved.

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 have surveillance and response capacity to manage chemical risks 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.

UAE level of capabilities

There are a number of national stakeholders involved in the management of chemical risks and events in UAE, including the MHP, NCEMA, MCCE, Chemical, Biological, Radiological and Nuclear (CBRN) Risk Mitigation Division/ Abu Dhabi Police, UAE Civil Defence, Environment Authority, Abu Dhabi Municipality, Abu Dhabi Food Control, and the Quality and Conformity Council. Numerous plans and legislative frameworks support the potential for a strong enabling environment for the management of chemical risks and events. However, to allow for more effective prevention, detection and response to chemical risks and events there is a need for more consolidated, formalized multisectoral coordination.

Recommendations for priority actions

- Establish a poisons centre covering the whole country with reference to relevant international guidance.

- Improve capacity through the establishment of a national training centre for health-care professionals to increase knowledge of how to deal with chemical incidents and poisons. This may be undertaken by incorporating modules into medical/public health degrees and more exercises and drills in the smaller emirates.

- Move forward with further GCC agreements and international memoranda of understanding to protect the country's borders and consequently reduce the incidence of chemical incidents.

Indicators and scores

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

Strengths/best practices
- UAE has turned into law a number of international agreements such as the Rotterdam and Stockholm conventions. The International Labour Convention 174 on Prevention of Major Industrial Accidents and International Labour Convention 170 on Safety in the Use of Chemicals at Work are ratified, but not national laws. It is uncertain whether the Strategic Approach to International Chemical Management has been implemented.

- The country has strong federal laws relating to chemical incidents. It has also mapped all major chemical sites in all the emirates, and provided some training to clinicians on the management of patients.

- There is good coverage of decontamination facilities and staff are suitably trained. While there has not been any major incidents related to chemical exposure, the few local incidents that occurred were well managed.

- Exercises on major chemical incidents are well covered in both Abu Dhabi and Dubai, but there is limited evidence on whether these have taken place in the other emirates. UAE has access to toxicological databases such as Poisondex and Toxbase, but does not have a poisons centre. The country has recognized this as an area for improvement.

- Abu Dhabi Food Authority and other municipalities take responsibility for testing foodstuffs and goods with regard to chemical safety. Regular water sampling is also undertaken by the water authorities in each emirate.

- Federal laws are in place within all the emirates for industrial health and safety and pollution control. The Environment Agency of Abu Dhabi has a network of fixed air pollution monitors and the Civil Defence Authority has the capability to monitor air quality during a chemical emergency.

- A UAE electronic Integrated Hazardous Materials Management System is used as a tool for the management and control of hazardous substances imported and produced in the country.

Areas that need strengthening and challenges

- Multisectoral collaboration on chemical risks and events needs to be strengthened. There is currently no public health technical working group for chemicals.

- Further training should be provided to the smaller emirates on identifying and dealing with chemical incidents.

- Agreement on standards/guidelines values for chemicals is needed for land, air and biological media to aid risk assessment and remedial action.

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

Strengths/best practices

- The NCEMA coordinates disaster-level incidents with multiple stakeholders and can also access funds for disaster-level chemical events. It operates an "Any Hazards Plan" which can deal with any major chemical incident. Outcomes are published following each major exercise and these feed back into learning.

- The CBRN centre legislates and monitors major chemical facilities within the UAE and undertakes periodic inspections of these sites. Suitable corrective actions are then suggested for improvement. It is understood that on- and off-site emergency plans are available for the major chemical sites, although these were not provided as part of the evaluation.

- UAE has a variety of published legislation and federal laws, plans and guidelines to enable chemical management and event response. NCEMA has also published a document on Occupational Health and Safety. The UAE is a member of, and has integrated the recommendations made by the Cooperation Council for the Gulf States on preventive requirements for hazardous substances.

- Abu Dhabi Food Control Authorities have federal powers to undertake inspections of food and MCCE inspections for land, water, and crops. There is planning in place to respond to cross-border maritime incidents using a real-life incident that took place in the weeks before the evaluation being used to provide details on capability.

- While no poison centres are available in the UAE, clinicians have access to both Poisindex and Toxbase for clinical treatment of patients.

Areas that need strengthening and challenges

- Although a number of international conventions have been ratified, not all have been formalized under UAE law.

- No information was provided on the disposal of hazardous waste in the UAE.

- There is no capability within the country to undertake biomonitoring, which would help to determine levels of human exposure during chemical incidents.

- There is no national poisons centre in the UAE.

Radiation emergencies

Introduction

To counter radiological and nuclear emergencies, timely detection and an effective response to 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.

