JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of the

HASHEMITE KINGDOM OF JORDAN

Mission report:
28 August – 1 September 2016

World Health Organization

JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of the

HASHEMITE KINGDOM OF JORDAN

Mission report:
28 August – 1 September 2016

World Health Organization

ACKNOWLEDGEMENTS

Contents

Abbreviations

AMR	antimicrobial resistance
BCG	Bacillus Calmette–Guérin
BRM	biorisk management
BSL	biosafety level
CBRN	chemical, biological, radiological and nuclear (incidents)
CDC	US Centers for Disease Control and Prevention
CMU	Crisis Management Unit
CPHL	Central Public Health Laboratory
DPT	diphtheria, pertussis and tetanus
EET	external evaluation team
EMPHNET	Eastern Mediterranean Public Health Network
EOC	Emergency Operations Centre
EPI	Expanded Programme for Immunization
EQAS	external quality assurance scheme
FE(L)TP	(Applied) Field Epidemiology Training Programme
FAO	Food and Agriculture Organization of the United Nations
GDP	gross domestic product
HCAI	health care-associated infections
HCCD	Higher Council of Civil Defence
IHR	International Health Regulations (2005)
INFOSAN	International Food Safety Authorities Network
ISO	International Organization for Standardization
JEE	Joint External Evaluation of the IHR
JFDA	Jordan Food and Drug Administration
JUST	Jordan University of Science and Technology
MERS-CoV	Middle East respiratory syndrome coronavirus
MoH	Ministry of Health
NFP	National Focal Point
NCD	National Civil Defence
NCSCM	National Centre for Security and Crises Management
OIE	World Organisation for Animal Health
OPV	oral poliovirus vaccine
PHEIC	public event emergency of international concern
PoE	point(s) of entry
RMS	Royal Medical Services
SOP	standard operating procedures
TB	tuberculosis
UNICEF	United Nations Children's Fund
VPD	vaccine-preventable disease
WHO	World Health Organization

Executive summary

Jordan has established capacity in most of the 19 technical areas relevant for the International Health Regulations (IHR 2005), and has many excellent practices in place. Especially impressive is the level of capability maintained despite the recent influx of migrants from neighbouring countries. However, in parallel to its strengths and good practices in public health, the World Health Organization (WHO) Joint External Evaluation (JEE) process identified gaps and processes to address for full compliance with the IHR. The main findings are summarized as follows.

While the Public Health Law is well known, including among powers able to implement the IHR, and the country has assessed how the Law can fulfil IHR requirements, it has not yet resulted in changes to allow the health laws to operate alongside other emergency laws to meet IHR capabilities. Current legislation on IHR implementation needs to be complemented by a formal assessment of legislation in sectors other than human health.

Jordan has formally established a national focal point for IHR, for the World Organisation for Animal Health, International Food Safety Authorities Network, and for the International Atomic Energy Agency. While there is willingness and ad hoc cooperation across the technical areas, most processes are ad hoc and triggered by individual judgements. Formal processes such as standard operating procedures are needed for coordinated cooperation and structured information exchange between the human health, food safety, veterinary health and civil defence authorities. Such a formalized system would allow an easier transfer of knowledge.

The Government of Jordan has recognized antimicrobial resistance as a major threat to health and efforts are under way to establish a national AMR surveillance system capable of generating quality data for informed national policies, strategies and plans, along with standardized laboratory methods and interpretation metrics for antimicrobial resistance testing.

The agricultural and livestock sector in Jordan is economically important and crucial for consistent food security. Increasing density of the human population facilitates human–livestock–wildlife interaction enhances the risk of infection with zoonoses, and Jordan has prioritized a number of zoonotic diseases. Formal documented links are being established across the human and animal health sectors in case of foodborne outbreaks and zoonotic disease with clear triggers and protocols for coordinated activity. Furthermore, food safety inspection and control functions, including trace-back and recall capabilities will be strengthened.

Good laboratory practices are in place for clinical diagnosis of priority infectious diseases, and a national licensing system exists for private laboratories. Systematic accreditation of services is not in place, but could be achieved with modest investment. Application of systematic quality management/analysis systems should be considered as a licensing requirement for all laboratories, and for accreditation of key analytical services. Cooperation and systematic information exchange between clinical microbiology, food safety and veterinary laboratories dealing with zoonotic diseases should be established.

Immunization, and vaccination cards for school entry, are mandatory in Jordan. These are provided free of charge to all target populations living in the country regardless of their nationality, including refugees. The programme is highly successful and, despite outbreaks of polio and other infectious diseases in neighbouring countries, has been successful in maintaining high vaccination coverage and protection of its population. It is crucial from a health security and public health perspective to maintain and support the immunization programme at the current level in the foreseeable future.

The country has attained reasonable capacities to detect events of significance for both human and animal health, as well as for other health security threats of concern, by establishing and enhancing indicator-based surveillance with an automated electronic notification surveillance system that enhances real-time surveillance and analysis.

However, intersectoral routine information and data exchange on zoonotic events only takes place during zoonotic outbreaks. To improve "one health" surveillance capabilities, Jordan should consolidate data into a "one platform" notification system to ensure efficiency gains, to rapidly detect any public health event, and to ensure event-based surveillance. While Jordan has achieved 1/200 000 in its field epidemiologist training programme, personnel turnover and "brain drain" is high in relation to countries of the region.

The country has a multisectoral coordination mechanism that includes health emergencies. This mechanism, led by the Higher Council of Civil Defence, has authority to ask for support from any sector. Its strategic plan outlines detailed roles and responsibilities in responding to emergencies, including public health events. The National Centre for Security and Crises Management (NCSCM) has recently been established to support the response to emergencies including public health concern. The division of work between these two entities remained unclear to the External Evaluation Team.

The health system established the Crisis Management Unit in 2008 which reports to the Minister of Health. An Emergency Operations Centre (EOC) has been shaped under this unit to include representatives from different units of the Ministry of Health (MoH), but is not yet functional or integrated into the top level crisis management structures of the NCSCM. The country should review and update its multi-hazard national health emergency preparedness and response plan, and develop contingency plans accordingly.

Jordan's Royal Medical Services is the main organization providing regional/international medical humanitarian assistance. It has demonstrated good practices and capability for public health emergencies and disasters. Nevertheless, the national plan for medical countermeasures and personnel deployment in public health emergencies should be reviewed and updated, and the MoH should maintain a revolving stockpile of emergency drugs and medical supplies through a formal agreement with local manufacturers and suppliers.

Jordan is able to conduct multi-channel, multi-target audience public communication on health issues, coordinate communication with key stakeholders and manage local level engagement. While some information is gathered on audience reactions and concerns on an ad hoc basis, Jordan's risk communication capacity would benefit from more systematic and routine feedback, and from more staff receiving specialist training in emergency risk communication.

The country has three IHR designated points of entry (PoE): Queen Alya international airport, Aqaba port and Al Omary ground crossing. The public health and medical services are provided mainly by the MoH and the airport, ground crossing and port operators. The Ministry of Agriculture controls the import of animals and agricultural products at all PoE. Mechanisms are available to share information on public health events/measures. However, there is a need to improve animal quarantine services and enhance coordination between the MoH and the different stakeholders at PoEs; and to use the IHR recommended model of ship sanitation certificates at Aqaba port. Public health contingency plans for all hazards are available at the Queen Alya airport; these should be urgently developed for the other PoEs.

The growing chemical industry is an important element in Jordan's economy. Several laws cover the safe use of chemicals in manufacturing, transport, sale and waste treatment, and public health. Jordan has ratified international chemical conventions with the national focal points within the Ministry of Environment and MoH. Laws on the safe use and storage of hazardous chemicals have also been updated. The WHO-recognized Poisons Centre at Jordan University Hospital needs strengthening and its national mandate clarified. The country should develop a national strategic plan for chemical safety that prioritizes actions between chemical stakeholders. This should be complemented by updating the national intersectoral plan

for chemical emergencies, which describes the roles and responsibilities of different stakeholders and takes into account IHR requirements.

The National Committee for Radiological Emergencies drafted a national radiological emergency plan detailing the roles and responsibilities in responding to radiation emergencies, which should be integrated into the NCSCM arrangements and strategy. The Government also established a National Nuclear Security Committee by order of the Cabinet and has a published policy on nuclear safety and a national register of radiation sources. The Energy and Minerals Regulatory Commission as the competent regulatory authority has a range of legislation, policies and procedures on the safe use and control of radiation across all relevant sectors. However, communication and information sharing with other relevant sectors, including with the IHR NFP, is lacking.

In summary, the Hashemite Kingdom of Jordan is close to achieving compliance with the IHR. The major gap identified is the unstructured and informally based (and thus vulnerable) cross-sector coordination and the unclear and relatively weak role of the national IHR focal point. During broad discussions with all relevant sectors, high willingness and commitment to increase cooperation was evident. The next steps will largely be to formalize and operationalize protocols and standard operation procedures, particularly for scenarios that do not occur very often.

The country is in a good position to fill many of the gaps with modest investment. This report may be used as leverage to engage partners in a dialogue to develop a plan to achieve health security and IHR implementation. This responsibility lies not only with the Government of Jordan but equally with its international partners.

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 of independence and transparency. The strong support of the WHO Representative to Jordan and her office is highly appreciated.

Introduction

The joint assessment of International Health Regulations (IHR 2005) core capacities in the Hashemite Kingdom of Jordan was carried out from 28 August to 1 September 2016 using the World Health Organization (WHO) IHR Joint External Evaluation (JEE) tool. A multisector External Evaluation Team (EET) consisting of individuals selected for their technical expertise from a number of countries and advisors from international organizations conducted the assessment. The mission comprised site visits and discussions between the EET experts and their Jordanian peers representing all sectors relevant to the 19 technical areas of the IHR. This report presents jointly developed recommendations and priority actions that resulted from these discussions.

Jordan is to be commended for its strong commitment to meet the core capacities required by the IHR. Prior to the arrival of the EET, the Government of Jordan had 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 EET at the start of external assessment. The EET and host country experts then participated in a series of facilitated discussions to jointly assess Jordan'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 EET.

The technical area scores are summarized below, followed by the discussion, indicators, strengths, challenges, scores, priorities, and key information documents within each of the 19 technical area sections.

Jordan is a constitutional monarchy. It is divided into 12 governorates that are informally grouped into three major regions: northern, central and southern. According to the November 2015 census, the population of Jordan is 9.5 million, with a per capita yearly income of US$ 12 162 based on purchasing power parity [International Monetary Fund data, 2016]. The budgetary allocation for health is 7.5% of gross domestic product (GDP), with 5% of which is spent on public health and 2.5% on private sector health care.

In general, the country has coped exceptionally well with the pressure on its health system as a consequence of a population increase of up to 1.5 million.

Jordan scores

Capacities	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	2
	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)	2
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	2
Antimicrobial resistance	P.3.1 Antimicrobial resistance (AMR) detection	2
	P.3.2 Surveillance of infections caused by AMR pathogens	2
	P.3.3 Health-care associated infection prevention and control programmes	3
	P.3.4 Antimicrobial stewardship activities	1
Zoonotic diseases	P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens	3
	P.4.2 Veterinary or animal health workforce	3
	P.4.3 Mechanisms for responding to zoonoses and potential zoonoses are established and functional	2
Food safety	P.5.1 Mechanisms are established and functioning for detecting and responding to foodborne disease and food contamination	3
Biosafety and biosecurity	P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal, and agriculture facilities	2
	P.6.2 Biosafety and biosecurity training and practices	3
Immunization	P.7.1 Vaccine coverage (measles) as part of national programme	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	4
	D.1.3 Effective modern point-of-care and laboratory based diagnostics	3
	D.1.4 Laboratory quality system	2
Real-time surveillance	D.2.1 Indicator- and event-based surveillance systems	3
	D.2.2 Interoperable, interconnected, electronic real-time reporting system	3
	D.2.3 Analysis of surveillance data	3
	D.2.4 Syndromic surveillance systems	4
Reporting	D.3.1 System for efficient reporting to WHO, FAO and OIE	3
	D.3.2 Reporting network and protocols in country	2
Workforce development	D.4.1 Human resources are available to implement IHR core capacity requirements	3
	D.4.2 Field Epidemiology Training Programme or other applied epidemiology training programme in place	4
	D.4.3 Workforce strategy	3

Preparedness	R.1.1 Multi-hazard National Public Health Emergency Preparedness and Response Plan is developed and implemented	**2**
	R.1.2 Priority public health risks and resources are mapped and utilized	**1**
Emergency response operations	R.2.1 Capacity to activate emergency operations	**2**
	R.2.2 Emergency operations centre operating procedures and plans	**1**
	R.2.3 Emergency operations programme	**3**
	R.2.4 Case management procedures are 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	**4**
Medical countermeasures and personnel deployment	R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency	**5**
	R.4.2 System is 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.)	**2**
	R.5.2 Internal and partner communication and coordination	**3**
	R.5.3 Public communication	**3**
	R.5.4 Communication engagement with affected communities	**2**
	R.5.5 Dynamic listening and rumour management	**2**
Points of entry (PoE)	PoE.1 Routine capacities are established at PoE	**3**
	PoE.2 Effective public health response at PoE	**1**
Chemical events	CE.1 Mechanisms are established and functioning for detecting and responding to chemical events or emergencies	**2**
	CE.2 Enabling environment is in place for management of chemical events	**2**
Radiation emergencies	RE.1 Mechanisms are established and functioning for detecting and responding to radiological and nuclear emergencies	**3**
	RE.2 Enabling environment is in place for management of radiation emergencies	**3**

Score 1: no capacity; **score 2**: limited capacity; **score 3**: developed capacity; **score 4**: demonstrated capacity; **score 5**: sustainable capacity.

Note on scoring the technical areas of the JEE tool

The entire JEE process is a peer to peer review, i.e. a collaborative effort between host country experts and External Evaluation Team members, to seek agreement on all elements of the evaluation. In completing the self-evaluation, the first step in the process, host countries are asked to focus on providing information on their capabilities based on the indicators and technical questions included in the JEE Tool. The host country may score their self-evaluation or propose a score during the on-site consultation with the external team. Should there be significant or irreconcilable disagreement between or among the external team members and/or the host country experts, the EET Lead will decide on the final score and this will be noted in the final report, along with the justification for each party's position.

