JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of the

REPUBLIC OF SOUTH AFRICA

Mission report:
27 November–1 December 2017

World Health Organization

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Acknowledgements

Abbreviations

AFP	acute flaccid paralysis
ARC-OVR	Agricultural Research Council-Onderstepoort Veterinary Research
AMR	antimicrobial resistance
ARC	Agriculture Research Council
CBRN	chemical, biological, radiological and nuclear
CCHF	Crimean-Congo haemorrhagic fever
cMYP	comprehensive multi-year plan
CWC	Chemical Weapons Convention
DAFF	Department of Agriculture, Forestry and Fisheries
DHIS	District Health Information System
DoH	Department of Health
EVD	Ebola virus disease
FETP	field epidemiology training program
GOARN	Global Outbreak Alert and Response Network
HCAI	health care-associated infection
HR	human resources
IAEA	International Atomic Energy Agency
IHR	International Health Regulations
IHR NFP	National International Health Regulations Focal Point
IMS	incident management system
INFOSAN	International Network of Food Safety Authorities
IPC	infection prevention and control
JEE	joint external evaluation
KNPS	Koeberg Nuclear Power Station
MCM	medical countermeasures
MNORT	multi-sectoral national outbreak response team
MoU	memorandum of understanding
NAPHISA	National Public Health Institute of South Africa
NATHOC	National Health Operations Centre
NATJOC	National Joint Operational Centre
NATJOINTS	National Joint Operational and Intelligence Structure
NDMC	National Disaster Management Centre
NECSA	South African Nuclear Energy Corporation
NFP	national focal point
NHLS	National Health Laboratory Service
NICD	National Institute for Communicable Diseases
NIOH	National Institute for Occupational Health

NMC	notifiable medical condition
NNDMP	National Nuclear Disaster Management Plan
NPC	South African Council for the Non-Proliferation of Weapons of Mass Destruction
PHEC	Public Health Emergency Committee
PHEIC	public health emergency of international concern
PHEOC	Public Health Emergency Operations Centre
PoE	point of entry
QA	quality assurance
QMS	quality management system
RASFF	Rapid Alert System Food and Feed
RED	reaching every district (strategy)
RVF	Rift Valley fever
SADC	Southern African Development Community
SAFETP	South Africa Field Epidemiology Training Program
SANAS	South African National Accreditation System
SLIPTA	Stepwise Laboratory Quality Improvement Process Towards Accreditation
SLMTA	Strengthening Laboratory Management Toward Accreditation
SOP	standard operating procedure
US CDC	United States Centers for Disease Control and Prevention
VPH	Directorate Veterinary Public Health
WAHIS	World Animal Health Information System

Executive summary

The joint external evaluation (JEE) in South Africa has been an enlightening experience. The attention and dedication which the national team has given to their self-assessment has been remarkable – even at the ground crossing point of entry (PoE) between South Africa and Swaziland, as well as in the provincial health facilities, the local team had confidently and competently completed their section of the assessment. That level of commitment is reflected in other technical areas, and among the staff responsible for those areas, particularly immunization.

It is important to note that the scoring does not completely capture the capacity of South Africa in a number of areas. In several technical areas, the country is operating at a level of demonstrated or even sustained capacity (scores 4 and 5), but what is often lacking is the enabling national plan or legislation (for example with respect to medical countermeasures and personnel deployment). Once such plans or pieces of legislation are developed and formalized/enacted, the country's scores in those areas will increase. In order to maintain the integrity of the JEE tool, however, scores in certain technical areas were lowered due to the lack of a national plan. In two instances, legislation on areas related to IHR and health security is pending in parliament, which shows South Africa's commitment to the International Health Regulations (IHR) 2005 and health security: the International Health Regulations Bill, 2013 and the National Public Health Institute of South Africa (NAPHISA) Bill. Once these bills are passed by parliament they will form the foundation for the enabling environment for the implementation of the IHR by South Africa. There is therefore an urgent need to fast track the enactment of these bills.

Overall, the external evaluation team noted that for most of the technical areas, there is developed, demonstrated and in some instances sustainable capacity, with competent and committed staff. An example of a best practice is the designation of certain PoEs (ground crossings) within the country which are IHR compliant. Another best practice was noted with real-time surveillance, where the level of systematic communication and collaboration between the human and animal health sectors, as part of the One-Health approach, is remarkable, in addition to South Africa's participation in the 2012 OIE PVS assessment. A gap was noted with the country's health workers being predominantly focused on HIV/AIDS and TB in the recent past, to the exclusion of other communicable diseases.

The assessment of the national laboratory system revealed that South Africa provides support for proficiency testing (a component of quality assurance programmes in laboratories) to over 10 countries in Africa, and assists other countries with their SLMTA/SLIPTA programmes. Additionally, the BSL-4 laboratory (the only one on the continent) is impressive. Staff in the provincial health facilities also exhibited a high level of dedication to improve the health situation of the population and improve health security.

South Africa has achieved fairly high scores for the majority of technical areas. This is largely attributed to a high level of political will and technical commitment. However, it is imperative to continue investing in IHR capacity to maintain the level of capacity observed in South Africa. Further, South Africa has demonstrated a very high level of collaboration across the technical areas. There is a clear willingness among multisectoral partners (human, animal, port health and security sectors) to work together. This collaborative approach should be facilitated by a clear chain of command and decision-making structures to allow for scaling up in times of emergency.

Finally, the external evaluators found several activities at designated PoEs that could be considered a best practice – not just to be rolled out for the country but also for the Southern African Development Community (SADC) subregion and the continent as a whole. For example annual audits conducted at PoEs to determine their readiness and ensure implementation of action plans. A 2015 annual audit done in KwaZulu-Natal identified that human resources in certain PoEs are stretched; in order to continue to provide the level of service and excellence currently established, more personnel are urgently needed.

South Africa scores

Technical areas	Indicators	Score
National legislation, policy and financing	p.1.1 Legislation, laws, regulations, administrative requirements, policies, or other government instruments in place are sufficient for implementation of IHR (2005)	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 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	4
Antimicrobial resistance	P.3.1 Antimicrobial resistance detection	3
	P.3.2 Surveillance of infections caused by antimicrobial-resistant pathogens	3
	P.3.3 Health care-associated infection (HCAI) prevention and control programmes	1
	P.3.4 Antimicrobial stewardship activities	2
Zoonotic diseases	P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens	4
	P.4.2 Veterinary or animal health workforce	4
	P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases are established and functional	4
Food safety	P.5.1 Mechanisms for multisectoral collaboration are established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases	3
Biosafety and biosecurity	P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal and agriculture facilities	3
	P.6.2 Biosafety and biosecurity training and practices	3
Immunization	P.7.1 Vaccine coverage (measles) as part of national programme	3
	P.7.2 National vaccine access and delivery	5
National laboratory system	D.1.1 Laboratory testing for detection of priority diseases	5
	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	3
Real-time surveillance	D.2.1 Indicator- and event-based surveillance systems	3
	D.2.2 Interoperable, interconnected, electronic real-time reporting system	2
	D.2.3 Integration and analysis of surveillance data	4
	D.2.4 Syndromic surveillance systems	4
Reporting	D.3.1 System for efficient reporting to FAO, OIE and WHO	3
	D.3.2 Reporting network and protocols in country	3
Workforce development	D.4.1 Human resources available to implement IHR core capacity requirements	3
	D.4.2 FETP[1] or other applied epidemiology training programme in place	4
	D.4.3 Workforce strategy	2

1 FETP: Field epidemiology training programme

Technical areas	Indicators	Score
Preparedness	R.1.1 National multi-hazard 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	3
Emergency response operations	R.2.1 Capacity to activate emergency operations	2
	R.2.2 EOC operating procedures and plans	2
	R.2.3 Emergency operations programme	4
	R.2.4 Case management procedures implemented for IHR relevant hazards.	4
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 in place for sending and receiving medical countermeasures during a public health emergency	2
	R.4.2 System in place for sending and receiving health personnel during a public health emergency	2
Risk communication	R.5.1 Risk communication systems (plans, mechanisms, etc.)	3
	R.5.2 Internal and partner communication and coordination	3
	R.5.3 Public communication	4
	R.5.4 Communication engagement with affected communities	3
	R.5.5 Dynamic listening and rumor management	4
Points of entry	PoE.1 Routine capacities established at points of entry	4
	PoE.2 Effective public health response at points of entry	4
Chemical events	CE.1 Mechanisms established and functioning for detecting and responding to chemical events or emergencies	3
	CE.2 Enabling environment in place for management of chemical events	3
Radiation emergencies	RE.1 Mechanisms established and functioning for detecting and responding to radiological and nuclear emergencies	2
	RE.2 Enabling environment in place for management of radiation emergencies	2

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

PREVENT

National legislation, policy and financing

Introduction

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

State parties should ensure provision of adequate funding for IHR implementation through national budget or other mechanism.