UAE level of capabilities

UAE is embarking on nuclear technology; Baraka Nuclear Power Plant (NPP) is under construction as the first of four planned units to be put into operation by the end of 2018. In this connection, UAE is working closely with the International Atomic Energy Agency (IAEA) to ensure safe use of nuclear technology. Preparedness and response to radiological and nuclear emergencies (further, radiation emergencies) is an integral part of the plan and an obligatory condition for any country starting to use nuclear technology.

Radiation emergencies are included in the scope of NCEMA, the lead coordinating agency at the national level for any type of emergency. For specific technical issues pertaining to radiation protection and safety, the Federal Authority for Nuclear Regulation (FANR) is the sole entity regulating the applications and safety of radiation sources and of the nuclear industry. In addition, other agencies contribute to the response to any radiation emergency as per the established national regulations, policies and plans. These are the following:

Abu Dhabi Food Control Authority, Abu Dhabi Health Authority, Abu Dhabi Municipality, Abu Dhabi Police, Abu Dhabi Quality and Conformity Council, Dubai Health Authority, Dubai Municipality, Dubai Police, Gulf Cooperation Council, Ministry of Climate Change and Environment, Ministry of Foreign Affairs and International Cooperation, Ministry of Health and Prevention, Ministry of Interior, National Centre of Meteorology and Seismology, National Centre of Radiological Protection, National Media Council.

Recommendations for priority actions

- Further strengthen capacities of the health sector nationwide, including identification and designation of additional health-care facilities that can be mobilized in case of a nuclear emergency scenario other than Baraka.

- Develop a national training programme for the health sector and harmonize the curriculum of existing training programmes offered to health professionals by various sources, to ensure consistency of skills for a medical response to radiological and nuclear emergencies. Establishment of a national training centre for this purpose may be one of the options.

- Given that individual exposure assessment is an important tool for medical response to radiation emergencies, explore the possibility of further developing or establishing the following national capabilities: (i) individual in vivo internal contamination monitoring capabilities, (ii) bioassays for in vitro assessment of internal contamination; (iii) cytogenetic biodosimetry. In addition, international collaboration with highly experienced laboratories in terms of inter-comparison exercises is encouraged.

- Foresee the psychosocial and mental health impact of a potential radiation emergency (the largest impact after Chernobyl and Fukushima accidents) during the planning stage. Special arrangements should be envisioned to mitigate psychological stress, anxiety and other mental health effects. Provision of timely, clear, and consistent information to populations prior, during, and after a nuclear accident is key to minimizing such impact. Therefore, establishment of community reception/information centres is an essential part of planning for emergency response.

Indicators and scores

RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies – Score 4

Strengths/best practices

- UAE is party to IAEA conventions on Early Notification of a Nuclear Accident, and on Assistance in the Case of a Nuclear Accident or Radiological Emergency. The national competent authority and focal point for notification under these conventions is FANR.

- The country has established strong federal legislation relating to nuclear and radiation safety. It has also mapped all major radiation sources and risks in all emirates, and provided training to health-care workers on the management of patients exposed to radiation and/or contaminated with radioactive substances.

- There is sufficient coverage of decontamination facilities and individuals are suitably trained in the vicinity of the Baraka NPP and at the designated Ruwaisa and Madina hospitals. Within the higher risk sector, a process has been established for timely and systematic information exchange between surveillance units and other relevant factors for national and international events (an early warning system).

- Rapid detection and response protocols for radiological and nuclear emergencies by all concerned entities are being regularly tested. Abu Dhabi Food Authority and other municipalities take the responsibility of testing food and drinking water safety in regard to radiation safety. Regular water sampling is also undertaken by the water authorities in each emirate. This national strength is reflected through:

  ○ national plans for radiological and nuclear emergencies, including the health sector;

  ○ regional and UAE part of GCC plan for radiological and nuclear emergencies; and

  ○ surveillance and management for radiological events, including environmental monitoring (water, air, soil, etc.).

Areas that need strengthening and challenges

- Basic and advanced training is needed for health-care workers who may be involved in a nuclear or radiological emergency at the designated hospital (i.e. nurses, emergency medical personnel, health administrators, radiation protection officers and medical physicists involved in any medical response to such emergencies.

- Further strengthening is needed for multisectoral surveillance, laboratory capacity and training on in vivo (internal contamination monitoring) and in vitro biodosimetry (bioassay and cytogenetic dosimetry). This should ensure comparable dose assessments following accidental exposure to ionizing radiation and further integration with the medical response for radiological and nuclear emergencies. Such training programmes should target biologists, medical technologists, and laboratory staff performing biological dosimetry and relevant medical specialists.

RE.2 Enabling environment in place for management of radiation emergencies – Score 5

Strengths/best practices

- A national nuclear regulatory body has been established under Federal Law by Decree No. 6 of 2009 on the Peaceful Use of Nuclear Energy.