PREVENT

National legislation, policy and financing

Introduction

The IHR provide obligations and rights for States Parties. In some States Parties, implementation of the IHR may require new or modified legislation. 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 their implementation.[1] In addition, policies that identify national structures and responsibilities as well as the allocation of adequate financial resources through the national budget or other mechanism are important.

> ***Target***
>
> *States Parties should have an adequate legal framework to support and enable the implementation of all of their obligations and rights to comply with and implement the IHR (2005). In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even where new or revised legislation may not be specifically required under the State Party's legal system, States may still choose to revise some legislation, regulations or other instruments in order to facilitate their implementation and maintenance in a more efficient, effective or beneficial manner.*

Jordan level of capabilities

Jordan is well served by its Public Health Law No. 47 of 2008. Presenters in the evaluation are fully aware of the Law, including some of the relevant articles and many of the available powers to implement parts of the IHR, e.g.

- The mandate of the Ministry of Health (MoH) covers all health affairs in the Kingdom;
- Strong powers exist on management of communicable disease outbreaks;
- Article 23 appears to target support for compliance with IHR, epidemic surveillance measures, taking laboratory samples and quarantine;
- The Minister has powers to authorize other ministries or institutions to undertake some MoH responsibilities; and
- Broad regulation-making powers are covered.

Gaps in the Law include:

- Lack of a planning function;
- Lack of a comprehensive list of notifiable diseases, particularly some foodborne diseases;
- Potential weakness in the power to respond to communicable diseases, which are only triggered by a national event, and some relevant events may not be national;
- English translation of the Law appears to forbid use or import of generic drugs, which has some relevance to capability to respond to a public health emergency of international concern (PHEIC);

---

[1]   Detailed guidance on IHR implementation in national legislation is available on the WHO website at www.who.int/ihr/legal_issues/legislation/en/index.html.

- No evidence that Article 23 on IHR powers has been used for ministerial instructions on matters relevant to IHR implementation;

- No information was available on how various laws governing a national response to health events and emergencies might align with the powers under the Public Health Law, particularly those related to the Higher Council for Civil Defence (HCCD) and the National Centre for Security and Crises Management (NCSCM); and

- While the IHR requires compliance with human rights principles, the Public Health Law is not compliant with the Siracusa Principles which stipulate that state power should be the least restrictive and intrusive means available, and not arbitrary, unreasonable or discriminatory.

Recommendations for priority actions

- Review complementarity of Public Health Law No. 47 with laws establishing the HCCD and the NCSCM; in particular, adopt amendments to ensure that roles are aligned and triggers are clear for powers of the MoH, the Minister, the Higher Council and the National Centre.

- Share the laws needed to implement IHR with all relevant ministries and authorities so that a joint review of these may lead to the development of a multisectoral IHR implementation plan.

- Review the regulation-making powers in Public Health Law No. 47 to fulfil specific IHR-related needs, e.g.

  ○ an endorsed national health disaster plan;

  ○ intersectoral coordination protocols;

  ○ important guides such as that for biosafety and biosecurity; and

  ○ protocols for roles of various emergency operating centres across governorates and ministries and how these fit with the roles and functions of the Higher Council and National Centre.

Indicators and scores

P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR

Score 2: Limited capacity.

Strengths/best practices

- Very good opportunities exist within Public Health Law No. 47 to implement the IHR, including the MoH health system mandate and powers to manage outbreaks of communicable diseases, enact regulations, work with other authorities and issue instructions (Article 23 references international conventions).

- There is a high level of awareness of this Law and many of the powers it provides.

- Laws establishing the Higher Council for Civil Defence and National Centre for Security and Crises Management may provide strong powers for a coordinated national response.

Areas that need strengthening/challenges

- There is no evidence as to how Public Health Law No. 47 law is used to implement the IHR.

- While Article 23 of the Law may allow the Minister to issue instructions related to implementation of the IHR, this needs to be put in practice.

- The review to align relevant laws across sectors and ministries needs to be completed. The available powers in these laws must be fine-tuned into a coherent and well understood matrix of responsibilities for a coordinated, multisectoral response to public health events as they escalate.

- Awareness of available laws across relevant ministries and agencies and how they are aligned is lacking.

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 2: Limited capacity.

Strengths/best practices

- The MoH has reviewed its laws and has a strong domestic health sector law providing good legislative support for implementation of the IHR.

Areas that need strengthening/challenges

- All domestic legislation and policies across relevant sectors should be adjusted to ensure implementation of the IHR.

- There is a need to consolidate knowledge of the available multisectoral legal powers and responsibilities to make it easier to coordinated their use. A manual recording all relevant laws, regulations, governmental instructions and orders related to the IHR may assist in achieving this target.

Relevant documentation

An English translation of Public Health Law No. 47 was provided. Other laws were described and it is believed that the following laws exist, although they were not seen or analysed.

- Constitution of Jordan (The Basic Law). Official Gazette No. 1093 of 8/1/1952, last amendment in Official Gazette No. 5117 of 1/10/2011.

- Civil Law No. 43, 1976.

- Sanction Law No. 16, 1960 and amendments.

- Family Protection Law No. 6, 2008.

- Food and Drug Administration Law No. 31, 2003.

- Labour Law No. 8, 1996 and amendments.

- Social Security Law No. 19, 2001 and amendments.

- Environment Protection Law No. 52, 2006.

- Residence and Foreigners' Affairs Law No. 24, 1973.

- Traffic Law No. 49, 2008.

- High Health Council Law No. 9, 1999.

- Food Control Law No. 79, 2001.

- The Right of Persons with Disabilities No. 31.

- Medicines and Pharmacy Law No. 80, 2001.

- Clinical Studies Law No. 97, 2001.

- Food and Drug Administration Law No. 31, 2003.

- Law of Water Authority No. 18, 1988.

- Import and Export Law No. 21, 2001.

- Standards and Metrology Law No. 22, 2000.

- Industry and Trade Law No. 18, 1998.
- Professional Licences Law No. 28, 1999.
- Custom Law No. 20, 1998.
- Narcotics and Psychotropic Substances Law.
- Social Security Act.
- Nuclear Energy Act.
- Transportation Law.
- Civil Aviation Law.
- Public Transport Act, 2006.
- Income and Sales Tax Law.

IHR coordination, communication and advocacy

Introduction

The effective implementation of the IHR requires multisectoral/multidisciplinary approaches through national partnerships for effective alert and response systems. Coordination of nationwide resources, including the designation of an IHR National Focal Point (NFP) as a national centre for IHR communications is a key requisite for IHR implementation.

Target
The NFP should be accessible at all times to communicate with the WHO IHR Regional Contact Points and with all relevant sectors and other stakeholders in the country. States Parties should provide WHO with contact details of NFPs, continuously update and annually confirm them.

Jordan level of capabilities

Jordan declared its readiness to meet the obligations to IHR by 2014. Multisectoral IHR coordination committees exist since 2008. An assessment was carried out, and an action plan for IHR implementation is addressed within the binary Joint Program Review Mission (JPRM). Different committees have been established related to health events e.g. epidemics, Middle East respiratory syndrome coronavirus (MERS-CoV), Ebola. Meetings and decisions of the IHR coordination committees are documented and circulated to all stakeholders. Multisector involvement in infectious disease outbreak detection and response is documented by the Directorate of Communicable Diseases and directly shared with concerned sectors (Ministries of Agriculture, Environment, Health, and Interior, Jordan Food and Drug Administration (JFDA), etc.) through focal point emails.

Jordan complies with IHR notification to WHO and shares information on PHEIC in a timely manner.

The Directorate of Communicable Diseases in collaboration with WHO conducts training and advocacy programmes periodically, e.g. on chemical hazards in 2014 and for PoE in 2012, to strengthen capacities for IHR implementation.

Recommendations for priority actions

- Develop standard operating procedures (SOPs) and terms of reference for IHR NFP and coordinating stakeholders.

- Identify the roles and responsibilities of each stakeholder and sensitize incumbents on their roles for implementation of the IHR core capacities.

- Share the action plan for implementing the IHR core capacities.

- Ensure sustainable reporting and exchange of information through regular meetings, training and planning methods for IHR implementation programmes.

- Conduct regular exercises to test the effectiveness of the multisectoral coordination mechanism and the IHR NFP functions through real events or simulations.

Indicators and scores

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

Score 2: Limited capacity. A coordination mechanism between relevant ministries is in place, and national SOPs or equivalent exist for the coordination between IHR NFP and relevant sectors.

Strengths/best practices

- A multisectoral committee ensures IHR implementation.

- Efficient reporting is carried out of PHEIC to WHO, the Food and Agriculture Organization (FAO) and the World Organisation for Animal Health (OIE).

- During a public health event there is generally good coordination among all the relevant sectors.

Areas that need strengthening/challenges

- Terms of reference, composition, and job description of the IHR NFP should be developed and the roles of all nominated focal points in the different sectors identified.

- Procedures and SOPs for IHR communication with WHO and stakeholders should be developed with clearly defined communication mechanisms and protocols.

- Advocacy and better planning between sectors are needed to recognize IHR as a national responsibility.

- Coordination between relevant ministries on PHEIC should be strengthened.

- Functional mechanisms for intersectoral collaboration between animal and human health surveillance units need to be reviewed and strengthened.

Relevant documentation

- Circulars for pandemics.

- Zika, MERS-CoV, H1N1.

- Minutes of meetings.

- Circulars that established the IHR multisectoral committee, the zoonotic and the epidemic committees.

PREVENT

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, antimicrobial resistance (AMR) is growing at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infection in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security, and national security.

Target

Support work being coordinated by WHO, FAO, and OIE to develop an integrated and global package of activities to combat antimicrobial resistance, spanning human, animal, agricultural, food and environmental aspects (i.e. a One Health approach), including: a) Each country has its own national comprehensive plan to combat antimicrobial resistance; b) Strengthen surveillance and laboratory capacity at the national and international level following agreed international standards developed in the framework of the Global Action Plan, considering existing standards and; c) 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.

Jordan level of capabilities

The Government has recognized AMR as a major threat to the people's health and development. Despite the fact that many of the components needed for AMR surveillance exist, additional work is required to develop a national AMR detection and surveillance system capable of generating quality data for evidence-informed national policies, strategies and plans. There is willingness at the national and provincial levels to establish such a system. Hospital laboratories are capable of performing AMR testing for important pathogens, for which there is an urgent need to standardize laboratory methods and interpretations metrics.

- Programmes for antimicrobial stewardship, surveillance, prevention and control of health care-associated infections (HCAI) are limited to certain tertiary care and universities hospitals. A multidisciplinary national AMR steering committee led by the MoH secretary is expected to have wide regulatory and technical authority. There is a nationwide shortage of qualified infection control, infectious diseases specialists and medical microbiologists.

Recommendations for priority actions

- Activate and empower the national AMR steering committee to develop a national action plan to address detection and surveillance in line with WHO Global Action Plan for influenza vaccines.
- Implement a national programme to oversee infection prevention and control activities in public and private health-care facilities.
- Develop a national antimicrobial stewardship programme that involves the human and animal sectors.
- Strengthen infrastructure of diagnostic labs in public and animal health sectors and standardize antibiotic sensitivity testing and interpretation.

Indicators and scores

P.3.1 Antimicrobial resistance detection

Score 2: Limited capacity. A National plan for detection and reporting of priority AMR pathogens has been approved.

Strengths/best practices

- Several public, private and university hospital laboratories are able to conduct manual and automated AMR testing. Data are mainly used to guide clinical decisions.

- Recently, a ministerial decree was issued to form a multidisciplinary multisector committee to address AMR, although its terms of reference and membership are yet to be approved.

- The Central Public Health Laboratory (CPHL) receives presumptive multidrug bacterial isolates from public and private institutions and conducts phenotypic confirmatory testing when needed.

- The mycobacteria lab at the National Tuberculosis Programme performs molecular antimicrobial sensitivity tests on clinical isolates referred form all over the country.

Areas that need strengthening/challenges

- AMR testing and interpretation methods are not standardized.

- Biosafety in some hospital microbiology labs is not adequately addressed, e.g. manipulation of Brucella culture in less than biosafety level (BSL)-2 biological safety cabinets.

- No systematic AMR testing is performed on animal samples.

P.3.2 Surveillance of infections caused by AMR pathogens

Score 2: Limited capacity. A National plan for surveillance of infections caused by priority AMR pathogens has been approved.

Strengths/best practices

- Some hospitals collect and monitor data on the resistance patterns of important pathogenic bacteria. Antibiograms are generated and shared on occasion.

- In collaboration with the Naval Medical Research Unit, the country conducted a three-year survey (2012–2015) of selected pathogens from eight intensive care units, the results of which are being analysed.

- Drug-resistant tuberculosis (TB) is monitored by the national TB programme.

Areas that need strengthening/challenges

- Capacity to report and share AMR testing is not widely available.

- Securing adequate human capacity and laboratory supplies are challenges for both the public and private sectors.

- There is a lack of standardized AMR testing and interpretation methods.

P.3.3 Health care-associated infection prevention and control programmes

Score 3: Developed capacity. Designated facilities are conducting some HCAI programmes.

Strengths/best practices

- Public and private hospitals visited had a functional infection prevention and control programme.

- Total and device-related HCAIs are monitored in some hospitals.

- Hand hygiene compliance is monitored in some hospitals, especially in high risk areas. Feedback on performance is shared with relevant departments and individuals.

- Infection prevention bundles for selected HCAIs are implemented in some hospitals.

- Medical waste, environmental hygiene and sterilization of surgical equipment are supervised by infection prevention and control programmes in some hospitals.

Areas that need strengthening/challenges

- The ratio of infection control professionals to patients is suboptimal. There is no clear career pathway for infection control professionals, and structured training opportunities are scarce.

- Hospital directors do not chair the infection control committee. Administrative support to infection control activities needs to be enhanced.

- Financial constraints and inadequate human resource capacity prevent the full adoption of HCAI prevention bundles.

- Definitions of HCAIs and their reporting mechanisms are not standardized at the national level.

P.3.4 Antimicrobial stewardship activities

Score 1: Limited capacity. There is no national plan for antimicrobial stewardship activities.

Strengths/best practices

- Some hospitals, especially in the private sector and in universities, practice antimicrobial stewardship activities.

- Antimicrobial stewardship is expected be an integral part of the planned national AMR steering committee terms of reference.

Areas that need strengthening/challenges

- Awareness of antimicrobial stewardship is generally low even among health-care providers. Advocacy and knowledge dissemination is needed.

- AMR in the animal sector is not systematically detected or monitored.