South Africa's level of capabilities

In South Africa, there are many pieces of legislation, policies, rules and regulations that support the implementation of IHR (2005). These include the Constitution of South Africa (1996), section 227 (1) (b); the Health Act No, 2003 (Act No. 61 of 2003), section 27 (1) (a), (2) & (3) – granting the right to access health care services and emergency treatment within reasonable legislative and available resources, section 90 (1) (j), (k) - relating to regulations on communicable diseases and notifiable medical conditions; the Public Finance Management Act, 1999 (Act No. 1 of 1999), section 16 – which gives the minister the right to authorize the use of funds in emergency situations. Section 25 of this Act, also gives authority to Members of the Executive Council for finance[2] to do the same. Other Acts include: the Municipal Finance Management Act No, 2003 (Act No. 53 of 2003); the Municipal Management Act, 2000 (Act No. 32 of 2000); and the Disaster Management Act, 2002 (Act No. 57 of 2002), enabler 3 – which talks to funding arrangement for disaster risk management.

In the animal health sector several pieces of legislation can be utilized, among them the Animal Diseases Act, 1984 (Act No. 35 of 1984) and the Regulations and Meat Safety Act, 2000 (Act No. 40 of 2000).

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2   The member of an Executive Council of a province responsible for finance in the province (cf. http://www.treasury.gov.za/legislation/PFMA/PFMA%201999%20as%20amended%20March%202017.pdf).

South Africa has carried out a comprehensive assessment of relevant legislation, administrative requirements and other government instruments for IHR (2005). Based on that there is a legislative bill for the implementation of IHR (2005) in process at the parliament indicating that some level of assessment has been carried out and the extent of the assessment will be further investigated.

Coordination between different parts of the government is carried out through the Multi-Sectoral National Outbreak Response Team (MNORT) and the structures attached to it. During an upcoming assessment, it will be analysed whether further Memoranda of Understanding (MoUs) or standard operating procedures (SOPs) will be needed to strengthen this system.

Although there is no dedicated funding or budget for IHR, it should be noted that a budget line is available for routine activities, while supplementary funds are released for management of emergencies. The effectiveness of these funding opportunities has been proven during a number of events, for example the country's support to countries in West Africa during the Ebola Virus Disease epidemic in 2014–2015.

In addition, the country has a number of bilateral agreements and is working with the SADC countries in matters concerning health security and IHR.

Recommendations for priority actions

- Use the assessment of all legal instruments and policies done to ensure they are aligned with IHR (2005).
- Fast track the enactment and domestication of the legislative process on the International Health Regulations Bill, 2013.

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

Strengths/best practices

- A system is in place to provide funds for emergencies.
- Cross-border agreements, MoUs and protocols are in place with SADC countries.
- Strong border collaboration exists through the capacity building of district health organizations.
- Regular cross-border meetings take place.

Areas which need strengthening/challenges

- Development and implementation of MoUs between health and other departments/sectors has yet to be done.

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

Strengths/best practices

- The IHR Bill and the National Public Health Institute of South Africa (NAPHISA) Bill are before parliament to be enacted.
- Strong coordination exists through MNORT monthly meetings, cross-border meetings and interdepartmental meetings.

Areas which need strengthening/challenges

- The IHR and NAPHISA Bills have not yet been enacted by parliament.
- Mapping of national health risks and resources has not been done jointly with other departments/sectors.

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 nation-wide resources, including the designation of an IHR NFP, which is 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.

South Africa's level of capabilities

South Africa has designated a single person (rather than the required centre) as the national IHR focal point; this position sits within the National Department of Health, Communicable Diseases Chief Directorate. Two additional people back up the IHR focal point, and all three are available 24 hours a day seven days a week. Coordination, communication and advocacy activities are being carried out but there are no standard operating procedures (SOPs) in place guiding the activities, although the terms of reference (ToR) for MNORT is adjudged as equivalent.

The MNORT is where collaboration occurs; this team has direct contact with a number of actors in public health and through the National Joint Operational Centre (NATJOC) to other relevant sectors and the political level. It should be noted that the MNORT has well-defined ToR, defining roles and responsibilities for all sectors and their linkages to the functions of the IHR NFP. The MNORT Committee has regular meetings that increase in frequency during an event. Between agencies, collaboration occurs on a voluntary basis with decisions escalated to the national level if required.

The NATJOC Committee, a government-level multisectoral coordination structure, convenes regularly, and provides the contacts and coordination with the provincial authorities. For situations where multisectoral action is required, specific laws and decrees provide details of the coordination actions that actors from different sectors at the regional and municipal level are required to take.

Although the IHR came into force in 2007 and has had political support in South Africa, there remains a lack of national legal instruments for implementation. In order to ensure continued development of IHR capacity, further evaluation of the present NFP is required for effectiveness. Furthermore, the forthcoming bills on IHR and the National Public Health Institute of South Africa (NAPHISA) must take IHR fully into account and ensure that the regulations are incorporated in the update of any national regulations on these and other issues.

Recommendations for priority actions

- Evaluate the functions of the IHR NFP for effectiveness to identify areas for further improvement and ensure proper designation of the IHR NFP.

- Conduct simulation exercises or evaluate past events to enable a comprehensive vulnerability, risk assessment and mapping exercise.

- Improve the mechanisms in sharing updates of IHR implementation among relevant sectors.

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 4

It should be noted that multisectoral and multidisciplinary coordination and communication mechanisms are in place, tested and updated regularly through exercises or through the occurrence of an actual event and action plans developed to incorporate lessons learned of multisectoral and multidisciplinary coordination and communication mechanisms. However, there are no national SOPs for coordination between the IHR NFP and relevant sectors but the ToR for MNORT is adjudged as equivalent.

Strengths/best practices

- There is political support to implement IHR (2005).

- Multisectoral and multidisciplinary coordination and communication mechanisms (MNORT; National Disaster Management Centre (NDMC); NATJOC; National Joint Operational and Intelligence Structure (NATJOINTS) and other forums) are available and functioning.

- A reporting network and protocols guiding it do exist in the country.

- Public health and security authorities (e.g. law enforcement, border control, customs) are linked during response to a suspected or confirmed biological event.

Areas which need strengthening/challenges

- The designation of NFP and implementation of IHR (2005) should be seen as a country activity; additional advocacy efforts are required to increase stakeholders' commitment to this idea.

- Human resources linked to the NFP need to be improved to support IHR coordination, communication and advocacy.

Antimicrobial resistance

Introduction

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

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

Target

Support work 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.

South Africa's level of capabilities

AMR management in South Africa is overseen by a Ministerial Advisory Committee on AMR, which includes all relevant sectors (including human, animal and environmental health, as well as pharmacists, laboratories and others represented). A comprehensive document, the South African *Antimicrobial resistance national strategy framework: 2014–2024* represents a collaborative approach and is a living document (and is currently being updated).

In human health, South Africa launched in 2014 and is implementing a national plan for laboratory testing of all WHO priority pathogens for AMR at both the National Health Laboratory Service (NHLS) and the National Institute for Communicable Diseases (NICD). There is a national AMR reference laboratory housed at NICD, at the Centre for Health Associated Infections, AMR and Mycoses (CHARM), as well as several state and private laboratory centres able to test and report AMR using the Clinical and Laboratory Standards Institute guidelines. Most laboratories are accredited by the South African National Accreditation System (SANAS) – ISO 15089 – for this testing.