- Federal Law No. 2 establishing the National Emergency Crisis and Disaster Management Authority identifies the principal coordination authority in the country for all types of emergency.

- National response general framework and plans for radiological and nuclear emergencies are enforced and clearly define the roles and responsibilities of all main and supporting entities including the health sector.

- A functional mechanism for multisector collaboration and coordination for radiological and nuclear emergencies is in place among stakeholders, in collaboration with relevant international organizations.

- Emergency response plans are regularly tested with key international, regional, national and local entities. Response has been evaluated and areas of improvement identified.

- An IAEA Emergency Preparedness Review of how UAE meets international safety requirements for preparedness and response to radiological and nuclear emergency[4] was conducted in 2015. This peer review made a thorough analysis of the national capabilities and risks, followed by recommendations and an action plan to address the identified areas for improvement. Significant progress has been made since 2015 towards implementing these recommendations.

Areas that need strengthening and challenges

- Coordination between the CBRN units and the medical sector could be enhanced to respond to radiological and nuclear emergencies.

- Standardized training courses could be consolidated for first responders (health sector).

- More hospitals should be designated for radiation emergencies and their capability improved as appropriate.

- Information centres should be established to engage local communities and provide information to the affected population; this should be used as a tool to mitigate the psychosocial impact of a potential radiation emergency.

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4   IAEA Stafety Standards: Preparedness and Response for a Nuclear or Radiological Emergency – General Safety Requirements No. GSR Part 7. Vienna; 2016 (www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf).

Appendix 1: Joint External Evaluation background

Mission place and dates

The mission took place in Dubai, United Arab Emirates on 19–23 March 2017. The team held multisectoral discussions and site visits in Dubai, Abu Dhabi and Al Fujairah.

Objectives

a) Assess implementation of IHR public health capacities for surveillance and response to public health events of potential international concern including at points of entry;

b) Review all related documents.

c) Develop a report describing the progress and gaps in implementing the IHR capacities.

d) Recommend priority actions and identify any gaps to ensure IHR capacities for global health security.

Mission team members

1. Michel Theiren (Team lead), WHO Eastern Mediterranean Regional Office, Cairo, Egypt

2. Markos Tibbo (Team co-lead), FAO Regional Office for the Near East and North Africa, Cairo, Egypt

3. Colleen Acosta, WHO European Regional Office Copenhagen, Denmark

4. Idris Al Abaidani, Ministry of Health, Muscat, Sultanate of Oman

5. Zhanat Carr, WHO headquarters, Geneva Switzerland

6. Hans van den Kerkhof, National Institute for Public Health and the Environment, Bilthoven, Netherlands

7. Nhu Nguyen Tran Minh, WHO Eastern Mediterranean Regional Office, Cairo, Egypt

8. Sian Morrow, Public Health England, London, United Kingdom

9. John Ridderhof, Centers for Disease Control and Prevention, Atlanta, USA

10. Adam Roth, Public Health Agency, Solna, Sweden

11. Dalia Samhouri, WHO Eastern Mediterranean Regional Office, Cairo, Egypt

12. Martine Van Utterbeeck, Doctors Without Borders, Paris, France

13. Anders Wallensten, Public Health Agency, Solna, Sweden

Preparation and implementation of the mission

- Prior to the visit, several communications took place with assessment team members and experts in UAE to review the agenda, responsibilities, and logistics.

- A national training was conducted on 25–27 October 2016 to provide national stakeholders with the information and resources necessary to participate successfully in the JEE process; and to provide guidance on self-reporting requirements and responsibilities.

- Background documents were collected and shared with the JEE team along with the complete JEE tool for review.

- One-day orientation was provided to the external experts on the JEE process and tool, objectives and expected outcomes, and to discuss and finalize the agenda of the mission.

- Meetings with the relevant stakeholders and field visits were conducted to validate the collected information and to reach a consensus on the scores and priority actions.

- A debriefing meeting was held with senior officials and national technical teams involved in the evaluation to present the outcomes of the JEE, best practices and priority actions.

- A press release described the participation of UAE in the JEE, highlighting the main strengths, gaps and priority actions that needed to be in place to meet the requirements of the 19 technical area.

Limitations and assumptions

- The evaluation was limited to one week, which restricted the amount and depth of information that could be managed.

- The results of this evaluation will be made publicly available.

- The evaluation is not an audit or an inspection.

- Information provided by UAE is not independently verified, but was jointly discussed and an assessment rating mutually agreed by the external assessment team and the UAE counterparts.

Supporting documentation provided by host country

- Self-reporting on JEE assessment tool, UAE.

- Presentation on overview of the health system in UAE.

- Presentations on each of the 19 technical areas of the JEE tool.

National legislation, policy and financing

Relevant documentation

- Ministerial Decree No. 326 of 2015 on the establishment of the National Committee for Implementation of International Health Regulations and Combatting Health Pandemics.