- Regulations to monitor and control the use of antibiotics in the human and animal sectors are not adequately enforced.

Zoonotic diseases

Introduction

Zoonotic diseases are communicable diseases and microbes spreading between animals and humans. These diseases are caused by bacteria, viruses, parasites, and fungi that are carried by animals; insect or inanimate vectors may be needed to transfer the microbe. Approximately 75% of recently emerging infectious diseases affecting humans are of animal origin; 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.

Jordan level of capabilities

Concern over zoonoses is high in Jordan as the increasing density of human populations resulting from the ongoing regional crisis may lead to hotspot areas and increased interaction with ecosystems that are untouched in the country. The current conflict facilitates human–livestock–wildlife interaction, putting humans and animals at risk of infection with zoonoses. Transmission is heightened by a lack of knowledge on zoonoses and consumption of unpasteurised animal products.

Jordan has identified many zoonotic diseases of importance, which need to be prioritized. Those of greatest public health concern based on ministerial and donor interest include brucellosis, MERS-CoV, cutaneous leishmaniasis, rabies, anthrax and avian influenza. According to local sources, cutaneous leishmaniasis has increased following the regional refugee crisis. Given the increasing number of outbreaks of avian influenza in the western part of Asia, there is a potential risk of its introduction into Jordan, especially through smuggled birds.

The public health system reports zoonotic diseases through the Integrated Disease Surveillance System that has an immediate and a weekly reporting schedule. The animal health sector reports zoonotic diseases on an immediate, weekly and monthly basis. Both systems have elements of event-based reporting, although they are not well established. Routine reporting of zoonotic diseases from both sectors also requires improvement.

Zoonoses of greatest national public health concern are included in the national surveillance system, which covers all health districts with daily and weekly reports. In the animal health sector, however, active surveillance exists only for brucellosis and MERS-COV and passive surveillance for brucellosis, avian influenza, anthrax, and rabies. Capacity gaps in the animal health sector affect zoonoses detection, real-time surveillance (epidemiology and lab capacities) as well as workforce and resources.

Information sharing among animal and public health sectors in the event of zoonotic outbreaks is on a case-by-case basis without an organized coordination mechanism. The One Health approach does not exist and the notification system is not coordinated, a major limiting factor for detecting and preventing the emergence of a PHEIC through real-time surveillance. In view of the above, WHO has recently led many stakeholders to start sharing information and participate in joint events to facilitate the integration of sectors around animal–human–wildlife–ecosystems health.

Jordan has a good national Disaster Risk Reduction Centre. The National Committee chaired by the Prime Minister meets on an ad hoc basis in case of disasters, including public health emergencies if they are declared of national concern.

Recommendations for priority actions

- Strengthen workforce and capacity of animal health sector through continuing education, training and recruitment of more veterinary officers

- Establish a robust surveillance and reporting system (from paper-based reporting to digital platforms) for major zoonotic diseases

- Develop national preparedness and response plan (expedite One Health approach through setting up Steering Committee and Technical Working groups, joint investigations, etc.)

- Ensure multisectoral coordination and SOPs for response (establish formal mechanism for information sharing between animal and human health sectors and linkages between laboratories to leverage on available expertise and diagnostic capacities).

Indicators and scores

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

Score 3: Developed capacity.

Strengths/best practices
- Functioning ad hoc collaboration and exchange of information is in place for multisectoral responses in case of events of public health concern.

- Disease reporting is obligatory for both human and animal health sectors with daily, weekly or monthly reports received at the national level for priority zoonotic diseases (a website is used for reporting by the public health sector).

- Surveillance systems are in place but are mostly passive and indicator-based, except for specific diseases where active surveillance is employed (e.g. avian influenza, brucellosis and MERS-CoV).

- A well-established public health laboratory provides the necessary diagnostic services for zoonosis and other diseases; and a central animal health laboratory provides these services for animal diseases including selected zoonoses.

- Donor-supported active, event-based surveillance occurs in the animal health sector for selected zoonoses.

- A contingency plan is available for preparedness and response in case of avian Influenza outbreaks.

Areas that need strengthening/challenges
- Zoonotic disease reporting is low, particularly in the animal health sector; surveillance systems should therefore be enhanced to enable interoperability and exchange of data among animal–human–wildlife–ecosystems systems on a real-time basis for effective and timely response.

- Capacity is needed to capture information such as rumours and media reports on zoonotic events of potential risk to public health, with a mechanism for collecting and sharing data quickly: electronic reporting, particularly in the animal sector, would address underreporting and data management issues.

- A critical mass of skilled workforce for surveillance and response to zoonoses should be maintained in key sectors.

- The zoonotic disease list should be prioritized, and a national control plan created for all zoonoses.

- Laboratories do not share information or reports; linkages should be established between public health and animal health laboratories for real-time sharing, which may require changes in regulations and/or authorizations.

P.4.2 Veterinary or animal health workforce

Score 3: Developed capacity.

Strengths/best practices
- Qualified veterinarians work for the animal health sector.

- Jordan University of Science and Technology (JUST) trains animal health professionals to be quality veterinary doctors and specialized graduates at Master of Veterinary Science level in various veterinary fields.

- A national zoonotic committee exists, although it needs to be activated and operationalized.

Areas that need strengthening/challenges
- Jordan's animal health workforce is less than half the subnational level as there has been a high turnover of skilled veterinarians to Gulf Cooperation Council countries. The country should therefore consider recruiting additional human resources, as well as laboratory technicians, at that level.

- In-service training should be provided on epidemiology, disease control, surveillance and the One Health concept, including tools to support outbreak investigation procedures. For example, veterinary officers might be included in Jordan's Applied Field Epidemiology Training Programme (FELTP), and in continuing animal health education in coordination with JUST to bridge this gap.

P.4.3 Mechanisms for responding to zoonoses and potential zoonoses are established and functional

Score 2: Limited capacity.

Strengths/best practices
- A contingency plan exists for avian Influenza in the animal health sector.

- Jordan has organized the first One Health stakeholder meeting with the support of WHO, paving the way for the formulation of a national One Health strategic plan.

- The National Disaster Management policy and guidelines available at all levels of Government are an opportunity to expedite the One Health approach.

- The country office of the FAO Emergency Centre for Transboundary Animal Diseases, when opened in Jordan, will support the Global Health Security Agenda and the One Health agenda.

Areas that need strengthening/challenges
- Jordan has no formal national plan for major zoonotic diseases.

- Health teams from different sectors need to participate in real zoonotic events or joint exercises for preparedness, e.g. for in avian influenza and MERS-CoV.

- Memoranda of understanding are needed between the animal and human health and the ecosystem

sectors to streamline joint activities. Regular meetings may facilitate information sharing among health-related sectors.

- Legislation and regulations in the human and animal health sectors need to be updated to reflect the One Health approach.

- Coordination, advocacy and communication on the One Health agenda should be established across different sectors. To achieve this, a One Health Coordinating Unit could be chaired by a Ministerial level and housed within the Disaster Risk Reduction Centre. The coordinating Unit would act as the Secretariat to a higher level One Health Steering Committee that would guide the implementation of One Health activities through technical working groups.

- Guidelines at subnational level for disaster management need to be elaborated to address specific requirements for the health sector in general, and zoonoses in particular.

Relevant documentation

- OIE-PVS Evaluation report of the veterinary services of Jordan.
- Avian Influenza Emergency Preparedness and Response Plan.
- Effects of disease on public health.
- Poultry sector in Jordan.
- Socioeconomic impact of avian influenza risks in Jordan.
- Law and regulations that relates to zoonoses.
- Surveillance of animal diseases in Jordan.
- Control strategy.
- Early notification system.
- Chain of command.
- Protocols for emergency preparedness in case of outbreaks.
- Emergency rooms: central.
- Staff in emergency rooms.
- Emergency rooms: local.
- Laboratory readiness.

Food safety

Introduction

Food and waterborne diarrhoeal diseases are leading causes of illness and death, particularly in less developed countries. The rapid globalization of food production and trade has increased the potential likelihood of international incidents involving contaminated food. Identification of the source of an outbreak and its containment are 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 (or further) cases need to be put in place.

Target

States Parties should have surveillance and response capacity for food and waterborne diseases' risk or events. It requires effective communication and collaboration among the sectors responsible for food safety and safe water and sanitation.

Jordan level of capabilities

Food safety is a priority in Jordan. To be safe for human consumption, food needs to pass proper production, processing, distribution, preparation, storage and handling. Hazards can occur at any stage of the supply chain and hence controls are essential to avoid the adverse health effects and economic consequences of foodborne illness, injury, and food spoilage. Adequate human resources for food safety controls and investigation of foodborne disease outbreaks and response should be trained, and focal points identified for food safety, animal health and key laboratories to test clinical and/or food samples collected during field investigations.

The country should establish a functioning communication mechanism among food safety stakeholders, including the sharing of laboratory findings. This is particularly important for rapid information exchange during investigations of suspected foodborne disease outbreaks. In addition, a risk profiling of food safety problems would help identify opportunities for authorities to implement appropriate risk management strategies. While the JFDA serves as a regulatory body, the food control system is fragmented across different governmental institutions. Food safety players include the Directorates of Plant Health and Animal Resources (Ministry of Agriculture), and the Jordan Atomic Energy Commission. Other stakeholders include the MoH, municipalities, Ministry of Environment, Aqaba Special Economic Zone Authority, and the Jordan Standard and Metrology Organization. Coordination between the focal points of these stakeholders, in case of food safety events, communication occurs via email and phone calls.

A foodborne surveillance system is implemented by JFDA in all regions, although the number of food inspectors is limited. The Food Law serves as regulation and a number of guidelines ensure its effective enforcement. Jordan has trained food inspectors who conduct inspections using risk-based food inspection guidelines. Food safety hazards are mainly associated with microbial contamination of food and water. The influx of refugees and low level of awareness of food safety issues are important factors. Pesticide residues, additives and aflatoxins have also been identified as chemical hazards for food safety.

Training was recently held by the MoH and the Eastern Mediterranean Public Health Network (EMPHNET). Food safety problems are analysed by a technical committee that meets on a weekly basis, and by a higher level committee that meets monthly. Information between focal points is shared according to Food Law 30/2015 and memoranda of understanding between sectors.

Recommendations for priority actions

- Improve food safety inspections and control: electronic inspection, tracing and recalls.
- Amend the food poisoning manual, including foodborne notifiable diseases, to fill reporting gaps.
- Develop a risk-based surveillance system for food exposure to chemicals.
- Develop an interactive reporting system as well as a functional network among focal points.
- Launch awareness programmes targeting consumers and food handlers.

Indicators and scores

P.5.1 Mechanisms are established and functioning for detecting and responding to foodborne disease and food contamination

Score 3: Developed capacity.

Strengths/best practices

- JFDA is the National Codex Contact Point and the food standard-setting body recognized by the International Organization for Standardization (ISO).
- Jordan has good laboratory capacity to test for microbial hazards, heavy metals, and pesticides. Laboratory capacity for veterinary drug residues is developing. Although laboratories are not linked; 17 tests are accredited.
- A foodborne surveillance system and guidelines for investigation and control of foodborne diseases are in place. Inspections use relevant regulations and risk-based guidelines.
- Jordan is a member of the International Food Safety Authorities Network (INFOSAN) and OIE (the INFOSAN focal point and the OIE delegate participate regularly in international meetings).
- JFDA and stakeholders review active and passive surveillance programmes every six months.

Areas that need strengthening/challenges

- Intersectoral coordination among food safety players needs to be improved with strong functional links.
- There are no regulations for allergens in food, antibiotic resistance, or pesticide residues.
- Joint exercises on foodborne emergencies would enable teams to act immediately to risks or recalls.
- Food and laboratory information management systems should be Implemented as a tool to share information among sectors.
- Laboratory capacity should be upgraded with new technologies and diagnostics.
- Food safety awareness should be promoted among stakeholders and the public in general.

Relevant documentation

- Agriculture Law and Agreement.
- Food Law.
- Food Poisoning Manual.
- Jordan Customs Memorandum.
- Jordan Institute for Standard and Meteorology.

PREVENT

- Ministry of Social Development agreement.
- Public Health Law.
- Surveillance Programme.
- Notifiable disease list.

Biosafety and biosecurity

Introduction

Working with pathogens in the laboratory is vital to ensure that the global community has 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 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 proper biosafety and biosecurity measures to protect researchers and the community. Biosecurity is important 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 is in place, ensuring that especially dangerous pathogens are identified, held, secured and monitored in a minimal number of facilities according to best practices; biological risk management training and educational outreach are 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 are in place as appropriate.

Jordan level of capabilities

Biorisk management (BRM) or biosafety and biosecurity processes are under development in Jordan. No specific legislation exists, although sections of the Public Health Law, and occupational health protection legislation address related issues. Different stakeholders are working on matters related to BRM and implementation of institutional processes from their own perspectives. A partial inspection of MoH hospital laboratories revealed lacunae in supervision for BRM implementation.

Many stakeholders work with microbiological analyses, i.e. the Ministries of Agriculture, Environment, and Health; Royal Medical Services (RMS); Royal Scientific Society; Public Security Directorate; JUST/PHBC and other universities; General Directorate of Civil Defence; and JFDA.

A very useful development is the recent publication of National Guidelines on Biorisk Management by the MoH which, if universally implemented, could substantially advance technical capacity in this area.

Recommendations for priority actions

- Finalize, comprehensive national biosafety and biosecurity legislation, including for laboratory licensing.

- Develop a national strategy and plan of action to implement the BRM guidelines, including legislation to ensure they are enforced.

- Enhance BRM coordination at the national level.

- Reduce the number of facilities that store or process dangerous pathogens and toxins through an inventory; and install and monitor pathogen control measures such as standards for physical containment, operational handling and failure reporting systems.

PREVENT

Indicators and scores

P.6.1 Whole-of-Government biosafety and biosecurity system is in place for human, animal, and agriculture facilities

Score 2: Limited capacity. Some, but not all, elements of a biosafety and biosecurity system are in place.

Strengths/best practices

- National Biorisk Management guidelines have been developed.

- The MoH has been designated biorisk management coordinator for Jordan, and a national BRM committee has recently been formed.

- There is political commitment to nominate a BRM officer at the level of Laboratory Directorate, Hospital and Central Laboratory; and to amend the by-law licensing private labs to designate a BRM officer.

Areas that need strengthening/challenges

- A BRM system should be fully developed at national level, and the BRM concept institutionalized.