In animal health, a national plan for surveillance and testing of AMR is in development. Currently there is little AMR laboratory capacity, although cross-sectoral training is being delivered by human health laboratory counterparts. For example, a pilot AMR laboratory project on *Salmonella* spp. and *E. coli* isolates from meat products between Department of Agriculture, Forestry and Fisheries (DAFF), the Agricultural Research Council-Onderstepoort Veterinary Research (ARC-OVR) and NICD partners is improving capacity and developing an AMR baseline. In the draft national veterinary AMR surveillance plan, at least one laboratory per province will be a designated an AMR laboratory.

In terms of surveillance for AMR infections in human health there are two tiers of programmes. The first one is the GERMS programme (established in 2002) targeting AMR for ESKAPE pathogens (*Enterococcus*

faecium, Staphylococcus aureus, Acinetobacter baumannii, Pseudomonas aeruginosa and Enterobacter spp) which was launched in 2010 at 14 academic sentinel sites. It has a national database with other organisms such as *Streptococcus pneumonia* and *Neisseria gonorrhoea,* and ongoing monitoring, analysis and input from members of GERMS Principal Investigators at the annual meeting. The GERMS annual reports are available on the NICD website. The second programme is electronic surveillance, which provides resistance maps compiled of public and private antimicrobial susceptibility data. There are plans to develop integrated electronic data exchange between human, animal and environmental sources of AMR pathogens (e.g. typing) in the future. However, there is no such programme for pathogen surveillance in animal health, with only ad hoc clinical reports of AMR by public and private field veterinarians. In the draft plan for national veterinary surveillance, a farm-to-retail approach will be implemented in phases, with some farms and abattoirs used as sentinel sites.

Currently, there is no concrete national plan targeting health care associated infections, though ad hoc implementation exists incorporating infection prevention and control (IPC) policies, operational plans, SOPs, and audits at health facilities, with isolation units and trained IPC professionals at tertiary hospitals, guidelines to protect health care workers from HCAI and surveillance targeting cluster detection in high-risk groups. In the pipeline is the pilot study on HCAI surveillance at sites in three provinces in South Africa.

In terms of antimicrobial stewardship, South Africa has a national strategy and implementation plan for AMR, which is currently being reviewed and will further incorporate animal health issues. It has also published Guidelines on Implementation of the Antimicrobial Strategy in South Africa: One Health Approach & Governance, June 2017, which articulates governance structures of stewardship in human health at national, provincial, district, and institution level. South Africa has two national training centres for antimicrobial stewardship, which train hospital teams from across the country in how to set up stewardship structures and perform bedside stewardship. All antibiotic use in humans requires a prescription from a registered medical professional under the Medicines and Related Substances Act (101 of 1955 as amended) and the Nursing Act (33 of 2005). Furthermore, there are Standard Treatment Guidelines and Essential Medicines Lists, updated on a three-year cycle, which are to include guidelines on use of antimicrobials for both inpatient and outpatient contexts. There have been some small scale patient advocacy and public communications initiatives in human health. However, there is a need to get a greater understanding of which health facilities are currently running antimicrobial stewardship programmes to target greater national consistency. Antimicrobial use patterns in human health are monitored at the provincial level where there are also AMR governance structures, but provinces are moving at different speeds on antimicrobial stewardship.

In animal health, the *South African veterinary strategy 2016–2026* covers veterinary medicines and AMR under pillar 2 on veterinary public health. A more targeted national guideline on appropriate antibiotic use for veterinarians does exist, although it has not yet been updated since the first publication and no related surveys have taken place to review implementation. However, national antibiotic use patterns in animal health are monitored by the South African Animal Health Association on request from the Chief Veterinary Officer to comply with an OIE directive to Member States, based on collating and reporting data on kilograms of active substance sold in the country. The DAFF is also actively involved in public and industry extension and communication activities targeting AMR, including presentations at conferences and workshops.

Antimicrobials in animal health are divided into those available over-the-counter under the Stock Remedies Act 36 of 1947 managed by the DAFF. According to the OIE PVS report of 2012 this includes tetracyclines, sulphonamides, oral tylosin, and intra-mammary preparations (excluding cephalosporins). This listing has been updated since then by removing colistin and reclassifying it as a scheduled drug. Other antimicrobials are also scheduled under the Medicines Act 101 of 1965 managed by Department of Health (DoH) and requiring veterinary prescription or being dispensed directly by veterinarians. There were standards of practice for off-label use by veterinarians, and the PVS report had noted that some veterinarians

provided antimicrobials to farmers without visiting their animals. The Medicines Act 101 had recently been amended to prohibit the compounding of antimicrobials for use as growth promoters. For over-the-counter antimicrobials, there is no monitoring or training targeting retailers who might be dispensing these drugs in such farm supply stores, to ensure good labelling, appropriate dosage volume, the provision of dosage instructions and associated information such as required withholding periods. It was reported that some form of veterinary para-professional qualification or licensing was being considered in this area to mitigate risks from such over-the-counter sales.

In terms of antimicrobial use in the absence of disease (e.g. as growth promoters in intensive livestock industries), although there are no compulsory restrictions, it was reported that the pig industry had a voluntary programme that had resulted in very little to zero antimicrobial use as growth promoters today, and that the focus was now on developing a similar programme with the poultry and beef feedlot companies. There was good evidence that relevant commercial companies were taking active steps to reduce the use of antimicrobials within their farming operations, often in response to retailer and consumer pressure. It should be noted that use of growth promoters generally involves antimicrobial classes such as the ionophores with less significance to AMR risk to human health.

Recommendations for Priority Actions

- Finalize "One Health" national AMR strategy

- Identify a national infection prevention control (IPC) focal point within the DoH to nationally plan and coordinate more consistently applied HCAI management.

- Develop antimicrobial stewardship guidelines for all levels of health care with designated centres through which implementation will be evaluated and made more nationally consistent.

- Continue to build veterinary laboratory and reporting capacity for AMR testing, finalize the national AMR surveillance plan and implement veterinary AMR surveillance from farm to retail, with AMR database integration with human health.

- Develop and implement veterinarian, retailer and farmer surveys on responsible and prudent use of antimicrobials, particularly targeting industry access and use in the absence of disease (growth promoters), off label provision by veterinarians, and over-the-counter sales of unscheduled antimicrobials from farm supply retailers.

- Review veterinary drug regulation or consider other risk mitigation measures such as AMR training and education of veterinarians, retailers and farmers, in light of the results of both the surveillance and surveys as described above.

Indicators and scores

P.3.1 Antimicrobial Resistance (AMR) Detection – Score 3

Strengths/Best Practices
- There is good capacity in human health to detect and report AMR with a national electronic AMR surveillance database established, incorporating both public and private health data.

Areas which need strengthening/Challenges
- Veterinary laboratory capacity to undertake AMR detection and reporting is currently lacking, but is in the process of being developed. This will build capacity to deliver on a national veterinary AMR surveillance plan, which is also in development.

P.3.2 Surveillance of infections caused by AMR pathogens – Score 3

Strengths/Best Practices

- The longstanding GERMS programme targeting AMR pathogens with 14 academic sentinel sites, a national database, and ongoing monitoring and analysis at the annual GERMS Principal Investigators meetings is a best practice.

- Electronic surveillance developed resistance maps at NICD website with public and private data.

- There are plans to develop an integrated electronic database of human, animal and environmental sources of AMR pathogens (e.g. typing) for relevant stakeholders.

Areas which need strengthening/Challenges

- There is no programme for pathogen surveillance in animal health, with only ad hoc, clinical reports of AMR by public and private sector veterinarians.

P.3.3 Healthcare associated infection (HCAI) prevention and control programmes – Score 1

It was noted during the plenary that the absence of a national multisectoral plan for HCAI/AMR prevention warranted a score of 1 for this indicator. However, the score could quickly increase to 3 following finalization of such a plan.

Strengths/Best Practices

- There is a good level of ad hoc implementation in health care facilities in many provinces incorporating IPC policies, operational plans, SOPs, and audits at health facilities, with isolation units and trained IPC professionals at tertiary hospitals, guidelines to protect health care workers from HCAI, and surveillance targeting cluster detection in high risk groups.

Areas which need strengthening/Challenges

- HCAI programmes need to be made more consistent through a national plan covering all areas of activity that would be consulted on, communicated, implemented and monitored nationally and within each province.