- Federal Law No. 2 of 2011 on the establishment of the National Emergency Crisis and Disaster Management Authority.

- Ministerial Decree No. 115 of 2013 on the establishment of the National Committee for Combating Health Pandemics.

- Cabinet Decree No. 30 of 2016, amending Cabinet Decree No. 27 of 2008 on the establishment of the Health Council.

- Public Health Law (to be issued in 2017).

- Draft declaration on an Early Warning System in GCC Countries.

- Federal Law No. 14 of 2014 on Control of Communicable Diseases.

- Cabinet Executive Decree No. 33 of 2016 on Federal Law No. 14 on Control of Communicable Diseases.

- Cabinet Decree No. 5 of 2016 amending some provisions of the Council of Ministers (Cabinet) Resolution No. 7 of 2008 on the Medical Screening of Expatriates arriving for work or residence.

- Federal Law No. 8 of 2013 on Zoonotic Infectious Disease Control.

- Federal Law No. 6 of 1979 on Veterinarian Quarantine in the UAE, and amendments in Federal Law No. 7 of 1992.

- Ministerial Decree No. 460 of 2001, and Law of 2003 on Veterinary Quarantine in GCC countries.

- Federal law No. 10 of 2015 on Food Safety.

- Federal Law No. 24 of 1999 on Environmental Protection and Development, and its amendments.

- Federal Law by Decree No.6 of 2009 on the Peaceful Uses of Nuclear Energy.

- Basic regulations for the prevention of ionizing radiation in United Arab Emirates (UAE BRPAIR 55/2004).

- Basic regulations for the management of radioactive waste in United Arab Emirates (UAE RRWM 57/2004).

- Regulation for emergency preparedness for nuclear facilities (FANR-REG-12).

- Regulation for the safe transport of radioactive materials (FANR-REG-13).

- Requirements for off-site emergency plans for nuclear facilities (FANR-REG-15).

- Basic safety standards for facilities and activities involving ionizing radiation other than in nuclear facilities (FANR-REG-24).

- Transportation safety guide (FANR-RG-006).

- Radiation safety in industrial radiography (FANR-RG-019).

IHR coordination, communication and advocacy

Relevant documentation

- Ministerial Decree No. 326 (2015) regarding the establishment of the National Committee for Implementation of International Health Regulations and Combatting Health Pandemics.

- Public Health Law, Article 27.

- Federal Law No. 14 (2014) and Cabinet Executive Decree No. 33 (2016) regarding control of communicable diseases.

- National Protocol of Communication Pathway for Reporting Acute Public Health Event(s) (2017).

- UAE National Action Plan 2017–2021.

Antimicrobial resistance

Relevant documentation

- Abu Dhabi Emirate AMR Surveillance Report 2010¬2014.

- UAE National Action Plan on AMR.

- HAAD Standard for Monitoring and Reporting of Antimicrobial Resistance.

- National Report for AMR Surveillance UAE, 2016.

- National Standard for AMR Surveillance UAE, 2017–2019.

- National Plan for the Prevention, Reduction and Elimination of HCAI.

- GCC Infection Prevention and Control Manual (2013).

- HAAD Policy for Infection Control in Health-Care Facilities.

- HAAD Standard for Infection Prevention and Control Management.

- MHP Policy and Procedure: Antibiotic Stewardship.

- HAAD mandate on ASP for hospitals.

- Dubai municipality veterinary clinics/commercial farms: AB utilization data on yearly basis (2015–2016).

- Dubai municipality Veterinary Service Section Strategy to combat AMR.

- European Union Commission Regulation No. 37/2010 (22 December 2009) on pharmacologically active substances and their classification regarding maximum residue limits in foodstuffs of animal origin.

- Ministerial decision No. 1136 (2003) regarding banned veterinary substances.

- OIE assessment: Global action to alleviate the threat of antimicrobial resistance: progress and opportunities for future activities under the 'One Health' initiative.

Zoonotic diseases

Relevant documentation

- Animal Health Law No. 8 (2013) on the prevention and control of contagious animal diseases and epidemics (list of notifiable animal diseases) and By-Law 14 (2014) for its execution.

- Quarantine Law for Animal & Animal Products.

- National Animal Health Plan 2016–2025.

- National Plan for Control and Eradication of Brucellosis.

- Disease outbreaks investigation and control.

- National animal identification and registration system.

- National contingency plan for animal diseases.

- Specific national contingency plans (avian influenza, RVF, African horse sickness and other equine notifiable diseases).

- Animal Welfare Law.

- Local orders and codes of practice (local authorities).

Food safety

Relevant documentation

- Federal Law No. 10/2015 concerning food safety.