- The number of facilities processing or storing dangerous pathogens and toxins should be minimized, and diagnostic interventions should avoid culturing such pathogens.

- Oversight, monitoring and enforcement mechanisms should be put in place for BRM.

P.6.2 Biosafety and biosecurity training and practices

Score 3: Developed capacity. A training programme on biosafety and biosecurity is being implemented with common curricula at some facilities that maintain or work with dangerous pathogens and toxins. A train-the-trainers programme for biosafety is under development along with sustained academic training for those who work with dangerous substances.

Strengths/best practices

- A well-developed BRM training programme is in place.

- BRM officers have been nominated, trained and designated in all nine MoH hospital labs, central labs in governorates and RMS.

Areas that need strengthening/challenges

- The high staff turnover should be addressed.

- Biosafety and biosecurity should be included in different health-care curricula to build a culture among future health-care workers and research centres.

Relevant documentation

- IHR Assessment Mission Jordan Report, 2014.

- Jordanian Guidelines on Biorisk Management, 2016.

Immunization

Introduction

Immunization is one of the most successful global health interventions and one of the most cost-effective ways to save lives and prevent disease. Immunizations are estimated to prevent more than 2 million deaths a year globally.

Target

A functioning 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.

Jordan level of capabilities

The national EPI programme was established in 1979, targeting infants with five antigens (Bacillus Calmette–Guérin (BCG); diphtheria, pertussis and tetanus (DPT); and oral poliovirus vaccine (OPV)). Today, the programme covers 11 antigens – BCG, DPT, hepatitis B, *Haemophilus influenzae* type b, OPV/inactivated polio vaccine, measles, mumps and rubella, and rotavirus). Other target population groups will be integrated in the programme, such as schoolchildren up to the age of 15 years, women of childbearing age, pilgrims (for influenza and meningitis), health-care workers (influenza and hepatitis B) and other high-risk groups.

Immunization in Jordan is mandatory for all target populations and vaccination cards are mandatory for school entry. These are provided free of charge, regardless of nationality. EPI has been fully financed by the Government, except for some vaccination campaigns with contributions from WHO, the United Nations Children's Fund (UNICEF) and other partners.

The programme has built a solid vaccine management system. A self-procurement mechanism covers all vaccines including those for the private sector, supported by a strong national regulatory authority and good surveillance systems for vaccine-preventable diseases (VPD) and adverse events following immunization (AEFI). Both the EPI monitoring and VPD surveillance systems meet the recommended performance standards, as confirmed by independent reviews, assessments and surveys. A robust cold chain system covers all administrative levels and secures continuous availability and quality of vaccines to all vaccination points in the country (no vaccine shortages have been reported for at least 10 years).

Routine immunization services are delivered largely through fixed sites – 537 across the country, including those of the MoH and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) – as well as through outreach sessions to cover remote areas. In addition, EPI implements frequent vaccination campaigns for polio and measles as part of its national VPD control, elimination and eradication strategy. Focused multi-antigen campaigns to improve population immunity are also carried out, particularly in high-risk groups (nomads, gypsies, refugees). Regular health education and population awareness activities with pre-campaign intensification have resulted in strong population demand and trust in the national EPI programme.

The programme operates through dynamic annual action plans that are in line with the global and regional goals and strategies (e.g. WHO's Global Immunization Vision and Strategy and Global Vaccine Action Plan 2011–2020), but has never established a multi-year plan.

PREVENT

EPI benefits from an active National Immunization Technical Advisory Group that meets regularly to advise on the policy, strategy, and progress towards the programme goals. As a result, very high vaccination coverage rates have been achieved at national level (99% and 94% with the third dose of DPT and the first dose of measles-containing vaccine respectively in 2015, according to WHO and UNICEF estimates), and in almost all districts and population groups (figures confirmed by coverage surveys). The incidence of VPDs thus decreased drastically to reach zero polio cases (sustained since 1995), zero maternal and neonatal tetanus cases (sustained since 2006) as well as zero measles cases for three consecutive years (2009–2011).

The programme was recently challenged by a significant influx of refugees (around 1.5 million), a large proportion of whom live among the Jordanian population across the country. Of the 120 confirmed cases of measles during the outbreak in 2013, the majority were among immigrants. An energetic vaccination campaign targeting all persons aged 6 months to 19 years living in the country, regardless of nationality, was immediately conducted and succeeded in lowering measles incidence to 20 cases in 2014 and zero cases in 2015.

Thanks to the strong immunization system, together with committed political leadership and close coordination with WHO, UNICEF, the United Nations High Commissioner for Refugees nongovernmental organizations and other partners, the programme was able to handle the challenge of the refugee influx through a revision of the national plan, and provision of free vaccines to all refugees. The cold chain was upgraded and the vaccine delivery strategy revised to include regular mandatory vaccination sessions in refugee camps and at frontier areas, as well as for refugee children living within the Jordanian community.

Recommendations for priority actions

- Update the national strategy to make sure all identified high-risk groups in hard-to-reach areas (nomads and gypsies) as well as all refugees are integrated into responsible-area vaccination micro-plans.

- Conduct staff training on identifying underserved populations including refugees and revising respective vaccination micro-plans to implement the Reaching Every Community strategy.

- Sustain the vaccine management achievements through a cold chain inventory and equipment renewal strategy, and introducing the WHO Effective Vaccine Stock Management tool.

- Develop a costed EPI multiyear action plan, based on the WHO tool, in collaboration with partners and stakeholders to sustain government commitment and EPI achievements; and ensure it is endorsed by the MoH and Ministry of Finance.

- Adapt the capabilities established for EPI programmes such as polio to support general immunization activities.

Indicators and scores

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

Score 5: Sustainable capacity.

Strengths/best practices

- The national policy is supported by a public health law and high government commitment.

- National financing is 100% except for some vaccination campaigns (partner contributions).

- Vaccination is mandatory for all target populations living in the country regardless of nationality.

- The up-to-date national immunization schedule is in line with the Global Vaccine Action Plan 2009–2011.

- The solid vaccine procurement and management system has had no vaccine shortage for at least 10 years at all administrative levels.

- The mixed routine vaccination delivery strategy, supported by accelerated or VPD campaigns, are able to reach every corner of the country.

- The robust monitoring, evaluation and surveillance programme has high performance indicators.

- A well-functioning National Immunization Technical Advisory Group exists.

- High routine immunization coverage figures are sustained at national and district levels and population groups (supported by surveys and WHO and UNICEF validation tools).

- The EPI system has demonstrated capacity to handle sudden increases in the target population.

Areas that need strengthening/challenges

- Programme capacity (financial, human and logistical) is overstretched by the high number of refugees, in particular means of transport to ensure smooth and regular mobile vaccination activities.

- The many refugees distributed among the general population needs to be identified for integration into the vaccination programme and VPD surveillance system.

- Refresher training is needed for all EPI staff on identifying the unreached and low vaccination coverage pockets, and developing adequate micro-plans to reach them on regular basis (Reaching Every Community strategy).

- Delays should be addressed in implementing the National Immunization Technical Advisory Group decision relating to pneumococcal conjugate vaccine introduction.

- A multi-year plan should be developed and costed.

P.7.2 National vaccine access and delivery:

Score 5: Sustainable capacity.

Strengths/best practices

- A well-functioning vaccine self-procurement system exists.

- The National Regulatory Authority is effective for all vaccines including those for the private sector.

- The cold chain capacity and vaccine management system are effective, with all districts supplied on a monthly basis and equipped with the necessary cold chain equipment.

- No vaccine shortages have occurred for the last 10 years in any administrative level.

- Recent expansion of the cold chain capacity has enabled temperature monitoring and alarm system at the national, subnational and facility levels; and walk-in cold rooms and 100 Ice-land fridges.

Areas that need strengthening/challenges

- Monitoring of vaccine stocks and quality throughout the various cold chain phases and in all administrative levels should be enhanced.

- There is no regular inventory or renewal strategy for cold chain equipment to ensure sustainability.

- No vaccine management assessment has recently been conducted.

Relevant documentation

- Public Health Law.

- Immunization guidelines.

- AEFI and AFP surveillance guidelines.

- Vaccination monthly reports and instruction flipcharts.

- WHO vaccine preventable disease monitoring system; 2016 global summary http://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=JOR.

- WHO EMRO Measles Monthly Bulletin http://www.emro.who.int/vpi/publications/measles-monthly-bulletin.html.

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.

Jordan level of capabilities

Jordan has a well-developed, tiered public health microbiology laboratory system complemented by laboratories in the private sector. Several reference laboratories exist at the national level, including one for water quality, the CPHL and a Central Virology Laboratory in Amman. The capital city also hosts a BSL-3 lab with advanced molecular diagnostics, and a laboratory each for TB, polio and malaria and bilharzia. The CPHL and its branches perform bacterial cultures, viral cultures, pulsed-field gel electrophoresis (PFGE) and operate a national influenza centre.

At the governorate level there are seven public health laboratories, and 32 government hospitals across the country have their own laboratories. In addition, basic laboratory capacity exists in 99 comprehensive medical centres and 190 primary health care centres.

Unlike governmental public health laboratories, private laboratories require a licence from the MoH. In addition to the services operating under the supervision of the MoH, many other stakeholders are active in the laboratory sector: RMS, universities, Royal Scientific Society, Jordanian Accreditation and Standardization), Ministry of Agriculture, Public Security Directorate, Ministry of Environment, General Directorate of Civil Defence, JFDA and the private sectors laboratory association.

Jordan can perform 10 core tests in a sustainable manner: for Brucella, cholera, Ebola, hepatitis, HIV, influenza and subtypes, MERS-CoV, polio, Rift Valley and West Nile. The entire population has access to laboratory tests through the public health system (by referral to upper tiers of the laboratory network). Only one accredited lab (ISO 15089) exists, and accreditation is not required for licensure. The criteria for licencing laboratories were not available for the EET. There is a scheme for quality control sample rounds (managed by the Laboratory Directorate under the MoH) but this only covers part of the diagnostic tests (bacterial identification and (drug) sensitivity testing, HIV and hepatitis serology), and only part of the laboratories participate in the rounds.

National guidelines are available for the selection, collection, preservation, packaging and transportation of microbiological samples. Transport of samples for referral to reference laboratories was estimated to be

available for at least 80% of intermediate level/districts within the country for advanced diagnostics. There is national production/procurement of necessary media and reagents for performance of core laboratory tests.

While there is ad hoc information exchange between different laboratory arms of the public health system (i.e. experts in the different sectors contact each other when necessary), there is no systematic comparison of strains/properties of microbes isolated from humans, animals, food or the environment.

Recommendations for priority actions

- Improve coordination, information exchange and communication between human, food safety, veterinary and environmental laboratories.

- Upgrade quality control processes, seek accreditation for the central and other public health laboratories, and consider this as a requirement for licensing.

- Strengthen laboratory capabilities for infectious diseases important to the country (e.g. rabies, Q fever).

Indicators and scores

D.1.1 Laboratory testing for detection of priority diseases

Score 4: Demonstrated capacity. The national laboratory system is capable of conducting 5 or more of the 10 core tests.

Strengths/best practices
- There are well-equipped molecular, serology and bacteriology units in reference laboratories.
- Staff are well trained.
- Collaboration is good with international agencies (US Naval Medical Research Unit 3 and Centers for Disease Control and Prevention (CDC)).
- A National Laboratory Working Group has been established.

Areas that need strengthening/challenges
- Staff turnover is high.
- Postgraduate medical employees are scarce.
- Specialized vertical programme laboratories may usefully be merged into a larger comprehensive laboratory service.
- Auxiliary laboratory services are weak.

D.1.2 Specimen referral and transport system

Score 4. Demonstrated capacity. A system is in place to transport specimens to national laboratories from at least 80% of intermediate level/districts within the country for advanced diagnostics.

Strengths/best practices
- Instructions for sample transportation exist at national level.

Areas that need strengthening/challenges
- Specimen referral should be available throughout the country.

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

Score 3. Developed capacity. Tier-specific diagnostic testing strategies are documented, but not fully implemented. The country is proficient in classical diagnostic techniques including bacteriology, serology, and PCR in select labs but has limited referral and confirmatory processes. It uses point-of-care diagnostics for priority diseases for the country, and at least one other priority disease. NB. strictly taken bedside point-of-care testing is not used, but rapid laboratory-based molecular tests are used.

Strengths/best practices

- Advanced molecular techniques are available at central reference lab level.

Areas that need strengthening/challenges

- Point-of-care testing should be considered for some diseases.

D.1.4 Laboratory quality system

Score 2: Limited capacity. National quality standards have been developed but there is no system to verify their implementation.

Strengths/best practices

- Participation in external quality assessment schemes in a limited number of countries.

Areas that need strengthening/challenges

- Not all laboratories participate in external quality assessment schemes.
- Laboratory licensing should be updated to require a quality management system, and ideally accreditation of key tests
- Licencing should be required by public health laboratories.

Relevant documentation

- IHR Assessment Mission Jordan Report, 2014.

Real-time surveillance

Introduction

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

Target

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

Jordan level of capabilities

The country has reached reasonable capacities to detect events of significance for human and animal health as well as for other health security threats of concern. The main generic systems are indicator- and syndrome-based. A comprehensive generic list of notifiable diseases (laboratory confirmed or clinically diagnosed) is available with disease-specific case definitions. Enhancing indicator-based surveillance with an automated electronic notification system has boosted real-time surveillance and analysis capability.

The animal health subsector has active and passive surveillance and notification systems following OIE standards and reporting criteria, utilizing data collected for clinical diagnosis, through herd inspections or from outbreak management/control.

Jordan also has a number of sentinel-based surveillance systems within public health facilities that monitor the trend of specific diseases and any change in the circulating pathogens causing them, using a syndromic approach. Such sentinel surveillance systems, which capture both epidemiological and laboratory data in an integrated manner, exist for diarrhoea, hepatitis and sexually transmitted diseases.

Information and data are exchanged with the Ministry of Agriculture in the event of zoonotic outbreaks on a case by case basis only. The lack of an intersectoral electronic notification system is another major limiting factor for implementing real-time surveillance.

Recommendations for priority actions

- Consolidate a single platform notification system for all health hazards (human, veterinary, chemical, radiological, etc.) to replace the fragmented approach and ensure efficiency in early detection.

- Organize an event-based surveillance system to enhance the rapid capture of information about events of potential risk to public health.