P.3.4 Antimicrobial stewardship activities – Score 2

Strengths/Best Practices

- There is an antimicrobial stewardship strategy and implementation plan in human health, along with essential antimicrobial lists, use guidelines, train-the-trainer and communications/awareness activities in the provinces.

- A good level of antimicrobial use data is being reported in both the animal health and human health sectors at national levels.

- A first version national AMR plan (The Antimicrobial Resistance National Strategy Framework: 2014-2024 which is currently being updated for period 2017-2024 and the Implementation Plan For The Antimicrobial Resistance Strategy Framework in South Africa: 2014-2019 published in 2015) has been developed, including targeting antimicrobial use in animals.

- AMR communications and awareness activities in animal health are ongoing.

Areas which need strengthening/Challenges

- There is a lack of data on AMR in animals and potentially, this may lead to inappropriate antimicrobial use in animals in the country.

- There is a need to move from a plan to finalization and implementation in terms of responsible and prudent use of antimicrobials in animal health, based on outcomes of AMR surveillance and usage surveys.

- There seems to be ongoing use of antimicrobial growth promoters in some commercial livestock industries with lack of antimicrobial use guidelines for the sector.

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 and insect or inanimate vectors may be needed to transfer the microbe. Approximately 75% of recently emerging infectious diseases affecting humans is 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.

South Africa's level of capabilities

South Africa has made excellent progress in both developing and implementing a One-Health approach to zoonotic disease risks and events in the country. There is highly effective information sharing and coordinated activity between the DoH, the DAFF and the Department of Environmental Affairs, but also incorporating other stakeholders, such as from the national security and local government sectors.

Effective strategic fora at the national level include a One Health Steering Committee and a One Health Forum, which meet quarterly, both with formal terms of reference involving relevant stakeholders, including government, academia and the private sector. At the time of the JEE mission, the One Health Forum was in the process of developing a formal One-Health policy for South Africa that was anticipated to encourage complete stakeholder participation. At the technical leadership level, the MNORT is the key mechanism for coordinated zoonotic disease information sharing, analysis and action.

In terms of surveillance, zoonotic diseases have been carefully prioritized and are officially legislated as notifiable to both human and animal health authorities. Both sectors having sufficiently functioning health networks from national to local level to detect and report these priority zoonoses at a reasonable level of sensitivity, although there was room for improvement especially with timeliness on the human health side. Animal health staff at local level also cover zoonoses detection in wildlife. Although some training has been conducted, further training, including training targeting zoonoses detection and response by human health workers at local level, is recommended.

Although there is yet to be a joint electronic real-time reporting system (implementation of which has some IT system constraints to consider), close to real-time cross-sectoral reporting happens where necessary (e.g. rabies). Updated zoonotic disease reporting is provided at monthly MNORT meetings by both human health and animal health staff, providing the opportunity for joint discussion and analysis of zoonotic risks and trends and related risk management and/or response measures. Overseas incidents (as well as domestic ones) are covered, such as the recent zoonotic disease events of plague in Madagascar (rats) or Ebola virus disease in West Africa (bats). In addition, the routine, monthly MNORT meeting can be convened immediately and more regularly as necessary. The strong national collaboration and coordination between human and animal health targeting zoonoses is also reflected down to provincial and district level, although often in a less ongoing way and at a more practical level targeting zoonotic incidents in the country.

South Africa provided numerous examples of effectively coordinated One-Health responses to zoonotic disease events from national to local levels. The most current example of this is rabies management, but others include effective examples were provided for other more sporadic zoonotic disease events of recent years such as highly pathogenic avian influenza (HPAI H5N8 – although not zoonotic), Crimean Congo haemorrhagic fever (CCHF), Rift Valley fever (RVF), anthrax and bovine brucellosis. The DAFF worked with the Department of Environmental Affairs to coordinate safe carcass disposal via composting during the recent HPAI H5N8 outbreak. The collaborative process is now practiced and work planning is in place to pre-identify disposal sites via this partnership. It would be worth testing the One-Health system on a larger scale by conducting a multisectoral simulation exercise involving a major national zoonoses emergency.

Based on the information and evidence provided, South Africa can be regarded as a model country within Africa in terms of developing a One-Health approach to the management and response to zoonotic disease risks both within the country and internationally.

Recommendations for Priority Actions

- Develop and approve a national policy for One Health.
- Conduct training for human and animal health stakeholders with a focus on early detection of zoonoses and joint preparedness and response to emergency zoonotic events, particularly at local level.
- Conduct a joint simulation exercise on a major zoonosis emergency involving all the major stakeholders of MNORT, and including joint operational activities of both the human and animal health networks to the local level.
- Develop a culture of continuous improvement through regularly evaluating and refining the effectiveness of One-Health systems coordination during simulation exercises and actual responses to zoonotic events.

Indicators and scores

P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens – Score 4

Strengths/best practices
- All zoonotic diseases of relevance have been prioritized and legislated as notifiable to both human and animal health authorities.
- The field network in animal health provides sufficient national coverage to ensure good sensitivity of detection of zoonoses in animals followed by timely and transparent cross-sectoral reporting at national to local levels.
- A standard operating procedure (SOP) exists for detecting and responding to priority zoonotic diseases, with ongoing situation reports and laboratory reports also shared as necessary.
- The surveillance and reporting system is particularly well practiced in relation to rabies reports due to the need for urgent multisectoral collaboration for investigation and response. Other zoonoses that had been detected and reported rapidly by either animal or human health authorities included RVF, CCHF, highly pathogenic avian influenza, bovine brucellosis and anthrax.
- All priority zoonoses incidents were also regularly reported to all relevant sectors at monthly MNORT meetings at national level, which allowed for the analysis and discussion of trends, and the possible detection of emerging zoonoses.

PREVENT

Areas which need strengthening/challenges

- It was reported that in the human health sector, zoonotic diseases were often not detected in a timely manner due to difficulty of diagnosis and a lack of awareness at some local levels by both primary health care staff and communities, given a lack of pre-service training and public awareness on zoonoses.

- In some geographical areas coordination of activities targeting zoonoses between human and animal health sectors could be improved, particularly at local level.

- Cross-sectoral testing between human and animal health laboratories within South Africa should be reviewed, especially relating to widening testing capability and for surge capacity, in the spirit of One Health.

P.4.2 Veterinary or Animal Health Workforce – Score 4

Strengths/best practices

- South Africa is blessed with a highly competent, well-educated and registered workforce of veterinarians and veterinary paraprofessionals.

- A new one year compulsory community service period for newly-graduated veterinarians was reported as being effective in "plugging the gaps" in rural and remote areas improving national surveillance and response coverage.

- All veterinarians, including state veterinarians, maintain continuous professional development as an annual requirement for ongoing veterinary registration, including in areas such as veterinary public health.

- The South African Veterinary Council maintains professional standards and codes of conduct by implementing disciplinary action, as well as recognizing specialists, such as veterinary epidemiologists.

- Animal health staff were routinely involved in the cross-sectoral Field Epidemiology Training Program (FETP) and local outbreak response team training.

Areas which need strengthening/challenges

- Expand the number of veterinarians involved in the FETP training courses, including the basic, intermediate and advanced versions.

P.4.3 Mechanisms for responding to zoonoses and potential zoonoses are established and functional – Score 4

Strengths/best practices

- Starting with and emanating from MNORT, South Africa has demonstrated capacity for response to zoonotic incidents, generally well-coordinated between the animal and human health sectors, and down to local implementation level, e.g. rabies, highly pathogenic avian influenza, RVF, CCHF, anthrax and bovine brucellosis.

- Response plans exist including National Guidelines for Epidemic Preparedness and Response as well as disease-specific response plans in both sectors.

- A multisectoral Rabies Advisory Group meets quarterly to review rabies in South Africa including coordinating rabies vaccination in dogs. The group had recently had funding approved for a vaccine bank of 200 000 doses.

Areas which need strengthening/challenges

- In some areas zoonoses response coordination between sectors at provincial and local levels is less strong, and targeted training may better ensure there is nationally consistent application.

Food safety

Introduction

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

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

South Africa's level of capabilities

South Africa has a very sophisticated and comprehensive food safety system, structured in three arms located in the DAFF, the DoH and the National Regulator for Compulsory Specifications (NRCS) under the Department of Trade and Industry.