- Final Draft of Cabinet Resolution of 2016 on the Bylaw of Federal Law No. 10/ 2015.

- Local Order No. 11/2003 on Public Health and Community Safety in the Emirate of Dubai.

- Report on Food Safety in Dubai, 2009–2010.

- Food Safety Manual, 2009.

- National guideline on foodborne illness and outbreak investigation.

- Federal Law No. 35/1992 for criminal proceedings and its amendments.

- Federal Law No. 5/1979: Agricultural establishment and its amendments.

- Federal Law No. 24/1992: Environmental protection and its amendments.

- Federal Law No. 28/2001: ESMA.

- Federal Law No. 1/2003 on establishment of the Federal Customs Authority.

- Gulf Cooperation Council rapid alert system for food.

Biosafety and biosecurity

Relevant documentation

- Infectious diseases Law No. 14/2014 and Bylaw 33/2016.

- Law for control of infectious diseases in animals No. 8/2013.

- National legislation and laws that cover biosecurity in UAE (Cabinet Resolutions Nos. 148/377/538/136).

- National biosecurity committee with representation of different stakeholders (Cabinet Resolution No. 461/2014.

- Executive biosecurity committee (Cabinet Resolution No. 122/2016.

Immunization

Relevant documentation

- National vaccination plan and vaccination manual.

- Health education materials and videos.

- Auditing tool for vaccination services in health-care facilities.

- PowerPoint on the National Immunization Campaign against measles in the UAE; Analysis of age groups of measles cases in the measles outbreaks as reported in the national notification system.

- Coverage data (as reported in the joint reporting form).

- Statistics on reporting sites/intermediate level.

- Reporting and registration forms; adverse events reporting form.

- VAR documents and vaccine registration criteria.

- Statistics (monthly and annual) forms.

- Immunization cards

- Global Health Observatory visualizations. Immunization coverage: country punch cards (http://apps. who.int/gho/data/node.wrapper.immunization-cov).

National laboratory system

Relevant documentation

- Lists of licensed/accredited laboratories from HAAD, DHA and MHP.

- HAAD Clinical Laboratory Standards.

- HAAD Laboratory licensure checklist.

- MHP (www.moh.gov.ae/en/About/pages/OrganizationStructureDetails.aspx?employeeid=40.)

- List of available microbiology, virology and serology tests.

Real-time surveillance

Relevant documentation

- Communicable diseases Law 2014.
- Additional guidelines for the above Law 2016.
- Disease notification manuals.
- Annual health statistics and AFP reports and surveillance field guide.
- NTP and Measles Elimination Manual.
- National Polio Outbreak Preparedness and Response Plan.
- Case definition guides.

Reporting

Relevant documentation

- Ministerial Decree No. 326 (2015) regarding the establishment of the National Committee for Implementation of International Health Regulations and combatting health pandemics.
- Public Health Law, Article 27.
- Animal Health Law No. 8 (2013) concerning the Prevention and Control of Contagious Animal Diseases and Epidemics (list of notifiable animal diseases).
- Federal Law No. 10 (2015) regarding food safety.
- Federal Law No. 2 (2011) for the establishment of the National Emergency Crisis and Disaster Management Authority.
- Federal Law No. 14 (2014) and Cabinet Executive Decree No. 33 (2016) regarding control of communicable diseases.
- National Protocol of Communication Pathway for Reporting Acute Public Health Event(s) (2017).
- Quarantine Law for Animal and Animal Products.
- National Animal Health Plan 2016–2025.
- National Plan for Control and Eradication of Brucellosis.
- Disease outbreaks investigation and control.
- National animal identification and registration system.
- National contingency plans (avian influenza, African horse sickness and other equine notifiable diseases).
- Animal Welfare Law.
- Local orders and codes of practice (local authorities).
- Daily Events Report, Daily MERS CoV report.
- Monthly Zoonosis Report.
- Food safety alert system.
- MHP Circulars for MERS CoV, Ebola, Zika, yellow fever vaccination.

Workforce development

Relevant documentation

- HR Statistics (for Biostatisticians and Public Health specialties).

- Minutes of meeting between TDC and Public Health Department.

- Ministerial Decree: Higher Committee of Disaster and Crisis Management.

- Minutes of meeting of higher crises and disaster committee (http://www.cemc.ae/Portal/en/programme/2016-program.aspx).

- Related continuing professional development training programmes salary scale of technical professionals.

- Budget of MHP (Health Clinics and Centres Sector).

Preparedness

Relevant documentation

- Federal Law No, 2, 2011 (foundation of NCEMA).

- Cabinet Law for Medical Stockpiles No. 39, 2015.

- National Framework for Response, Issue 1, 2012.

- National Risk Registry Issue 1, 2012.

- National Risk Management plans for different emergencies, and supporting plans.