- Improve the exchange of data with concerned bodies on a real-time basis and enhance the feedback system.

- Establish a multidisciplinary surveillance team from relevant entities to investigate events.

DETECT

Indicators and scores

D.2.1 Indicator- and event-based surveillance systems

Score 3: Developed capacity.

Strengths/best practices

- An indicator-based surveillance system for human health is functioning.

- The national infectious diseases surveillance guideline has recently been updated (2015) including the list of priority diseases, conditions and case definitions.

- Key information is exchanged between the human and animal health sectors for multisectoral responses to events of public health concern.

- Epidemiological surveillance reports are disseminated weekly on the official website.

Areas that need strengthening/challenges

- The surveillance system for zoonotic diseases and other hazards such as chemicals and radiation needs to be enhanced, and an electronic data sharing system initiated to enable exchange of data among sectors on a real-time basis for effective and timely response.

- A system for the rapid capture of information about events of potential risk to public health (rumours, media) should be set up with facilities to collect the data (facsimile, electronics, phone links).

- A system needs to be developed for data validation and quality assurance.

- A critical mass of public health officers skilled in surveillance and response for emerging diseases should be maintained.

D.2.2 Inter-operable, interconnected, electronic real-time reporting system

Score 3: Developed capacity.

Strengths/best practices

- An electronic reporting system for notifiable diseases has recently been implemented in public hospitals to which the private health entities and laboratories will be linked.

- Trained manpower exists for data collection and analysis.

- FETP fellows are involved in outbreak detection, investigation, and response.

Areas that need strengthening/challenges

- The electronic disease notification surveillance system needs to be expanded to cover all private hospitals and laboratories and to contain all health hazards including those of chemical radiation origin.

- A common electronic platform needs to be established between the animal and human health sectors for exchanging information on diseases of public health concern on a real-time basis.

DETECT

D.2.3 Analysis of surveillance data

Score 3: Developed capacity.

Strengths/best practices

- An electronic standardized form for collecting surveillance data is available.
- Data reporting is regular, albeit with delays, and ad hoc teams are in place to analyse data.
- The weekly epidemiological report is published on the MoH website.

Areas that need strengthening/challenges

- The capacity to analyse surveillance data on a real-time basis needs to be increased.
- A mechanism should be developed for sharing the laboratories' data with relevant ministries and agencies.

D.2.4 Syndromic surveillance systems

Score 4: Demonstrated capacity.

Strengths/best practices

- Syndromic-based surveillance systems exist for diarrhoea, hepatitis and sexually transmitted diseases, which demonstrates Jordan's capacity to establish and operate such a surveillance system in the event of any emerging health need.
- Sentinel influenza surveillance has been established in four hospitals (severe acute respiratory infections) and at four comprehensive health-care centres (influenza-like illness) with the ability to subtype influenza.

Areas that need strengthening/challenges

- The system remains somewhat fragmented; there is therefore a need for all efforts to be assessed and then implemented as an integrated strategy and system under a common platform. Challenges will include individual vertical programmes with different reporting frequencies and priorities.

Relevant documentation

- Surveillance guidelines.
- List of notifiable diseases.
- Food poisoning guideline.
- Circulars (Zika, Ebola, MERS-Cov).
- Emerging and re-emerging disease guidelines.

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. Also, threats related to accidental or deliberate release of chemical, radiological and nuclear agents are of increasing concern. Collaborative multidisciplinary reporting on public health events reduces the risk of diseases and their international spread.

Target

Timely and accurate reporting of public health events according to WHO requirements and consistent coordination with FAO, OIE, IAEA and other relevant international organizations enhances the likelihood of rapid and coordinated response to these public health events, nationally and globally.

Jordan level of capabilities

The country has designated an HR NFP, which is operational. Focal points for OIE and INFOSAN are established under the Ministry of Agriculture. The International Atomic Energy Agency (IAEA) focal points are established under the Radiation Safety Department of the Energy and Minerals Commission and the Jordanian National Atomic Energy Commission.

An IHR multisectoral committee has been established by ministerial decree. It is headed by the primary IHR NFP person and includes representatives from the ministries of Agriculture, Environment, Health, and Transportation, JFDA, National Civil Aviation, Customs, Civil Defence, Ports Health Authority and ground crossing. The terms of reference of the Committee are not mentioned in the decree, although it is supposed to play a major role in coordination and communication between the IHR NFP and the respective ministries/departments, and thus in the implementation of the IHR.

Information sharing related to zoonotic events or foodborne diseases from IHR NFP to OIE and INFOSAN focal points is in place (but not the reverse). However, it is neither based on written protocols nor supported by an information technology platform for the timely sharing of information.

Assessing the risk of national or PHEIC comes under the mandate of the MoH for infectious, zoonotic events and foodborne events in collaboration with the Ministry of Agriculture and JFDA. Assessing the risk of chemical and radiation events is the mandate of the Civil Defence through its teams at different administrative levels in collaboration with the Ministry of Environment and radiation commissions. Also, a national team (HAZMAT) supports assessment of the risk of chemical events; its role will be expanded to support radiation events as well.

Use of the decision instrument (Annex 2 of the IHR) applies only to infectious diseases. However, the instrument is not known to the sectors; hence notification of PHEIC to WHO is not followed. The country does have a system to facilitate the response to potential PHEIC in a coordinated manner through the Supreme Council for Civil Defence.

Recommendations for priority actions

- Develop a policy for notification of potential PHEIC for all reporting entities.

- Improve understanding of WHO, OIE, and FAO requirements through multisectoral discussions.

- Conduct simulation exercises to test the capacity for early detection, risk assessment and timely (within 24 hours) reporting of events, particularly those related to events of chemical, radiation and unknown origin to WHO through the IHR NFP.

- Establish a mechanism (online portal) for the timely notification and information sharing of potential PHEIC among national stakeholders.

Indicators and scores

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

Score 3: Developed capacity. The country has functioning focal points for IHR, FAO, OIE and IAEA. It is able to identify and report to WHO potential PHEIC, particularly those related to infectious, zoonotic and foodborne diseases or events; however there is limited capacity to maintain the 24 hours time frame, or to report public health events of chemical, radiation or unknown origin.

Strengths/best practices

- IHR NFP is established in the country with defined functions; focal points for FAO, OIE and IAEA are also available with clear terms of reference.

- An IHR multisectoral committee is in place.

- National laboratories have the capacity to confirm some pathogens, and international and reference laboratories are accessible for the confirmation of public health events.

- Jordan has access to international expertise to assist in assessing the risk of public health events of different origins.

Areas that need strengthening/challenges

- The fact that the IHR NFP has many responsibilities in addition to IHR, and the junior and unclear membership functions of the IHR multisectoral committee, affect the proper implementation of IHR capacities, particularly those related to identification of PHEIC and reporting to WHO.

- There are insufficient human resources within the MoH to support risk assessments for public health events of different origins, and lack of awareness of the decision instrument and its use among the non-health sector. This limits national capacity to identify and report PHEIC to WHO within 24 hours.

D.3.2 Reporting network and protocols in country

Score 2: Limited capacity. The country reports potential PHEIC to WHO and OIE for relevant zoonotic diseases. However, no established protocols or multisectoral coordination exist to respond to potential or real PHEIC.

Strengths/best practices

- Reporting requirements to WHO, OIE and IAEA are known to their national focal points.

- The Supreme Council for Civil Defence includes representation from different sectors with defined terms of reference to coordinate the response to emergencies including PHEIC.

- Civil defence through its teams and HAZMAT have the capacity to conduct initial risk assessments for emergencies including those related to chemical and radiation events.

Areas that need strengthening/challenges

- IHR NFP is not a member of the different national coordination mechanisms, and hence has no access to information on public health events occurring in the country and coming from non-health origins.

- SOPs for joint investigations and response to public health events of non-health origin are not in place, which may affect a timely and coordinated response.

- The country does not have the capacity to report potential PHEIC from governorate to national level in a timely manner, particularly those related to non-health sectors. Also, protocols are not in place for the timely reporting of potential PHEIC to WHO and OIE.

Relevant documentation

- Ministerial decree on the IHR NFP and its functions.

- Ministerial decree on the IHR Multisectoral Committee.

- Public Health Law of 2008.

- Strategic Plan for the Higher Council of Civil Defence.

DETECT

Workforce development

Introduction

Workforce development is important to sustain a public health system by developing and maintaining a highly qualified public health workforce with appropriate technical training, scientific skills, and subject matter expertise.

Target

States Parties should have 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).

Jordan level of capabilities

The Government of Jordan spends 7.6% of its GDP expenditure on health care, of which approximately 21% is spent on the workforce. The total expenditure on public health is 5% of GDP. The workforce expenditure includes training of physicians, veterinarians, nurses, paramedical staff (including laboratory technicians etc.). There are academic institutions, both public and private, across the country to provide basic and postgraduate professional training. The number of such institutions varies by governorate based on the availability of infrastructure.

The Government established the FETP in 1998 with the arrival of the first FETP resident advisor from CDC to develop human resources in field epidemiology and response. It has been functioning as a self-sustained MoH institution since 2008 and is currently located as a programme within the Directorate of Primary Healthcare Administration within the Communicable Diseases Director's office. Since its inception, FETP has trained 61 field epidemiologists: 59 physicians and 2 veterinarians. Today, 10 of the 12 governorates have FETP-trained field epidemiologists. Additionally, several graduates are located at the central level, occupying positions such as Director of Communicable Disease Control, Head of the National Cancer Registry, surveillance epidemiologists in the governorates, and other key posts. The Jordan FETP has also built capacity in the region by training residents from Iraq, Syrian Arab Republic, Yemen, and the West Bank and Gaza Strip.

The FETP has institutionalized weekly meetings to review epidemiology and surveillance data at the Directorate. Outbreaks and unusual events are detected, investigated and acted upon by the residents and graduates. The public health laboratory has been incorporated into the FETP curriculum and training and the public health laboratory personnel now fully participate in the weekly epidemiology and surveillance meeting.

The programme was instrumental in improving death notification and cause of death reporting, and mortality data are now analysed periodically. The programme assisted the institutionalization of the behavioural risk factor surveillance survey to better understand risk factors for chronic diseases.

The FETP has achieved the target of 1:200 000 population trained field epidemiologists. It intends to expand the training to include frontline public health workers by establishing a short-course (three months) frontline FETP at district level within the governorates. From the health-care workforce standpoint, according to MoH annual statistical data from 2015, there are currently, per 10 000 population, 22.2 physicians; 7.1 dentists; 12.7 pharmacists; 13.5 nurses; and 2 midwives. There are 6 medical colleges, 14 nursing schools (8 in the private sector and 6 in the public sector) and 30 paramedical training schools in Jordan.

Recommendations for priority actions

- Develop clear strategies for all components of workforce capacities.
- Make FETP available for other government sectors such as JFDA.
- Ensure sustainability by working with other ministries, and asking those who participate to contribute resources to the overall programme.
- Start frontline FETP (3-month programme) at district level.

Indicators and scores

D.5.1 Human resources are available to implement IHR core capacity requirements

Score 3: Developed capacity. Multidisciplinary human resources are available at national and intermediate level.

Strengths/best practices

- Human resources are available in various disciplines (physicians, epidemiologists, biostatisticians, information systems specialists, veterinarians, social scientists, laboratory technicians/specialists and other public health personnel) trained in public and private sector institutions.
- Capacity is available both at national and governorate level to implement IHR core requirements.

Areas that need strengthening/challenges

- Funding constraints result in attrition of qualified public health professionals due to limited career opportunities. Turnover of experts is high and coordination is lacking among stakeholders.
- Technical capacities of all cadres need strengthening, not only at governorate but also at district level.
- The Government should allocate sustainable resources to introduce new positions within the government structure for various public health professional categories such as epidemiologists with a structured career ladder both at national and governorate levels across the country.

D.5.2 Field epidemiology training program or other applied epidemiology training programme in place

Score 4: Demonstrated capacity. Two levels of training are in place in Jordan: FETP (basic, intermediate, or advanced), and FELTP or comparable applied epidemiology.

Strengths/best practices

- FETP exists across the country, with 61 graduates. In addition to an advanced two-year programme, FETP is also offered at intermediate level.
- Partnership with other countries in the region to share FETP graduates during emergency events exists through EMPHNET. The programme has also helped FETP trainees from the Syrian Arab Republic, West Bank and Gaza Strip, and Yemen.

Areas that need strengthening/challenges

- FETP only targets the MoH and should cater for the public health workforce in other governmental institutions such as JFDA and agricultural sectors.
- Effective placement and utilization of FETP graduates in the field should be improved, to ensure a field epidemiologist in each district of the country.

DETECT

- Collaborative mechanisms should be developed at the international level.

- Frontline FETP should be established to train frontline workers at district level.

D.5.3 Workforce strategy

Score 3: Developed capacity. A health-care workforce strategy exists but is not regularly reviewed, updated or implemented consistently.

Strengths/best practices

- A well-established FETP exists in the MoH.

- Political commitment is assured for FETP sustainability.

- A network of academic institutions exists across the country.

Areas that need strengthening/challenges

- The health-care workforce strategy needs to be more comprehensive to include all sectors and should be reviewed, updated and implemented consistently.

Relevant documentation

- CDC FETP score sheet assessment report, 2011.

- Annual statistical data, Ministry of Health Jordan, 2015.

RESPOND

Preparedness

Introduction

Preparedness includes the development and maintenance of national, intermediate and community/primary 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 maintenance 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*
> *The effective implementation of the IHR (2005) requires multisectoral/multidisciplinary approaches through national partnerships for effective alert and response systems. Coordination of nationwide resources, including the sustainable functioning of a National IHR Focal Point, which is a national centre for IHR (2005) communications, is a key requisite for IHR (2005) implementation. The NFP should be accessible at all times to communicate with the WHO IHR Regional Contact Points and with all relevant sectors and other stakeholders in the country. States Parties should provide WHO with contact details of NFPs, continuously update and annually confirm them.*

Jordan level of capabilities

Jordan is susceptible to both natural and man-made disasters, which cause a significant loss of life, livelihoods and infrastructure, reversing development gains. Apart from being susceptible to epidemics and pandemics, the country is vulnerable to natural threats including floods, earthquakes and extreme heat. In addition, the country is hosting a high number of refugees, which places an extra burden on the health system.