The DAFF is responsible for quality assurance and the safety of regulated agricultural products when exported. They are also responsible for meat safety, the safety of imported and exported fresh meat, etc. (in the area of animal health, on farms and at abattoirs) as well as the registration of pesticides and stock remedies and the testing for residues (National Chemical Residue Monitoring & Control Programmes).

The DoH controls the importation, manufacture, sale and exportation of processed foodstuffs generally through the development of food safety and nutritional labelling regulations.

The NRCS ensures safety of canned and frozen fish/fish products, fresh seafood and canned meat products (meat content > 10%). They are responsible for the control of imported fish/fish products and the certification of these food products intended for the export market.

South Africa makes use of available international food safety standards and is a member of international food standards setting bodies (Codex Allimentarius) and networks (International Network of Food Safety Authorities, INFOSAN; Rapid Alert system Food and Feed, RASFF). The Codex Alimentarius contact point, RASFF contact point and INFOSAN emergency contact point all reside within the DoH, Directorate of Food Control.

Food Safety law enforcement services are located at the national level for imported foodstuffs and at the municipal level for locally manufactured foodstuffs. National food safety contact points are identified in the three departments initially mentioned as well as in all provinces to act on any food safety incident or emergency (Food Safety Alert Response Team, FSART).

For Foodborne illness, focal persons are nominated and take part in outbreak response teams. Efforts are made to coordinate and share foodborne outbreak information through formal multisectoral coordination platforms (e.g. MNORT); and during investigation of foodborne outbreaks, information exchange takes place at district and provincial levels. However, coordination, collaboration and communication among the

different teams remain suboptimal in particular concerning the identification of the nominated focal points in their regions/provinces. Participation of the focal points from the three arms in their regions/provinces is variable due to suboptimal coordination, collaboration and communication.

During the plenary, the fragmented aspect of the food safety system was raised as a potential challenge to good communication/coordination among key stakeholders. National colleagues indicated the existence of an auditing mechanism that ensures that there is compliance with the norms and standards relating to the functions of Environmental Health Services, of which food safety is one. Forums are established at a local level to discuss and deal with food safety-related issues and representatives from other relevant departments such as the DAFF, Social Development, Basic Education, etc. are part of the forum.

The country demonstrated the ability to detect and respond to food safety issues through illustrated experience of timely detection of residues and contaminants in exported and imported products to South Africa, and response to foodborne outbreaks.

In terms of risk communication, there is a dedicated unit within the DoH that assists in terms of any communication-related issues and also arranges communications campaigns targeting communities with messages on safe food preparation, refrigeration, food hygiene, etc.

During the plenary, the national team was prompted on their procedures in dealing with food safety outbreaks from a human surveillance point of view. Citing the a case of listeriosis, the team indicated they can link human cases to food by whole genome sequencing of both human samples and test samples from the food that have tested positive for the pathogen to determine the source. The National Health Laboratory Service (NHLS) does the pathogen testing for food and once a pathogen is identified and isolated, it is transferred to the NICD for the in-depth analysis, thus enabling easier comparison of pathogen data between human health and food sectors. In ensuring co-ordination in trying to identify the cause of the Listeriosis outbreak, the NICD held a workshop to discuss the issue, which brought all the relevant stakeholders together including clinicians, epidemiologists, microbiologists, regulators (DAFF & DoH), food safety, law enforcement, external laboratory staff, etc. This demonstrates the multisectoral approach towards dealing with an outbreak.

An INFOSAN simulation exercise was conducted to test the sensitivity of South Africa's communication mechanism. This was primarily a communication exercise and involved the national and provincial levels. In terms of going further with simulation exercises, WHO has produced a Simulation Exercise Manual that South Africa might like to use for guidance reference http://www.who.int/entity/ihr/publications/WHO-WHE-CPI-2017.10/en/index.html.

Concerns were raised about independent meat inspection, as some inspectors are employed or funded by meat- processing companies, which brings with it an inherent risk of conflict of interest. The DAFF clarified that independent meat inspectors work under a sanitary mandate, are compelled to follow guidelines and report to the department. There is an audit service for inspections in facilities under the authority of DAFF's VPH. Ante- and post-mortem inspection is done in some abattoirs (meat for export to countries specifying involvement of state veterinarians at inspection points) by state veterinarians, but facilities supplying the local market and exporting to countries which do not specify state veterinary meat inspection service have private meat inspection arrangements with inspectors who are authorised and registered by the state. DAFF is working on an independent meat inspection system with some stages already implemented.

CDC leads food safety epidemic preparedness and response, with multisectoral coordination through MNORT. The NHLS provides microbiological analysis when foodborne outbreaks occur.

Recommendations for priority actions

- Conduct monitoring and evaluation of places/institutions with a high risk for foodborne outbreaks.

- Develop/review SOPs to link surveillance and response staff, focal points for food safety and animal health as well as the relevant laboratories (that will rapidly identify and test suspect clinical and/or food samples collected during an event) to target earlier detection and characterization of foodborne outbreaks.

- Conduct multisectoral rapid risk assessment and risk management for foodborne outbreaks, with reporting to all relevant stakeholders.

- Conduct detailed analysis using after-action reviews and simulation exercises of foodborne outbreaks, incorporating lessons learned into a cycle of continuous improvement, particularly targeting efficient coordination of both prevention and response elements.

Indicators and scores

P.5.1 Mechanisms for multisectoral collaboration established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases – Score 3

Strengths/best practices

- South Africa has a robust food safety system and outbreak response teams composed of the trained appropriate focal persons from relevant sectors and laboratories. It demonstrated the existence of mechanisms for rapid/emergency information sharing and linkages between surveillance and response personnel, food safety, animal health and laboratories.

- The country also demonstrated proven expertise and experience in certifying and detecting food safety issues in relation to imported and exported food products, as well as capacity to respond to foodborne outbreaks and illnesses.

- Simulation exercises have been conducted to enhance communication between the different levels.

- Discussions during the plenary on the capacity level led the external assessment team to suggest increasing the score to 4. However, it was eventually agreed to leave the score at 3, due to the need to enhance multisectoral cooperation—and given there was no time to do after-action reviews and close evaluations of responses for continuous improvement, due to resourcing constraints, assessing risks and responding to foodborne crises. Therefore, it was felt that operational capacity including linkages between key sectors was 'developed' capacity (level 3), but the extra "working together to consider the risks and interventions" (level 4), which implied additional multisectoral efforts and continuous improvement/refinement over time, was not yet met.

Areas which need strengthening/challenges

- Focal points are not always known to members of the outbreak response team.

- Early detection and response to foodborne outbreaks needs to be strengthened.

- Documentation of lessons learned from responding to previous outbreaks should be enhanced.

- In some districts, investigation and reporting is not timely.

- After-action reviews of responses to previous outbreaks not usually done.

Biosafety and biosecurity

Introduction

Working with pathogens in the laboratory is vital to ensuring that the global community possess a robust set of tools—such as drugs, diagnostics, and vaccines—to counter the ever evolving threat of infectious diseases.

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

Target

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

South Africa's level of capabilities

A number of stakeholders are involved in implementation of biosafety and biosecurity in South Africa by enforcing the national legislation and applicable regulations. There is no single regulation for biosafety and biosecurity but instead several regulations, acts, standards and other policies apply. This relates to the interest of different government departments in safety and security, for example the DoH provides legislation that is focused on human pathogens, while the same is true for the DAFF for veterinary pathogens.

The DoH is responsible for the registration of microbiological laboratories where human pathogens are stored and handled; approval of Biosafety Level-3 (BSL-3) and BSL-4 laboratories; and approving the transfer (i.e. importation and exportation) of human pathogens (National Health Act No. 61 of 2003 Regulation 178, specifically relating to the registration of microbiological laboratories and the acquisition, importation, handling, maintenance and supply of human pathogens. The DAFF provides requirements for the approval of veterinary diagnostic laboratories (i.e. ISO accreditation); auditing and approval of BSL-3 laboratories that deal with veterinary pathogens; authorization of transfer (import and export) of veterinary pathogens between laboratories; and approves research conducted with animal pathogens, animals and animal-derived products (Animal Diseases Act No. 35 of 1984, Veterinary and Para-veterinary Professions Act No. 19 of 1982). The Department of Labour ensures compliance to Occupational Health and Safety Act No. 85 of 1993 and related regulations, particularly the regulations related to hazardous biological agents. The Department of Trade and Industry operates the South African Council for Non-Proliferation of Weapons of Mass-Destruction, and with regard to associated regulations and acts, registers facilities holding dangerous agents and technologies[3] and approves transfer of dangerous pathogens between facilities (import and export) (Non-Proliferation of Weapons of Mass-Destruction Act No. 87 of 1993).