- Concept of national operations, national standards for operation centres.

Emergency response operations

Relevant documentation

- Federal Law No. 2, 2011 (foundation of NCEMA).

- Cabinet Law for Medical Stockpile No. 39, 2015.

- National Framework for Response, Issue 1, 2012.

- National Risk Registry Issue 1, 2012.

- National Risk Management plans for different emergencies, and supporting plans.

- Concept of national operations, national standards for operation centres.

Linking public health and security authorities

Relevant documentation

- Federal Law No. 2, 2011 (foundation of NCEMA).

- Cabinet Law for Medical Stockpile No. 39, 2015.

- National Framework for Response, Issue 1, 2012.

- National Risk Registry Issue 1, 2012.

- National Risk Management plans for different emergencies, and supporting plans.

- Concept of national operations, national standards for operation centres.

Medical countermeasures and personnel deployment

Relevant documentation

- Reference guide for medical strategic stockpile (December 2014).
- Cabinet Resolution No. 39 (2015) on the strategic medical stockpile project.
- Ministerial Decree No. 872 (2016) on matters relating to the strategic medical stockpile.
- Manual medicines management procedures for the strategic stockpile, serums, vaccines and medical supplies in the Gulf Cooperation Council 2016.
- Mechanism of exchange of medical supplies between the GCC and the settlement value 2016.
- Health Gulf Council tenders.

Risk communication

Relevant documentation

- Federal Decree Law No. 2 (2011) and its amendments regarding NCEMA establishment (Law of Emergency, Crisis, and Disaster Management).
- National Response Framework.
- Media and Public Communication Plan (Emergency Management Supporting Plan, NCEMA).
- National Media Council Law.

Points of entry

Relevant documentation

- GCC health contingency plan.
- UAE health contingency plan.
- UAE National emergency plan for infectious diseases in humans.
- General Civil Aviation Authority regulations.
- Health authorities local contingency plan.
- PoE Emergency plans.
- NCEMA emergency plan, risk register and response plan.
- Guidelines for biosafety at PoE.
- National protocol for public health emergency notification.
- Ports contingency plans.
- Communicable Diseases Law (2014).
- GCC guideline for the establishment of medical centres at PoE.
- GCC situational analysis of core capacities at the PoE.
- GCC unified public health guidelines for PoE in accordance to IHR 2005.
- National guideline for management of suspected or confirmed Ebola virus disease.

Chemical events

Relevant documentation

- Emergency response guidebook 2016.
- Emirates for fire protection and the protection of lives in 2012 and updates in 2016.
- Federal Law No. 24 of 1999 on Protection of the environment and development.
- Regulation on handling of hazardous materials, hazardous waste and medical waste.
- Regulation on pesticides, conditioners and fertilizers.
- HAAD Standard for Antidote Stock.
- UAE occupational health and safety management system national standard.

Radiation emergencies

Relevant documentation

- UAE Policy on the Evaluation and Potential Development of Peaceful Nuclear Energy.
- UAE Nuclear Law (English)-
- FANR-REG-12 Regulation for Emergency Preparedness for Nuclear Facilities.
- FANR-REG-13 Regulation for the Safe Transport of Radioactive Materials.
- FANR-REG-15 Requirements for Off-site Emergency Plans for Nuclear Facilities.
- FANR-REG-24 Basic Safety Standards for Facilities and Activities involving Ionizing Radiation other than in Nuclear Facilities.
- FANR-RG-006 Transportation Safety Guide.
- FANR-RG-019 Radiation Safety in Industrial Radiography.
- FANR Resolution No. 04 (2011) on Radiation Protection Committee.
- IAEA Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, INFCIRC-336.
- IAEA Convention on Early Notification of a Nuclear Accident, INFCIRC-335.
- IAEA Emergency Preparedness Review mission report, 2015.
- Barakah NPP on-site and off-site emergency response plans (confidential).
- Potassium iodide distribution and administration procedure in case of nuclear accident at the Baraka NPP.
- Media Response Plan for Barakah NPP (confidential).
- Hospital procedure for detection and decontamination of radiologically contaminated patients: this procedure applies to Madinat Zayed and Ruwais hospitals.
- General framework for radiological and nuclear emergencies (confidential).
- National Risk Register (confidential).
- Gulf Cooperation Council coordination plan for radiological and nuclear emergencies (confidential).