The country has a multisectoral coordination mechanism, including the health system, to respond to emergencies, led by HCCD and NCSCM. The health system established the Crisis Management Unit (CMU) in 2008 which reports to the Minister of Health. Recently, an Emergency Operations Centre (EOC) Committee was formed encompassing representatives from different units of MOH. The EOC was established with CDC support, and WHO is providing support to make it functional. CMU has no mirror structure at governorate and district levels. However, crisis management focal points are assigned and trained at governorate level of the health system. Stronger leadership and additional human resources are required to scale up emergency preparedness and response. An all-hazards disaster risk assessment is also needed to generate the evidence base for national planning and policies.

Recommendations for priority actions

- Conduct a comprehensive health emergency risk assessment with a focus on vulnerability and capacity assessments while considering hazards identification and analysis, in collaboration with both intra- and intersectoral stakeholders.

- Review and update the multi-hazard national health emergency preparedness and response plan, and develop contingency plans to address the findings of the risk assessment. IHR core capacities should be incorporated into the plan. In addition, separate and additional SOPs should be established to activate various components of the plan.

- Develop and pass appropriate national legislation prepared by the MoH to serve as a robust framework for operationalization of the multi-hazard national health emergency preparedness and response plan. This should also strengthen intra- and intersectoral coordination of health emergency management.

Indicators and scores

R.1.1 Multi-hazard National Public Health Emergency Preparedness and Response Plan is developed and implemented

Score 2: Limited capacity.

Strengths/best practices

- The country has drafted a multi-hazard national health emergency preparedness and response plan with technical support from the WHO Regional Office for the Eastern Mediterranean. Different intra- and intersectoral stakeholders participated in the planning process.

- Jordan has contingency emergency preparedness plans for important communicable diseases such as A(H1N1) that can be added to the national emergency plan.

- CMU organizes or participates in drills and exercise, one of the biggest of which was the Eager Lion exercise conducted by the military.

Areas that need strengthening/challenges

- The national emergency plan lacks an all-hazard, whole-health and multisectoral approach.

- The plan does not incorporate IHR core capacities, and the role of the IHR focal is not well defined.

- Risk communication, like many other functions of emergency management, is not well defined in the national emergency plan such as command and control, logistics, and telecommunication.

- The national emergency plan is a starting point, but needs to be legally endorsed, include other directorates of the MoH and other sectors, and needs to be well disseminated.

R.1.2 Priority public health risks and resources are mapped and utilized

Score 1: No capacity.

Strengths/best practices

- Different sectors have carried out hazard identification/assessment exercises.

- A situation analysis of MoH hospitals for mass casualty incidents and chemical, biological, radiological and nuclear (CBRN) incidents has been done by MoH and WHO.

Areas that need strengthening/challenges

- No comprehensive all-hazards risk assessment has been done in the health system.

- Risk assessments are mistaken for hazard assessments. Risk is a function of hazards probability and their impact which in turn are defined by vulnerability and capacity status.

- Risk assessment should precede, and feed into emergency planning.

Relevant documentation

- Public Health Law.

- Emergency Preparedness and Response Plan.

- A(H1N1) plan.
- National Health Emergency Preparedness and Response Plan.
- Royal Medical Service Plan for Deployment of Field Hospitals.
- National Strategy for Security and Crises Management.
- Eight contingency plans developed by the National Centre for Security and Crises Management.
- Situation analysis of MoH hospitals for mass casualty incidents and CBRN incidents.

Emergency response operations

Introduction

A public health emergency operations centre (EOC) is the hub 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 the response to an emergency or emergency exercise. They also provide other essential functions that support decision-making and implementation, coordination, and collaboration.

Target

Countries will have a public health EOC functioning according to minimum common standards; maintaining trained, functioning, multisectoral rapid response teams and "real-time" biosurveillance laboratory networks and information systems; and trained EOC staff capable of activating a coordinated emergency response within 120 minutes of the identification of a public health emergency.

Jordan level of capabilities

Emergency management mainly relies on the services provided by the National Civil Defence (NCD). This is an institution established in 1948 with full capacity to provide preparedness and response in disaster situations, and operates under the Ministry of Interior. The NCD also includes the management of ambulance services, and transportation of patients in an emergency and of patients with particular health needs.

In addition, the Defence Medical Corps (RMS) runs a considerable number of health facilities in the country, which are accessible to civilians. Within this institution, emergency response plans are in place and periodically tested. RMS is often involved in international missions, providing health-care services in emergency situations, including setting up field hospitals at short notice.

A fully equipped Public Health EOC has been officially opened but is not fully operational. The centre represents an opportunity for the MoH to increase its overall capacity to prepare and respond to emergencies. It could considerably enhance coordination among directorates of the MoH and collaboration with all other partners and sectors. In principle, the MoH EOC could operate as the link to the NCM. While the facility was inaugurated in 2014 with international support, it still lacks defined roles and responsibilities, staff, and full recognition within MoH departments. Therefore, the main challenge is to operationalize the Public Health EOC.

Recommendations for priority actions

- Engage the cooperation of all MoH departments to define the role and responsibilities of the Public Health EOC.

- Enhance coordination and collaboration of MoH and its Public Health EOC with the coordination structures of the HCCD and the NCSCM.

- Develop an EOC strategic plan that defines the EOC role, responsibilities and operations; and agenda of tests and drills of the emergency plan.

Indicators and scores

R.2.1 Capacity to activate emergency operations

Score 2: Limited capacity.

Strengths/best practices

- Emergency response operations, including health, have been handled at all levels by NCD for decades and this institution has proven efficiency and experience. Plans and SOPs are in place and are regularly updated and tested. Ambulance services belong to the organizational plan of the NCD since 1979.

Areas that need strengthening/challenges

- The Public Health EOC at the MoH is under development and currently has no actual capacity to coordinate response actions. Despite the indicator score of 2, NCD staff have appropriate training in emergency management and can activate a response within 2 hours. However, they may have limited capacity for specific health issues of IHR concern and coordination with MoH departments is poor.

- As a requirement for IHR, the MoH Public Health EOC must be strengthened and its operations integrated with those of other players. The advantages of operating an EOC at MoH include promptness and efficiency in communicating and handling potential PHEIC.

R.2.2 Emergency Operations Centre operating procedures and plans

Score 1: Limited capacity. While the MoH Public Health EOC is not operational, this capacity is ensured by the NCD EOC whose capability is well established and could reach a higher score according to documentation provided and discussions held.

Strengths/best practices

- Benefits of the NCSCM could be significant. This new institution could coordinate all sectors for a more complete and integrated system of emergency preparedness and response. It should also formally request each relevant ministry to establish and operationalize a partner EOC.

Areas that need strengthening/challenges

- The Public Health EOC at the MoH must be activated, staffed and functional on a daily basis.

- All plans, work charts and SOPs should be finalized, endorsed and periodically tested.

- Forms, data collection and reporting templates, and mechanisms should be in place to manage, communicate and interact during PHEIC.

R.2.3 Emergency operations programme

Score 3: Developed capacity.

Strengths/best practices

- Functional exercises are conducted on a regular basis, particularly in concomitance with drills performed by either the NCD forces or RMS.

Areas that need strengthening/challenges

- It is important to make the Public Health EOC at the MoH fully operational, which will benefit the coordination and overall management of emergency operations, especially for IHR issues.

R.2.4 Case management procedures are implemented for IHR relevant hazards

Score 5: Sustainable capacity.

Strengths/best practices

- Transportation of patients is correctly planned and carried out. This task falls mainly under the responsibility of the NCD, although in some cases, the transport facilities of the MoH or the Red Crescent may be involved. The transport of individuals with specific listed diseases (potentially highly infectious patients) is coordinated by MoH.

Areas that need strengthening/challenges

- The availability and distribution of better equipped ambulances would improve management and infection prevention control of highly infectious patients.

Relevant documentation

- Public Health Law.

- MoH Emergency Preparedness and Response Plan by Crisis Management Unit.

- A(H1N1) plan.

- Plans developed by the High Commission of Civil Defence.

- MoH Emergency Operations Centre Operations Plan (draft).

- WHO Eastern Mediterranean Regional Office Ebola Virus Disease Preparedness and Response Assessment Mission in Jordan.

Linking public health and security authorities

Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is man-made (e.g. anthrax terrorist attacks) 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 in order to minimize loss of life or injury, and for optimal public safety and security.

Target

In the event of a biological, chemical or radiation event of suspected or confirmed deliberate origin, a country will be able to conduct a rapid, multisectoral response, including the capacity to link public health and law enforcement, and to provide and/or request effective and timely international assistance, including to investigate alleged use events.

Jordan level of capabilities

Jordan has faced multiple humanitarian crises, including mass movements of refugees, food and nutrition insecurity, attacks on health workers, and infectious disease outbreaks (e.g. MERS-CoV, measles, polio). These have necessitated a multisectoral response involving both national and international stakeholders. This substantial experience with emergencies and crises has led to strong institutions that have the statutory authority to engage public health and law enforcement in the response.

Jordan's Higher Council for Civil Defence is responsible for the management of national crises, and has the authority to ask for support from any sector. It has a strategic plan that outlines detailed roles and responsibilities to respond to different emergencies, including public health events. However some sectors are not aware of its existence. There have been jointly conducted trainings for the investigation and response to CBRN, and currently three teams at regional level respond to biological and chemical threats. The mandate of these teams will be expanded to include response to radiation events.

There is a call centre (911) for emergencies. Information coming from this call centre are sent to the HCCD for necessary action. The National Defence EOC works with the Royal Medical Services and the MoH.

SOPs to accelerate the coordination needed for a prompt and appropriate response are not in place, although event-specific SOPs are. Specific events include disease outbreaks and food contamination, which may require the support of the security sectors to implement public health measures. However, SOPs for joint investigations, joint risk assessments, coordinated control activities and law enforcement are not in place.

How a chemical or radiation event is identified depends on the event and place of occurrence. A mobile laboratory is in place for the diagnosis of CBRN. The Prince Haya Centre at JUST has the capacity for CBRN laboratory diagnosis. The forensic laboratory under the Ministry of Interior and the Poison Centre collaborate on laboratory diagnoses. In terms of linking public health with security, the biosafety and biosecurity strategy should not be limited to laboratories, but expanded to include the transportation of materials.

The new NCSCM includes an EOC and will likely take over the responsibilities of the HCCD. Currently, information from the call centre (911) is also shared with the National Security Centre. Membership of the Higher Council and National Security Centre is clearly defined; the groups meet regularly and on an ad hoc basis to share information and make decisions related to emergencies occurring in the country including

RESPOND

public health events. The concerned sectors take the lead in the response to events in coordination with the other sectors.

A mapping of hazards has been conducted by the HCCD, including their most likely sources; however not all relevant sectors were involved in the mapping exercise. Drills are also regularly conducted for investigation and response to different emergencies, mainly chemical spills, to enhance the capacity of operations staff.

Recommendations for priority actions

- Designate one institution (e.g. NCSCM) as the lead to coordinate the response to national emergencies and crises among appropriate ministries.

- Ensure that relevant stakeholders of public health and security have access to all existing plans.

- Improve information-sharing related to the detection of public health events, investigations and response.

- Review and update SOPs for joint investigations and response to public health events.

- Develop a national biosecurity and biosafety plan.

Indicators and scores

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

Score 4: Demonstrated capacity. At least one public health emergency response or exercise within the previous year included information-sharing with security authorities using a formal memorandum of understanding or other agreement or protocol.

Strengths/best practices
- Within the government structure and as stated in the Public Health Law, the public and animal health systems at all levels are able to request the support and engagement of law enforcement agencies to assist with managing a health event or hazard under the leadership of Minster of Agriculture, Environment, and/or Health, depending on the type of event.

- The emergency call centre relays information received to the HCCD for action.

- The EOC in civil defence works with the RMS and MoH.

- Event-specific SOPs are in place for disease outbreaks and food contamination.

Areas that need strengthening/challenges
- Triggers for notification and information sharing between public health and security sectors are not identified, which may delay the timely sharing of information and response.

- Joint training between the different sectors including law enforcement and security, is not in place.

- The many existing coordination structures, e.g. HCCD and the National Security Centre, creates confusion when coordinating the necessary response.

Medical countermeasures and personnel deployment

Introduction

Medical countermeasures (MCM) are vital to national security and protect nations from potentially catastrophic infectious disease threats. Investments in medical countermeasures create opportunities to improve overall public health. In addition, it is important to have trained personnel who can be deployed in the case of a public health emergency for response.

Target

A national framework for transferring (sending and receiving) medical countermeasures and public health and medical personnel among international partners during public health emergencies.

Jordan level of capabilities

Jordan is politically stable with financial and operational resources that put it in a good position to provide humanitarian assistance to other countries in the region. It is one of the main destinations of refugees. Jordan's RMS – the main organization that provides regional/international medical humanitarian assistance – has demonstrated good practices in the field of public health emergencies and disasters.

Recommendations for priority actions

- Review and update the national plan of MCM personnel deployment in public health emergencies. The plan should be led by the NCSCM and ensure the full involvement of all sectors including the military, MoH, nongovernmental organizations, and Red Crescent Society. The plan also should address communication and information-sharing among partners.
- The MCM plan should be tested and updated periodically through exercises.
- The MoH should maintain an actively revolving national stockpile of emergency drugs and medical supplies through a formal agreement with local manufacturers and suppliers.

Indicators and scores

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

Score 5: Sustainable capacity.

Strengths/best practices

- RMS has sent MCMs to several countries including Liberia and the West Bank and Gaza Strip.
- RMS has an action plan and is able to deploy two field hospitals in six hours to any location in the country. However, it takes about 48 hours to deploy a field hospital to another country in the region.
- The MoH participated in the Eager Lion exercise along with other sectors.

RESPOND

Areas that need strengthening/challenges

- While the RMS collaborates with other sectors, these are not included in the RMS plan.

- The MoH has no active collaboration with the WHO Global Outbreak Alert and Response Network, although the latter has conducted some training courses in collaboration with EMPHNET.

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

Score 5: Sustainable capacity.

Strengths/best practices

- RMS staff are well trained and skilled to be deployed to regional/international emergencies.

- MoH staff have participated in RMS regional missions, e.g. to Liberia.

- The MoH participated in the Eager Lion exercise along with other sectors.

Areas that need strengthening/challenges

- No training exists for MoH staff to work in regional/international public health emergencies.

- There is no roster of trained health staff that can be called by RMS, if required.

Relevant documentation

- Public Health Law.

- National Health Emergency Preparedness and Response Plan.

- Royal Medical Service Plan for Deployment of Field Hospitals.