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3   These include BSL-3 and BSL-4 pathogens, and technologies that may support a nuclear-weapon proliferation agenda.

In addition, the South African National Accreditation System plays an important role as the body responsible for accreditation of laboratories according to international standards (ISO 17025/ISO 15189) – for example the requirements for training, competence of staff, but also validation, verification and maintenance of equipment are strongly addressed in these standards. The South African Bureau of Standards provides national standards that pertain to biological safety, for example national standards for biosafety cabinets (which provides the standard to which all biosafety cabinets that are sold and operated in the country must conform to) and respiratory protection (for example, the standards required for N-95 masks and other respiratory protection equipment available and used in the country).

There is collaboration between the public health and veterinary sectors; the view on biosafety and biosecurity is similar in both sectors and the availability of experts is high at national level. One limiting factor in consolidating the national biosecurity actions is the low level of collaboration with law enforcement and military with regard to biosecurity. The National Defence Force is involved as a part of the South African Council for Non-Proliferation of Weapons of Mass Destruction. In addition, the police have laboratories for forensic analysis of toxins when there is suspicion of deliberate use of biological agents but collaboration with public health and veterinary sectors is limited. The collections of dangerous agents has long been consolidated and centralized at the national reference laboratories, namely the NICD and ARC-OVR. These institutes have a great deal of knowledge with regards to biorisk management, and are regarded as experts nationally and internationally. These laboratories (agencies) also handle and store the dangerous biological toxins. However, there is currently no consolidated list of pathogens with risk classification. Separate lists are available in accordance with the different pieces of legislation, which are administrated by different government departments. The lists are largely based on international risk group classifications, but without the risk assessment taking into consideration the South African context. In association with these different policies, different registries of laboratories and the microorganisms that they store and handle are kept by the different government departments (i.e. the DoH maintains a registry of microbiological laboratories that deal with human pathogens, as does the DAFF for veterinary agents, and the Department of Trade and Industry manages laboratories that deal with listed agents and technologies – so overlap between these registries is commonplace).

Biosafety and biosecurity training is available and practised at the national reference laboratories (NICD and ARC-OVR), laboratories of the NHLS (medical) and veterinary diagnostic laboratories. For example, the NHLS is able to provide reports as to how many staff members were trained in different modules of biosafety and biosecurity. In addition, assessment of the training and competency evaluations of staff through ISO standards does occur.

South Africa has a national biosafety and biosecurity committee under the Academy of Science of South Africa (the Standing Committee on Biosafety and Biosecurity). One of the activities of this committee has been an assessment of the status of biosafety and biosecurity in South Africa. One of the recommendations following the JEE meeting in Pretoria in 2017 is that that this committee could be tasked with addressing harmonization of legislation and other activities identified here.

In addition, the South African Biorisk Association was established in 2011. The association, although small, includes members from universities, reference laboratories and other public and private institutions, and companies in the private sector. One of the activities of the South African Biorisk Association was to act as a local organizing committee for the African Biosafety Association Conference, held in Johannesburg in June 2011. Although funding is scarce, the association strives to facilitate biorisk training and send their members to attend international biorisk management conferences.

Currently, there is no formal policy regarding the issue of dual use in South Africa, and this has been identified as an actionable point.

Recommendations for Priority Actions

- Establish a national biosafety and biosecurity committee with multisectoral representation. The committee could serve as a base for recommendations regarding consolidated/harmonized actions across sectors (for example to develop national infectious agents risk group lists, national guidelines/policies with regards to dual use, code of conduct, etc.).

- Review legislation and harmonize guidelines and policies (and legislation, if needed).

- Strengthen and harmonize governmental oversight activities (legislation compliance audits) for laboratories handling and storing microorganisms and toxins, and ensure sustainability of the auditing capacity.

- Consolidate national lists/registries of pathogens and laboratories.

- Ensure delivery of biosafety and biosecurity training (and associated competency measurement) is sustainable and standardized, including survey of biosafety/biosecurity curriculum at tertiary training facilities to ascertain baseline, and development of a national biosafety/biosecurity curriculum.

Indicators and Scores

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

Strengths/ Best Practices

- There is comprehensive legislative framework with regard to biosafety (and biosecurity) and control of genetically modified organisms in the country, and there are several measures in place for monitoring the implementation of the legislation.

- Laboratories that have access to (and store) dangerous pathogens are limited.

- South Africa has recently formed a national biosafety association and the country collaborates and interacts with global/international biorisk management networks.

- There is a national biosafety and biosecurity committee (Standing Committee on Biosafety and Biosecurity) that potentially could form the basis of a national multisectoral committee.

- The Occupational Health & Safety Administration oversees committees that address occupational health and safety (and in the laboratory environment this relates to biosafety) in the workplace. In addition, reference laboratories and some universities also have institutional biosafety and biosecurity committees.

Areas which need strengthening/Challenges

- National resource allocation to achieve sustainable capacity is needed to support implementation and monitoring of biosafety/biosecurity legislation. This includes increasing capacity for inspection of human microbiological laboratories following registration.

- Although a registry of high-containment laboratories is available, biosafety and biosecurity in South Africa would benefit from a national registry of all microbiological facilities including which microorganisms and toxins they handle and store.

- Issues of dual use research are not formally and coherently addressed by guidelines or regulations in South Africa.

- Since there is no national list of pathogens with risk group categorization, the current pieces of legislation on biosafety need to be updated and/or consolidated.

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

Strengths/ Best Practices

- There is a well-developed biorisk management programme at national reference laboratories and capacity to provide biorisk management training. Central agencies/reference laboratories are recognized as experts in the field – for example by providing training and workshops in this regard, and providing advice and guidance to counterparts for implementation and maintenance of biosafety and biosecurity infrastructure (nationally and internationally).

- There is good access to biosafety equipment and maintenance at national reference laboratories (point of reference/provision of expertise in the field to the Southern African Development Community/rest of Africa and beyond).

- Veterinary laboratories are required to be accredited according to ISO standards; all laboratories at the NICD are accredited to ISO standards, and NHLS laboratories have measures in place to expand accreditation status of laboratories. By virtue of this accreditation, the validation, verification and maintenance of equipment is audited frequently.

Areas which need strengthening/Challenges

- There is a lack of a national consolidated training curriculum for biosafety and biosecurity. To fully meet the requirement of indicator 6.2 score 3, a national training curriculum should be developed and a train-the-trainer programme should be established. Such a national curriculum would consolidate the considerable work already done on this topic in the country, such as the train-the-trainer courses the NICD and ARC-OVR already provide.

- The NCID is currently also establishing a training centre, which covers the topics of biosafety and biosecurity. There are also university courses on the topic, and the NHLS provide their laboratory staff training in biosafety and biosecurity as well.

- Resource allocation for sustainable training in biosafety and biosecurity.

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.

South Africa's level of capabilities

South Africa has a long successful tradition in supplying vaccinations to their population. The country has developed a comprehensive multi-year plan (cMYP) for its immunization programme aligned to the Global Vaccine Action Plan. Annual operational plans for immunization are developed from this cMYP. The focus is on an extensive childhood vaccination programme but other vaccines are also available, some through the public health system and some through the private sector. As an example the country's plan takes into account zoonoses of national concern as can be seen in the National Influenza Policy, Rabies Guidelines, and Yellow Fever Guidelines. Immunization services are delivered according to the national Expanded Programme on Immunization and are free of charge, as detailed in the Constitution of the Republic South Africa, 1996 and the National Health Act, 2003.

Monitoring of vaccine coverage is done through the District Health Information System (DHIS), the Quarterly Dashboard Indicator Report and the DoH data flow policy; and Statistics South Africa is the source of data used as denominator in coverage estimates. The surveillance of vaccine-preventable diseases is described in the surveillance technical area.