Appendix 2: Key host country participants and institutions

Team members

- Lead: Fatma Al Attar, Consultant and Director of IHR Office, Ministry of Health and Prevention
- Co-lead: Khalid Al Nuaimi, Head of Risk Evaluation Sector, National Crisis and Emergency Management Authority
- Co-lead: Mohamed Badi, Public health specialist, Ministry of Health and Prevention

Leads and co-leads by technical area

Legislation, policy and finance

- Lead: Lubna Al Shaali, Director of Public Health Policy, Ministry of Health and Prevention
- Co-lead: Rasha Salama, Expert Public Health, Ministry of Health and Prevention

Coordination, communication and advocacy

- Lead: Fatma Al Attar, Consultant and Director of IHR Office, Ministry of Health and Prevention
- Co-lead: Mohamed Badi, Public Health Specialist, Ministry of Health and Prevention

Antimicrobial resistance and infection control

- Lead: Najiba Abdulrazzaq, Head, Medical Department/ Head, Infection Control and Prevention Central Committee, Ministry of Health and Prevention
- Co-lead: Hashem Al Tarifi, Department Manager, Drug and Medical Products Division, Abu Dhabi Health Authority
- Jens Thomsen, Section Head, Environmental Health, Abu Dhabi Health Authority.
- Yousuf Naqvi, Regulation Officer, Drug and Medical Product Regulation, Abu Dhabi Health Authority.
- Ashraf El Houfi, Dubai Health Authority.
- Rayhan Hashemy, Deputy Chief Medical Officer, Tawaam Hospital, Abu Dhabi Health Services Company.
- Nawal Alkaabi, Deputy Chief Medical Officer, Sheikh Khalifa Medical City, Abu Dhabi helath Services Company
- Rania El lababidi, ID Clinical Pharmacist, Cleveland Clinic Abu Dhabi

Food safety

- Lead: Ola Mira, Head of Occupational Health and Safety Department, Ministry of Health and Prevention
- Co-lead: Bobby Krishna, Food Safety Section, Dubai Municipality
- Ahmad Rasheed Al Ani, Food Safety Section, Dubai Municipality
- Ayesha Mohammad Al Mukhayat, Food Safety Section, Dubai Municipality
- Khaled Abdulla Al-Marzouqi, Acting Policies and Risk Analysis Division Director, Abu Dhabi Food Safety Control

- Majidi Abdullah Ibrahim Abualush, In charge of Environmental Health, Ministry of Climate Change and the Environment

- Basem Theeb Hussein Jawahereh, Ministry of Climate Change and the Environment

- Farah Alhammadi, Ministry of Health and Prevention

Zoonosis

- Lead: Nabil Al Marhomy, Public Health Consultant, Ministry of Health and Prevention

- Co-lead: Fatima Al Otaibi, Dubai Municipality

- Meera Al Kalabani, Abu Dhabi Food Safety Control

- Momhamed Karim Bin Gabara, Specialist, Veterinary Laboratories, Ministry of Climate Change and the Environment

Immunization

- Lead: Laila Hussen Aljasmi, Head of Immunization Section, Ministry of Health and Prevention

- Co-lead: Fathiya Al Sarkal, Specialist Community, Dubai Health Authority

- Badrya Al Shahi, Physician, Abu Dhabi Health Authority

Biosafety and biosecurity

- Lead: Safiya Alshamsi, Director of Laboratories and Blood Banks, Ministry of Health and Prevention

- Co-lead: Fatima Rashid Alshehhi, Al Qasmi Hospital Laboratory

- Nermin Khalifa, Al Qasmi Hospital Laboratory, Ministry of Health and Prevention

National laboratory system

- Lead: Safiya Alshamsi, Director of Laboratories and Blood Banks, Ministry of Health and Prevention

- Co-lead: Mona Al Dareish, Bioprocess Engineer, Ministry of Climate Change and the Environment

- Fatima Alburaiki, Saqr Hospital Laboratory, Ministry of Health and Prevention

Surveillance

- Lead: Mohamed Badi, Public Health Specialist, Ministry of Health and Prevention

- Co-lead: Nahed Al Yousuf, Head of Preventive Services Centre, Dubai Health Authority

- Farida Al Hosani, Director of the Communicable Diseases Department, Abu Dhabi Health Authority

Reporting

- Lead: Fatma Al Attar, Consultant and Director of IHR Office, Ministry of Health and Prevention

- Farida Alhosani, Director of Communicable Diseases Department, Abu Dhabi Health Authority

- Co-lead: Mohamedd Badi, Public Health Specialist, Ministry of Health and Prevention

- Momhamed Karim Bin Gabara, Animal Health Expert, Ministry of Climate Change and the Environment

Workforce development

- Lead: Afaf Al Sharaf, Head of Postgraduate Training and Development, Ministry of Health and Prevention

- Co-lead: Mohamed Nasaif, Training and Development Expert, Ministry of Health and Prevention

Preparedness and medical countermeasures and personnel deployment
- Lead: Merfat BaniTamim, Head of Medical Countermeasures, Ministry of Health and Prevention
- Co-lead: Lubna AlShaali, Director of Public Health Policy, Ministry of Health and Prevention