- National Strategy of Security and Crises Management.

- Eight contingency plans developed by the National Centre for Security and Crises Management.

Risk communication

Introduction

Risk communications should be a multi-level and multi-faceted 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 outbreaks of diseases. For any communication about risks 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, as well as the voice of the affected population. Communications of this kind promote appropriate prevention and control actions through community-based interventions at individual, family and community levels. Disseminating the information through the appropriate channels is essential. Communication partners and stakeholders in the country need to be identified, and functional coordination and communication mechanisms should be established. In addition, the timely release of information, and transparency in decision-making, are essential to build trust between authorities, populations and partners. Emergency communication plans need to be tested and updated as needed.

Target

States Parties should have risk communication capacity which is multi-level and multi-faceted real time exchange of information, advice and opinion between experts and officials or people who face a threat or hazard to their survival, health or economic or social well-being so that they can take informed decisions to mitigate the effects of the threat or hazard and take protective and preventive action. It includes a mix of communication and engagement strategies like media and social media communication, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement and community engagement.

Jordan level of capabilities

The main actors in risk communication on health threats are the Directorate of Health Communication and Awareness Media Centre in the MoH. There is a designated, trained media spokesperson in the Media Centre, although senior officials such as the Director of the Directorate for Communicable Diseases are also frequently used for issues falling within their area of expertise. The MoH has adopted a National Risk Communication Contingency Plan, and mechanisms are in place to ensure coordination between sectors and with stakeholders during an emergency (in particular via the MoH Emergency Committee, a cross-government Media Committee and, for emergencies of national importance, the HCCD). SOPs defining roles, responsibilities and clearance processes for risk communication have not yet been developed: these issues are currently decided on an event-by-event basis.

The Directorate of Health Communication and Awareness has around 20 staff based in Amman who work on all aspects of health communication and health promotion. The Directorate works with a network of health promoters based in Jordan's 12 governorates. A supervisor in each governorate manages the health promoters and sits on the local health committee. With this network, Jordan is able to conduct multi-channel, multi-target audience public communications on health issues, coordinate with stakeholders, and conduct some local level engagement. The network of health promoters provides feedback to the central team on audience reaction and concerns. It sometimes provides intelligence on rumours: examples were given of rumours in communities during an immunization campaign about the safety of the vaccine. These rumours had to be countered before people would allow their children to be vaccinated. Such engagement

RESPOND

and feedback is currently ad hoc, although if it were routine and systematic, this would increase Jordan's capacity in the areas of community engagement, rumour management and dynamic listening. It was found that very few health communication staff in Jordan had specific training and expertise on risk communication.

Overall Jordan has a fairly good system of public communication on health risks. With relatively small further investment, this could be developed into a very good system.

Recommendations for priority actions

- Conduct risk communications training for key staff in the MoH, partner organizations (e.g. Ministry of Agriculture, JFDA) and the network of health promoters.

- Organize a workshop with the MoH and its network of health promoters on implementing a system of rumour management, active listening and community engagement in Jordan. The workshop would train and inform officials on the theory and international best practices, with a facilitated discussion to agree on how this can be applied and implemented in Jordan.

- Develop SOPs on risk communication.

- Conduct a simulation exercise on risk communication and/or include a component in a wider emergency response simulation exercise to test the risk communication SOPs.

- Set up a study visit to one or more best practice countries to compare SOPs and listening/rumour management/community engagement systems.

Indicators and scores

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

Score 2: Limited capacity. The MoH has adopted a National Risk Communication Contingency Plan, robust mechanisms are in place for multisector, multipartner engagement and coordination, and some key staff have undergone specialist training in risk communication. However, SOPs for risk communication have yet to be developed and the number of staff trained in risk communication is not yet sufficient to assure that the system can cope with a sustained emergency.

Strengths/best practices
- There is a high level of commitment in the MoH to risk communication as a response measure.

- The MoH has adopted a National Risk Communication Contingency Plan.

- Robust mechanisms are in place for multisector, multipartner engagement and coordination via the MoH Emergency Committee, the HCCD and the intragovernmental Media Committee.

- The network of health promoters in Jordan's governorates and their membership on local health committees allow the system to reach down to the local level.

Areas that need strengthening/challenges
- SOPs on risk communication should be developed and endorsed. These should define, in particular, roles and responsibilities in multisector emergencies (e.g. an emergency involving the Ministry of Agriculture, the JFDA, and the MoH). They should also codify how public communication on a health risk can be fast-tracked in an emergency situation.

- Only a few staff in the MoH and its partners have received specialist training in emergency risk communication. The number should be broadened by providing training to all key staff members in the MoH, its partner ministries and its network of health promoters.

R.5.2 Internal and partner communication and coordination

Score 3: Developed capacity. Robust mechanisms are in place for communication coordination with government sector partners (MoH Emergency Committee, HCCD, Media Committee) and engagement with key stakeholders such as health-care workers, civil society organizations and the private sector. Coordination extends to local level as the Health Promotion Supervisor is a member of local health committee in governorates. The system has proved reasonably effective in recent emergencies such as outbreaks of MERS CoV. Nonetheless, coordination does not extend to all partners and stakeholders, and there is no programme to text coordination systematically.

Strengths/best practices

- The Director, Health Communication and Awareness Directorate sits on the MoH Emergency Committee.
- The Media Centre and Media Committee coordinate government communication.
- Engagement with stakeholders exists at both national and local level.

Areas that need strengthening/challenges

- Coordination should include all relevant partners, and SOPs for communication coordination should be developed.
- The SOPs should be tested regularly through a programme of simulation exercises.

R.5.3 Public communication

Score 3: Developed capacity. The Health Communication and Awareness Directorate and its health promotion network is able to conduct proactive public outreach on a mix of platforms (newspapers, social media, television, journalists, SMS) at national and local level. In order to achieve a capacity score of 4, engagement with audiences and media needs to be continuous, guided by risk communication best practice and to have comprehensive geographical coverage.

Strengths/best practices

- The development of audiovisual communications is cost-free in cooperation with the national TV station.
- The use of social media has proven effective for risk communication.
- Local level communication is assured through a network of health promoters.

Areas that need strengthening/challenges

- A system for feedback and engagement with audiences should be developed.
- Public communication capacity should be increased so that it becomes continuous.
- Risk communication expertise needs to be increased within the Health Communication and Awareness Directorate so that public communication can be guided by best practices.

R.5.4 Communication engagement with affected communities

Score 2: Limited capacity. Social mobilization, behaviour change communication and community engagement are an established part of the national health communication strategy. Information, education and communication materials are developed by the Directorate for Health Communication and Awareness and pretested with stakeholders. The network of health promoters and the local health committees involve key local stakeholders. Nonetheless, the health promotion system at the governorate level has no financial or human resource autonomy. It is therefore not a decentralized system as envisaged at score level 3.

Strengths/best practices

- The Directorate for Health Communication and Awareness has capacity in the areas of social mobilization, behaviour change communication and community engagement.

- Community engagement is assured at the local level via health promoters in governorates and local health committees.

- Systematic pretesting of information, education, and communication materials occurs with stakeholders.

Areas that need strengthening/challenges

- Increased focus should be placed on listening to communities and understanding their issues, beliefs and concerns. A first step towards this could be to develop the listening and feedback role of health promoters at local level. In a second phase, systematic studies of communities' knowledge, attitudes and beliefs could be conducted, perhaps in partnership with a university.

- Health promotion teams at the level of governorates would need a significant degree of financial and human resource autonomy for Jordan to have a decentralized system of community engagement.

R.5.5 Dynamic listening and rumour management

Score 2: Limited capacity. Ad hoc detection of rumours and listening to communities takes place via the Directorate for Health Communication and Awareness in Amman (media monitoring) and the health promoters in the governorates. However, these activities are not systematic. The danger is that risk communication signals go wrong, are missed, or only spotted at a late stage. As seen in the Ebola epidemic in West Africa, failure to listen or to identify rumours early can result in the response strategy being ineffective.

Strengths/best practices

- Monitoring of social and mainstream media to detect rumours is in place.

- There is evidence of successful management of rumours at local level during vaccination campaigns.

Areas that need strengthening/challenges

- Systematic listening and rumour management needs to be developed and implemented. As a first step, make listening and rumour management part of the role of the health promoters. In the longer term, Jordan could involve a university partner in further elaborating its systems for dynamic listening and rumour management.

Relevant documentation

- Ministry of Health's National Risk Communication Contingency Plan.

- Hashemite Kingdom of Jordan IHR Self-Assessment, 2016.

- Jordan EVD Assessment Mission, Short Report, 2015.

- Mission of Joint WHO/MoH expert mission for the MERS CoV, Amman, Jordan, 20–22 September 2015.

- WHO IHR Assessment Mission to Jordan, 2014.

OTHER

Points of entry

Introduction

All core capacities and potential hazards management apply to points of entry, which enforce health measures to prevent the spread of diseases. States Parties are required to maintain core capacities at designated international airports and ports (and where justified for public health reasons, designated ground crossings) which will implement specific public health measures required to manage a variety of public health risks.

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

Jordan level of capabilities

Jordan has three airports, one sea port (Aqaba) and five ground crossings. It has designated Queen Alya international airport, Aqaba port and Al Omary ground crossing for IHR implementation. The public health and medical services are provided mainly by the MoH and by airport, ground crossing and port operators. The Ministry of Agriculture controls the import of animals and agricultural products at all points of entry (PoE). The MoH is the competent authority for all PoE. PoE have international communication links with those in other countries. Means of communication are available to share information on public health events/measures. Procedures are functional for communication between the pilot-in-command of aircraft, master-in-command of a ship carrying suspected cases on board, and competent authorities at airports and ports; however, these are neither documented nor maintained on a routine basis.

A clinic is available in the public area of the airport, port and the ground crossing, which provides services for ill travellers and those accompanying them. Personnel and ambulances are also available to transport ill travellers to nearby medical and diagnostic facilities unavailable in these clinics. Sufficient personnel are available to run the daily workload at the clinics. However, staff at PoE are not sufficiently trained to assess, treat and isolate ill travellers and affected animals. Public health programmes including safe food and water management at PoE are functioning. Safe environment for travellers also includes public washroom premises and catering facilities. Inspection programmes for imported goods are in place with online reporting to the concerned sectors/ministers. However data on these programmes are not regularly shared with the competent authority.

Vector surveillance and facilities around PoE are in place and part of national entomology surveillance. Vector control measures, implemented based on the results of vector surveillance, are managed by subcontractors.

A public health contingency plan for all hazards is in place in the airport only. The plan includes procedures to deal with ill travellers. An isolation area at the airport is easily reachable through an external or internal emergency passage. Arrangements with the Ministry of Agriculture are in place for assessment and quarantine of animals; however the quarantine services need enhancements. Aqaba port has the capacity to issue ship sanitation certificates, although the model used for these certificates was not shared with the JEE team.

Recommendations for priority actions

- Improve the animal quarantine services at the PoE.

- Enhance coordination between the different stakeholders at the PoE and the MoH through regular meetings and sharing of data related to the functioning of public health and inspection programmes.

- Develop a plan to train personnel providing health services at the PoE to recognize disease symptoms, and to be familiar with procedures for prompt assessment, care and reporting of ill travellers, and infection control techniques for their safe transfer, including the use of personal protective equipment.

- Develop a multi-hazard public health contingency plan for each PoE as an integral part of the emergency plan.

- Ensure the use of the IHR-recommended model of ship sanitation certificates at Aqaba port.

Indicators and scores

PoE.1 Routine capacities are established at PoE

Score 3: Developed capacity. The designated PoE has access to equipment and personnel for the transport of ill travellers to an appropriate medical facility. Inspection programmes to ensure a safe environment are functioning but not at all PoE. A functioning programme for vector surveillance and control at PoE and nearby facilities is in place.

Strengths/best practices

- Communication with other international PoE is in place.

- Public health and inspection programmes for imported goods are in place and functioning.

- Vector surveillance and control programme are functioning and maintained.

- Access to medical facilities at PoE and referral arrangements to other health facilities are in place.

- The IHR health parts of the Aircraft General Declaration and Maritime Declaration of Health are used.

Areas that need strengthening/challenges

- Quarantine services at the airport are used for birds only. Other imported animals are transported to the quarantine area in Amman city. Maintenance of safe transport of these animals is highly desirable to minimize the risk of transmission of infections.

- Turnover among personnel is high, and a training programme/plan is lacking to ensure the availability of trained personnel to carry out all public health functions on a continuous basis.

- A mechanism for information-sharing on public health and inspection programmes with the competent authority should be set up to facilitate the early detection and rapid response to public health events.

- Other ground crossings in the country are not designated for IHR implementation; however, effective public health surveillance and response at these crossings is necessary to minimize the risk of public health hazards spreading to and from neighbouring countries.

PoE.2 Effective public health response at PoE

Score 1: No capacity. Public health contingency plans for all hazards for each point of entry are not in place except for Queen Alya international airport.

Strengths/best practices

- Queen Alya international airport has a public health contingency plan, developed in coordination with the different stakeholders at the airport.

- SOPs are in place in the other PoE to respond to specific events.

- A space to isolate ill passengers from others is designated at Queen Alya international airport.

Areas that need strengthening/challenges

- The public health contingency plan in Queen Alya international airport needs to be tested and updated accordingly.

- Other PoE need to develop public health contingency plans with the involvement of the different stakeholders.

- Existing SOPs can be included as annexes to the plan but generic SOPs need to be developed.

Relevant documentation

- Emergency plan for Queen Alya international airport.

- National Aviation Public Health Emergency Preparedness for Public Health Events for Queen Alya international airport.

- Aqaba Port Occupational Health and Safety Plan.

Chemical events

Introduction

State Parties should have surveillance and response capacity for chemical risk or events. It requires effective communication and collaboration among the sectors responsible for chemical safety, industries, transportation and safe disposal.

Target

States Parties should have surveillance and response capacity for chemical risk or events which requires effective communication and collaboration among the sectors responsible for chemical safety, industries, transportation and safe disposal.

Jordan level of capabilities

The growing chemical industry is an important aspect of Jordan's economy. Several laws exist for the safe use of chemicals from manufacturing, transport, sale, waste treatment and public health. Jordan has ratified international chemical conventions with the national focal points within the Ministry of Environment or MoH. Laws on the safe use and storage of hazardous chemicals have also been updated following incidents. Chemical hazards are not under the direct responsibility of the MoH; rather, multisectoral risks are managed by several governmental and nongovernmental agencies, with lead agencies assigned by legislation.