National systems ensure a continuous cold chain, the assets for which are located in pharmaceutical depots. This is ensured by the implementation of the South African Pharmacy Council Regulation, Rules Relating To Good Pharmacy Practice 2015 and the Cold Chain and Immunisation Operation Manual, 2015.

Recommendations for Priority Actions

- Fully implement the Reaching Every District (RED) strategy in all provinces to improve access to and delivery of immunization services.

- Strengthen EPI disease surveillance activities to address the challenges of:

  ○ increased number of silent districts for reporting of AFP cases;

  ○ ongoing measles outbreaks in the country.

- Validate coverage data by performing a coverage survey (among other activities) and assessing ways to improve data quality.

Indicators and Scores

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

Strengths/Best Practices

- More than 90% of the country's 12-month-old population has received at least one dose of measles vaccine in the past three years, but some parts of the country fall below this level.

- Strong involvement of public hospitals, clinics, health centres and health posts in immunization services.

- There were successful mass campaigns of bivalent oral polio vaccine in October/November 2016 and measles in June/July 2017.

- Provinces manage to mobilize funds for responding to the EPI disease outbreaks.

- A successful independent (external) EPI review was conducted in November 2017.

- South Africa is the only country in the WHO African Region to establish a Polio Essential Facility (PEF) – through the NICD.

Areas which need strengthening/Challenges

- Frequent staff rotation/turn over and non-involvement of facility managers serve as barriers to effective supportive supervision.

- There are no health facility micro plans. This is in violation of a major provision of the RED strategy of reaching every child with vaccines.

- There is weak private sector involvement in EPI and surveillance programme. Only one province (Western Cape) has a Memorandum of Understanding for the systematic engagement of the private sector in immunization.

- Private providers do not report immunization data and this practice affects the immunization coverage in the country.

- The high drop out rate has been exacerbated by limited tracking of defaulters and inadequate catch-up of missed doses.

- Reasons for not reaching every child with immunization services include:
  - vaccine resistance due to cultural/religious reasons;
  - vaccine refusal due to activities of anti-vaccination groups;
  - geographically hard-to-reach populations with limited resources.

- There are challenges with data quality, specifically overreporting, transcription error, denominator issues and delays in reporting.

PREVENT

P.7.2 National vaccine access and delivery – Score 5

Strengths/Best Practices

- The vaccine programme is fully financed by the Government of South Africa.

- Vaccine delivery (maintaining cold chain) is available in all (100%) districts within the country.

- Regular supply of routine vaccines is assured – depending on global supply.

- All the pharmaceutical depots and facilities have means to monitor the temperature of vaccine; temperature readings are recorded twice a day.

- The pharmaceutical Stock Visibility System (SVS)[4] is used in all facilities.

- Most provinces use the pharmacists/pharmacy assistants in vaccine and cold chain management available in public health care facilities (community health centres and clinics).

Areas which need strengthening/Challenges

- Poor vaccine estimates lead to vaccine stock outs in health facilities, but these can be quickly rectified.

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4   http://polity.org.za/article/ndoh-and-vodacom-custom-built-mobile-application-to-improve-access-and-availability-of-essential-medicines-in-south-africa-2016-07-14

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.

South Africa's level of capabilities

The National Health Laboratory Service (NHLS) was established in 2001 by an Act of Parliament: the National Health Laboratory Services Act, 2000 (Act No. 37 of 2000). Laboratory services (as defined by Act 37 of 2000 and the NHLS Amendment Bill number 1093 of 2015) are provided by the NHLS across the country guided by service-level agreements with all the provinces. The NHLS is mandated to provide cost-effective and efficient health laboratory services to all public sector health care providers; support and conduct health research; and provide training for health science education. It is the statutory responsibility of the DoH and provincial health departments to ensure the smooth delivery of health care.

The NHLS also includes specialized divisions: the NICD (an actor working globally in infectious disease intelligence); the National Institute for Occupational Health (supports the development and provision of occupational health services in South Africa); the National Cancer Registry (provides epidemiological information for cancer awareness and surveillance; and the Antivenom Unit situated within the South African Vaccine Producers, a wholly-owned subsidiary of the NHLS (it is the only producer in southern Africa of antivenom for snake and spider bites and scorpion stings).

The NHLS provides laboratory and related public health services to over 80% of the population through a national network of laboratories. The organization employs approximately 7000 people and runs laboratories in all nine provinces. It is a four-tiered network that comprises 10 national laboratories, 17 provincial tertiary laboratories, 44 regional laboratories and over 150 district laboratories.

In total 35 accredited laboratories, distributed across the provinces, have met International Quality Assurance Standards following assessment by the South African National Accreditation System (SANAS). SANAS is the only national body responsible for carrying out accreditations with respect to conformity assessment, as mandated through the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act No. 19 of 2006).

The country has advanced quality assurance systems, overseen by a centralized quality management system (QMS), which has 75 full-time employees. QMS implementation is achieved through a group of motivated quality assurance (QA) managers and coordinators, as well as full- and part-time auditors. Their activities include laboratory audits, health technology assessment of in vitro devices, managing 26 proficiency-testing schemes, several QA-related projects and ensuring national document control. The National Safety Office under the National Institute for Occupational Health (NIOH) also oversees and monitors safety training, audits and adherence to safety standards in the laboratories.

The primary health care laboratory manual forms the basis for supporting the activities of the national specimen referral system, which is provided by the NHLS and private courier companies depending on location.

The ARC-OVR is a well-recognized veterinary research institute which has seven OIE reference laboratories, with capacity to test for African horse sickness, African swine fever, bluetongue virus, foot-and-mouth disease, rabies, Rift Valley fever and lumpy skin disease. All the laboratories that perform analyses that the government pays for (notifiable diseases) are accredited by SANAS and are regularly audited by the veterinary services. The list of these facilities are available to veterinarians both private and public on the DAFF website. The government also pays for the transportation of samples from districts to the laboratories.

While there is collaboration between animal health and human health surveillance systems, there is increasing recognition of the need for closer collaboration and integration of these laboratory systems. The Centre for Emerging Zoonotic & Parasitic Diseases within the NICD is the nucleus of activities around rabies surveillance and diagnosis in the country.

Recommendations for priority actions

- Improve information and communication technology (ICT) systems in order to establish effective linkage of the laboratory information management systems with the public health surveillance systems, which will result in improvements in detection and confirmation of outbreaks.

- Ensure the standardization of the service delivery, increase the availability of basic testing and improve turnaround time(s) at the various tiers of the laboratory system, especially at the lower tiers of the laboratory network (e.g. district and local levels).

- Increase linkages and collaboration between NHLS, veterinary laboratory services, private sector laboratories and other national laboratory systems in other countries in the subregion.

- Establish a national quality framework to support continuous quality improvement for the laboratory systems at all tiers, in order to institutionalize the existing quality management systems within the NHLS network.

- Provide an enabling environment for pathology residents and intern technicians to complete their training on time.

Indicators and scores

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

Strengths/best practices

- South Africa has an advanced, publicly funded national health laboratory system with a well-developed ICT infrastructure and effective linkages to clinical care.

- The NICD, which is part of the NHLS system, is the most advanced bio-medical laboratory on the African continent and the country continues to invest in maintaining the facilities.

- There are 26 proficiency-testing schemes established across the country with well-established systems for quality assurance.

Areas which need strengthening/challenges

- The inequitable distribution of laboratory staff capacity across health facilities in the country needs to be addressed.

- Training of laboratory staff is lengthy, resulting in low pass rates for trainee pathologists and intern technicians; interventions to address this and provide additional in-service training for laboratory staff are needed.

- The procurement system and the supply chain mechanisms in the country need to be strengthened.

D.1.2 Specimen referral and transport system – Score 4

Strengths/best practices

- The NHLS has developed a functional, nationwide specimen referral system which is delivered through a hybrid of service delivery models directly (by the NHLS systems) and indirectly (through the use of contracted couriers).

- The extensive network of laboratories ensures that travel time of specimens is not overly long; and couriers receive the appropriate training.

- The specimen referral and transport system is fully financed by the Government of South Africa.