Emergency response operations
- Lead: Abdulkarim Alzarouni, Director Emergency, Crisis and Disaster Operation Centre, Ministry of Health and Prevention
- Co-lead: Yaser Sharif, Ministry of Health and Prevention; National Crisis and Emergency Management Authority
- Najlaa Ibrahim, Abu Dhabi Health Authority

Linking public health and security
- Lead: Abdulkarim Alzarouni, Director Emergency, Crisis and Disaster Operation Centre, Ministry of Health and Prevention
- Co-lead: Najlaa Ibrahim, Emergency, Crisis and Disaster Operation Centre; Head of Risk Evaluation Sector, Ministry of Health and Prevention; National Crisis and Emergency Management Authority

Risk communications
- Lead: Ahmed Saeed Ahmed Sulaiman, Emergency, Crisis and Disaster Operation Centre, Ministry of Health and Prevention
- Co-lead: AbdulKarim Abdulla Al Senani, National Media Council
- Co-lead: Jumana Mohammed Ghanem, Senior Media Planning Officer and National Crisis and Emergency Management Authority
- Wedad Ahmed Bin Humaid, Director of Government Communication Department, Ministry of Health and Prevention
- Adeeb Salem Al Zaabi, Abu Dhabi Health Authority
- Rami Adwan, Abu Dhabi Health Authority.
- Kawthar Ahmed Al Jaberi, Government Communication Department, Ministry of Health and Prevention
- Kefah Saleh, Central Preventive Medicine Department, Ministry of Health and Prevention
- Fatima Asfandyar Al Zarooni, Health Education and Promotion Department, Ministry of Health and Prevention
- Zeyad Faoor Al Rais, Central Emergency and Disaster Committee, and Dubai Health Authority
- Eman Banat, Central Emergency and Disaster Committee, and Dubai Health Authority

Points of entry
- Lead: Aws AlKhanjari, General Manager, Emergency Services and Compliance, Abu Dhabi Airport
- Co-lead: Fatma Alattar, Consultant and Director of IHR Office, Ministry of Health and Prevention
- Farida Alhosani, Director of Communicable Diseases Department, Abu Dhabi Health Authority
- Sultan Al Amiri, General Authority for Security of Ports, Borders and Free Zones; and National Crisis and Emergency Management Authority
- Abdulrzak Jumale, Dubai Airport Medical Centre, Dubai Health Authority

- Riaz Ahmed Khan, Specialist Registrar, Preventive Services Centre, Dubai Ports

- Sawsan Nahas, Specialist, Preventive Services Centre, Dubai Health Authority

- Nahed Alyousuf, Head of Preventive Services Centre, Dubai Health Authority

- Kaltham Ali, Veterinarian, Ministry of Climate Change and the Environment

- Mervat Al Nuaimat, Head of HSE, Ministry of Climate Change and the Environment

- Thaer Khalil, Senior Ports Specialist, Abu Dhabi Ports

- Mustafa El Wazani, Director of Dubai Airport Medical Centre, Dubai Health Authority

- Hamad Alattar, Dubai Health Authority

Chemical events

- Lead: Ola Mira, Head of Occupational Health and Safety Department, Ministry of Health and Prevention; and National Crisis and Emergency Management Authority

- Ahmed Bin Kashah Al Shemeili, Head of Chemical, Biological, Radiological and Nuclear Unit, National Crisis and Emergency Management Authority

- Co-lead: Khaled Hashel Alnuaimi, National Crisis and Emergency Management Authority

- Ali Mohamed Al Kaabi Yousef Al Kaabi, National Crisis and Emergency Management Authority

- Saad Al Suwaidi, Abu Dhabi Police Headquarters.

- Jassim AlShehi, Abu Dhabi Civil Defence.

- Yasser Al Sherif, Environment Agency, Abu Dhabi.

- Omar Alshemiri, Abu Dhabi Food Control Authority.

- Saad Alhashimi, Ministry of Health and Prevention.

- Farah AlHammadi, In charge of Environmental Health, Transport, Abu Dhabi

Radiation emergencies

- Lead: Ola Mira, Head of Occupational Health and Safety, Ministry of Health and Prevention; Safety Department, Federal Authority for Nuclear Regulation

- Fahad Mohamed Al Bloos, Manager, Emergency Preparedness and Response

- Co-lead: Yasser Issam Sharif, Consultant, Radiation in Medicine Developments, Federal Authority for Nuclear Radiation

- Jamila Salem Alsuwaidi, Consultant Medical Physicist, National Crisis and Emergency Management Authority

- Fatma Al Kaabi Hessa Al Marzouqi, Medical Physics, Chair, Radiation Protection Committee, Dubai Health Authority

- Abdulla Al Yammahi, HAAD, Ministry of Health and Prevention