Safe chemical management

The National Profile for Chemicals of the Ministry of Environment is regularly updated and provides an overview of the management of chemical production, export, import and use. Directorates within the MoH play a key role in the safe management of chemicals. For example, the Directorate of Environmental Health drafted a national strategy and workplan on chemical safety, registering chemical poisoning by health directorate, and providing scientific information on chemicals. Gaps exist on preparedness and response to chemical accidents and poisoning control; however, good work has been undertaken to evaluate the impact of chemicals on health (e.g. blood and environmental lead levels). However, it is unclear whether the system for chemical classification, labelling and packaging is globally recognized in Jordan. In addition, the National Profile highlights problems with the safe management of chemicals, notably:

- insufficient accurate information on the quantity of chemicals imported, locally produced, or used;
- insufficient accurate information on chemical waste products due, for example, to poor coordination between competent authorities;
- environmental pollution in concentrated industrial processes for the manufacture and use of chemicals;
- occupational exposure to chemicals due to poor workplace practices and/or adequately trained staff.

A future edition of the National Profile could usefully reflect the requirements of IHR capabilities, and include poison control, surveillance, and emergency and other plans related to chemicals (e.g. those of HCCD).

Emergency preparedness and planning

In 1999, HCCD produced a comprehensive national plan to deal with disasters, including chemical emergencies (industrial and transport accidents). Efforts should ensure that all relevant stakeholders are aware of their roles and responsibilities described in the plan, which should also be updated to reflect IHR responsibilities and cross-referenced with the National Profile for the Management of Chemicals. The plan may describe chemical incidents that may constitute a PHEIC. This ensures that relevant stakeholders with a common mechanism to address , e.g. through public health risk assessments, surveillance, cross-sector reporting or alerting the IHR NFP. A list of toxic chemicals or other dangerous agents as is maintained by different ministries for the safe use, trade and management of chemicals.

Surveillance and reporting

Guidelines exist for toxicosurveillance, e.g. to detect intoxication from exposure to pesticides, which can lead to updated legislation, and health monitoring. Civil Defence is responsible for the management of chemical casualties from occurrence to hospital admission, and all events involving chemicals are recorded in a central database. Within hospitals, a deputy police presence notifies others in the case of poisoning or intoxication. Cases from mass intoxication from chlorine, for example, support collaboration between the receiving hospital and MoH. Engagement with local stakeholders, once SOPs have been developed for the sound management of chemical emergencies. Jordan lacks a comprehensive plan for chemical surveillance or alerts for risk assessment for chemical incidents. Training on chemical surveillance systems and risk assessments of chemical events may be helpful.

Poisons centre

The Poisons Centre manages an online website on poisonings and intoxications, although it is under-resourced and unable to maintain a 24/7 presence. A well-resourced poisons centre integrated in the national health system should be able to perform important tasks related not only to the treatment of poisoned individuals but also risk communication, reporting of exposures (e.g. pesticides) and public health activities (e.g. surveillance). As well as increased resources, the WHO Regional Consultation in 2014 identified a need for training and technical support on database management; strengthening poison/toxicology information for emergency response, and facilitation of twinning between poison centres.

Response

Civil Defence plays a lead role in the response to CBRN incidents: five regional units provide a 24/7 service dealing with hazardous material incidents. Hazmat units are well trained and have an excellent mechanism to work with specialist chemical units of the Joint Armed Forces. Civil Defence and JAF receive funding from foreign governments to strengthen their response capacity. Civil Defence has information on specific chemical hazards to help manage events, although further capability may support mitigation of risks presented by chemicals.

Chemical workforce

Workforce development and retention of trained staff specialized in the management of chemicals and chemical emergencies (e.g. toxicologists) is important although budgetary restrictions may play require consideration.

Recommendations for priority actions

While several laws govern the safe use of chemicals, including public health, these instruments require review to ensure that all IHR-related elements to chemicals are met.

- Develop a national strategic plan for chemical safety that prioritizes actions of chemical stakeholders (e.g. occupational health, environmental pollution, accurate lists of hazardous chemicals and risk mapping).

- Update the national intersectoral plan for chemical emergencies, which describes the roles and responsibilities of different stakeholders (e.g. surveillance, environmental monitoring, epidemiological studies, toxicology, laboratory analysis, crisis communication, EOC activation) for IHR requirements.

- Integrate the revised chemical emergency plan into the national strategic plan for health crises.

- Integrate further resources (e.g. 24/7) and chemical units as well as enhanced engagement with local stakeholders.

Indicators and scores

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

Score 2: Limited capacity.

Strengths/best practices
- The Ministry of Interior (Civil Defence) is mandated as the lead authority for chemical accidents and carries out its functions effectively.

- A poisons centre is available within the Chemical Safety Department of the MoH.

- A comprehensive civil defence plan to deal with disasters and emergencies is also available.

- Information is available on the safe management of chemical incidents and poisonings.

Areas that need strengthening/challenges
- All relevant stakeholders should be made aware of their roles and responsibilities as described in the plan.

- Sharing the quick wins of the Civil Defence Plan with MoH, Poison Centre and Environment Ministry will help ensure these plans are reflected in the preparedness plans of others.

- Equipment and training for an efficient clinical response for chemicals may require further support.

- Good work on reporting chemical incidents and poisonings by several authorities' modification of these systems will ensure that effective alert, reporting and surveillance help meet IHR requirements.

- Jordan maintains a good but inadequately resourced poisons centre; it provides information, case management information and laboratory testing, but lacks investment in infrastructure.

CE.2 Enabling environment is in place for management of chemical Events

Score 2: Limited capability.

Strengths/best practices

- Under the Ministry of Environment, Jordan operates an integrated programme for the management of chemicals. A National Profile of Management of Chemicals is available and regularly updated, in coordination with other governmental, nongovernmental stakeholders and relevant committees.

- Legislation is in place and Jordan has ratified important legislation on good management and governance of chemicals.

- While emergency response plans exist for civil defence, they have not been updated or made available to key stakeholders. There is therefore scope to demonstrate chemical capacity with regard to IHR.

Areas that need strengthening/challenges

- Updating national plans and procedures to incorporate IHR requirements with regard to chemicals is important to demonstrate effective cross sectoral work for PHEIC (e.g. food, water, air, soil, drug-borne contamination, chemical accidents, occupational exposures and deliberate release).

- Integration of chemical-specific emergency plans into strategic national plans for health emergencies requires that roles and responsibilities (e.g. surveillance, monitoring, epidemiology, toxicology, laboratory analysis, crisis communication) in chemical emergencies are well defined and tested through exercises.

Relevant documentation

- National Profile for the Management of Chemicals, 4th edition 2014, Ministry of Environment.

- Regional consultation on Strengthening national capacities of preparedness and response to chemical events as required under International Health Regulations 2005 (IHR).

- Assessment of the readiness of Jordan's radionuclear and chemical capacities for IHR implementation, WHO Workshop Report, 31 March 2014.

- Civil Defence Plan for Disasters and Emergencies, 1999, Higher Council of Civil Defence.

- Public Health Law No. 47, 2008.

- International Health Regulations (IHR) and chemical events, 2015, WHO. ISBN 9789241509589.

Radiation emergencies

Introduction

State Parties should have surveillance and response capacity for radio-nuclear hazards/events/emergencies. It requires effective communication and collaboration among the sectors responsible for radio-nuclear management.

Target

States Parties should have surveillance and response capacity for radio-nuclear hazards/events/emergencies. It requires effective communication and collaboration among the sectors responsible for radio-nuclear management.

Jordan level of capabilities

The National Committee for Radiological Emergencies, established by the Government in January 2014, drafted a National Radiological Emergency Plan detailing the roles and responsibilities of responding competent authorities. The Plan was approved in February 2016 by the Minister of Interior as Head of the Supreme Counsel of Civil Defence. However, the Plan will need to be integrated into the arrangements and strategy of the NCSCM. The Government also established by order of the Cabinet a National Nuclear Security Committee and has a published the National Policy on Nuclear Safety and National Register of Radiation Sources.

The Energy and Minerals Regulatory Commission as the competent regulatory authority has a range of legislation, systems of work, instructions and policies on the safe use and control of radiation across all relevant sectors.

Recommendations for priority actions

- Establish immediate coordination and communication between the focal points of IHR and IAEA.

- Conduct simulation exercises for the medical management of radiation casualties.

- Ensure access of the National Radiological Emergency Plan to all sectors including ground staff, and develop sectoral plans for the response to radiation emergencies.

- Establish a mechanism for information-sharing between radiation and public health sectors.

Indicators and scores

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

Score 3: Developed capacity. Technical guidelines or SOPs developed, evaluated and updated for the management of radiation emergencies (including risk assessment, reporting, event confirmation, notification, and investigation).

Strengths/best practices

- The Energy and Minerals Regulatory Commission has automated radiation screening at PoE for vehicles.

- Automated environmental monitoring stations are connected to the Energy and Minerals Regulatory Commission for gamma and gross alpha/beta counts.

- The Energy and Minerals Regulatory Commission has two mobile environmental monitoring labs and has undertaken a countrywide environmental sampling programme.

Areas that need strengthening/challenges

- Provision for the protection of first responders and emergency workers against ionising radiation needs to be put in place. The Emergency Management System does not provide dosimeters, basic knowledge on radiation hazards, SOPs or personal protective equipment.

- Operational planning is needed across government sectors developing technical guidelines and SOPs for first responders and all those undertaking radiological environmental monitoring; data exchange arrangements should be created to inform a full public health risk assessment (e.g. environmental monitoring data between the Energy and Minerals Regulatory Commission and JFDA).

- Transport requires a permit from the Energy and Minerals Regulatory Commission.

- Samples are randomly taken and analysed from shipments.

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

Score 3: Developed capacity. An operational radiation emergency response plan exists with intersectoral participation (could be part of national emergency response plan) and national policies, strategies or plans for national and international transport of radioactive material, samples and waste management including those from hospitals and medical services are established.

Strengths/best practices

- A National Radiological Emergency Plan has been approved by the Minister of Interior.

Areas that need strengthening/challenges

- Coordination and communication mechanisms need to be formalized between national authorities responsible for radiological and nuclear events and MoH and/or IHR NFP.

- Protection of first responders and emergency workers against ionising radiation needs to be established. The Emergency Management System does not provide dosimeters, basic knowledge on radiation hazards, standard procedures or personal protective equipment for this group.

- Transport requires a permit from the Energy and Minerals Regulatory Commission

- Operational planning must be put in place across government sectors developing technical guidelines and SOPs for first responders and all those undertaking radiological environmental monitoring; data exchange arrangements are needed to inform a full public health risk assessment (e.g. environmental monitoring data between the Energy and Minerals Regulatory Commission and JFDA).

Relevant documentation

- IAEA Emergency Preparedness and Response Information Management System Report on National Arrangement to Face Nuclear or Radiological Emergencies Member State: Jordan; 5 October 2016.

- National Radiological Emergency Plan, National Committee for Radiological Emergency (approved by Supreme Counsel of Civil Defence, February 2016).

- Overview of the National Regulatory Infrastructure; Majid I. Hawari; Energy and Minerals Regulatory Commission, February 2016.

- IAEA Mission Report on the Integrated Nuclear Infrastructure Review Mission Phase 2; 4–14 August 2014, Amman, Jordan.

- Energy and Minerals Regulatory Commission website, Legislation and Regulatory Documents (www.emrc.gov.jo).

OTHER

Appendix: Joint external evaluation background

Mission place and dates

The mission took place in Amman, Jordan from 28 August to 1 September 2016. The team held multisectoral discussions and site visits in the capital city of Amman.

Mission team members

- Mika Salminen (Team co-lead), National Institute for Health and Welfare, Helsinki, Finland
- Dalia Samhouri (Team co-lead), WHO Eastern Mediterranean Regional Office, Cairo, Egypt
- Kashef Ijaz, Centers for Disease Control and Prevention, Atlanta, USA
- Dayle Edwards, Public Health England, London, United Kingdom
- Rob Orford, Public Health England, Cardiff, United Kingdom
- Markus Tibbo, FAO Regional Office for the Near East and North Africa, Cairo, Egypt
- Abdulla Asiri, Ministry of Health, Riyadh, Saudi Arabia
- Fatma Al Attar, Ministry of Health, Dubai, United Arab Emirates
- Ezzeddine Mohsni, Eastern Mediterranean Public Health Network, Amman, Jordan
- Ali Ardalan, Tehran University of Medical Sciences, Tehran, Iran
- Enrico Davoli, Consultant, Emergency Response Operations, Latina, Italy
- Ben Duncan, Freelance Risk Communication Expert, Edinburgh, United Kingdom
- Stéphane Saporito, Communication Officer, Journalist/Cameraman, Geneva, Switzerland
- Genevieve Howse, Principal Howse Fleming Legal, La Trobe University, Melbourne, Australia

Objectives

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

b) Review all related documents;

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

d) Recommend priority actions to update and finalize the national plan to achieve and maintain IHR capacities for global health security.

Limitations and assumptions

- The assessment lasted one week, which limited the amount and depth of information that could be managed.
- It is assumed that the results of this assessment will be made publicly available.
- The assessment is not an audit, and information provided by Jordan will not be independently verified. Information provided was discussed and an assessment rating was mutually agreed between the host country and the assessment team.

Preparation and Implementation of the Mission

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

- A national training was conducted between 7-8 August to provide national stakeholders with the information and resources necessary to successfully participate in JEE process; and provide guidance on self-reporting requirements and responsibilities for the JEE process.

- Background documents have been collected and shared with the JEE team along with the complete JEE tool for review

- The Mistry of Health of Jordan with the support of WHO Jordan Country Office put in place the necessary administrative and logistics arrangements to facilitate the deployment of the external experts to the country.

- One day orientation was conducted to the JEE external experts to orient them on the JEE process and tool, objectives and expected outcomes of the JEE 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 with senior officials and with national technical teams involved in the evaluation to present the outcomes of the JEE; best practices and priority actions took place on the last day of the mission.

Key host country participants and institutions

Please add

Supporting documentation provided by host country

- Self-reporting on JEE assessment tool, Jordan.

- Presentation on overview of the health system in Jordan).

- Technical area presentations on each of the 19 technical areas of the JEE tool.

- Online repository of supporting documents, notifications, data sources, previous assessments and web links for the 19 technical areas of the JEE tool.