Areas which need strengthening/challenges

- The systems for collection and referral of veterinary specimens need to be strengthened and better resourced.

- Procurement and prepositioning of consumables, transport media and ICT infrastructure at all the peripheral levels needs strengthening.

- Integrating and deploying innovative (technology) solutions to all levels in order to improve retrieval of results and shorten time to action is a challenge; the country is piloting several initiatives currently and others are in place (e.g. at the NHLS and Frere Hospital).

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

It was noted during the plenary that the veterinary sector was operating at a score of 4, but that to be true to the JEE tool, the average score of both the veterinary and public health sectors meant that the overall score of this indicator was listed as 3.

Strengths/best practices

- Veterinary public health laboratory services are funded by DAFF and are provided exclusively through a network of laboratories, which have all been accredited by SANAS.

- The NHLS and Onderstepoort Veterinary Institute are among the most advanced laboratory research laboratory facilities in the world and they are integrated with the public health care system of the country.

- The country has mechanisms in place for conducting health technology assessments for medical devices and have conducted quality assessments for rapid test kits for HIV and malaria.

- South Africa has the highest penetration of Genexpert machines in the world and has begun to explore its use in making diagnosis in areas other than TB and multi-drug resistant TB.

Areas which need strengthening/challenges

- Improve access to and coverage of veterinary laboratory services because this resource is currently limited compared to the systems in the human health sector.

D.1.4 Laboratory quality system – Score 3

It was noted during the plenary that the veterinary sector was operating at a score of 4, but that to be true to the JEE tool, the average score of both the veterinary and public health sectors meant that the overall score of this indicator was listed as 3.

Strengths/best practices

- The NHLS has well-developed quality assurance mechanisms which include internal processes (routine NHLS audits) and external processes (SANAS, which is aligned to ISO standards).

- In total 94% of national central laboratories are accredited by SANAS and have achieved ISO certification (ISO 15189:2012); fewer laboratories at provincial and local levels are accredited.

- There are 26 proficiency-testing schemes in operation across the country supported by the NHLS, which are available to laboratories in 24 countries.

Areas which need strengthening and challenges

- Registration of health professionals with the Health Professions Council of South Africa is compulsory, however licensing and accreditation by laboratories in the private sector is not mandatory, which is a challenge.

- Provincial and local level laboratories need a lot of investment in order to for them to conform to the national quality standards and eventually the international quality standards.

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 bio-surveillance 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.

South Africa's level of capabilities

South Africa has a surveillance system with notifiable medical conditions (NMCs) for human health. This system is a passive surveillance system administered by the national, provincial and district health authorities. The National Health Act, 2003 (Act No. 61 of 2003) gives the national DoH the authority to determine which diseases are notifiable, how soon after diagnosis notification should take place, and the information required for each condition. Implementation of the NMC system has had varying degrees of success. However, its effectiveness and efficiency has been inadequate over the years, as it has not been able to produce the required information needed for timely response. The various levels of notification are point of diagnosis, district, provincial and national, although there are elements of community surveillance in place with information from community health workers attached to health care centres. Standardized reporting documents and procedures, standard operating procedures (SOPs), NMC case notification forms and case definitions are all made available to facilitate surveillance and reporting.

Notification of NMCs is done simultaneously from health facilities to other levels by scanning of the case notification form; this means collection, collation and analyses are done at the national level. However, weekly aggregate data are forwarded from district level to the national level. The animal health sector also has a reporting pathway for controlled and notifiable diseases, which includes rabies, Rift Valley fever, brucellosis, tuberculosis and avian influenza.

The human health surveillance system uses enhanced and recently streamlined paper-based NMC reporting, and relies on an efficient and well-functioning laboratory information system in both the public and private sectors. This includes centralized data management and warehousing, and a well-established syndromic surveillance system for acute flaccid paralysis (AFP), measles, sexually transmitted infections, severe acute respiratory syndrome and influenza-like illness among others. The animal surveillance system is also well established with linkages to private veterinarians and abattoirs.

Systems in both the animal and human health sectors are not interoperable, interconnected or electronic (and therefore do not support real-time reporting). However, South Africa is currently developing a mobile application for NMC real-time reporting, with implementation planned for February 2018.

DETECT

Event surveillance is also conducted at the National Emergency Operation Centre through media streaming and receiving of information through toll-free telephone lines. This information can be fed back to provincial level for verification.

During the plenary it was determined that data analysis is done at the national and provincial levels and not at the district level because the epidemiology and data management capacity is poor. In addition, there is no feedback mechanism in place.

Recommendations for Priority Actions

- Strengthen real-time indicator and event-based surveillance systems to be interoperable and interconnected.
- Strengthen real-time data validation and analyses, particularly at lower levels.
- Strengthen real-time linkage of human health and animal health surveillance systems.

Indicators and Scores

D.2.1 Indicator and event-based surveillance systems – Score 3

During plenary South Africa colleagues established that there is indicator surveillance in place even though reporting is paper and e-mail based. There is a list of NMCs in place, categorized according to reporting time required, ranging from 24 hours (immediate reporting) to monthly.

Strengths/Best Practices

- There is an enhanced and streamlined paper-based NMC reporting system.
- Efficient and well-functioning laboratory information systems exist in both the public and private sectors.

Areas which need strengthening/Challenges

- Submission of surveillance data needs to be done electronically.
- The event-based surveillance system needs to be interoperable and interconnected with the indicator-based surveillance system.
- Data collation and analysis at each level needs to be strengthened.
- Community-based surveillance in all provinces needs to be strengthened.
- Resources for efficient NMC surveillance at provincial level need to be increased.

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

During plenary South Africa colleagues indicated that a mobile application, which is interoperable, interconnected and electronic, is being developed to enable real-time reporting via the public health surveillance system.

Strengths/Best Practices

- An electronic real-time reporting mobile application is under development

Areas which need strengthening/Challenges

- Introduction of short message service (SMS) into the mobile application needs to be developed.

D.2.3 Analysis of surveillance data – Score 4

During plenary, South Africa colleagues indicated that data at the provincial level is only summarized monthly while analysis is done at the national level for monitoring of trends and actions. Analysis at the national level is evidenced by the production of monthly communiqué and quarterly bulletins on NMCs as a means of feedback to other levels.

Strengths/Best Practices

- Analysis of surveillance data and monitoring of trends for action at the national level is done.
- Monthly communiqués on NMCs are issued and a quarterly bulletin produced.

Areas which need strengthening/Challenges

- The feedback mechanism needs to be strengthened to ensure dissemination of weekly reports, monthly communiqués on NMCs and the quarterly bulletins to all levels.
- Capacity building of surveillance officers on data analysis at the district level needs to be strengthened.

D.2.4 Syndromic surveillance systems – Score 4

During plenary South Africa colleagues noted that syndromic surveillance systems are in place to detect more than three core syndromes (i.e. AFP, measles, viral haemorrhagic fevers, severe acute respiratory syndrome, influenza-like illnesses, sexually-transmitted infections) indicative of public health emergencies.

Strengths/Best Practices

- Data collected are centrally managed and stored at the National Institute for Communicable Diseases (NICD) where data validation is done.

Areas which need strengthening/Challenges

- Presently reporting is paper-based and there is need to upgrade this to an interoperable, electronic format.

DETECT

Reporting

Introduction

Health threats at the human–animal–ecosystem interface have increased over the past decades, as pathogens continue to evolve and adapt to new hosts and environments, imposing a burden on human and animal health systems. Collaborative multidisciplinary reporting on the health of humans, animals and ecosystems reduces the risk of diseases at the interfaces between them.

Target

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

South Africa's level of capabilities

South Africa has developed capacity to report potential public health emergencies of national and international concern (PHEIC) to WHO and OIE through the established IHR national focal point (NFP) and OIE delegates, respectively. The NFP for IHR, which at present is not a centre, sits within the Communicable Disease Chief Directorate in the DOH and is operational. Reporting to WHO consists of mandatory annual reporting, as well as immediate notifications. For animal health, an operational OIE contact point (OIE delegate) exists within the DAFF. Reporting to OIE consists of six monthly reports, annual reports as well as immediate notifications. Food safety is coordinated between the DOH and DAFF.

The DoH has a list of category 1 notifiable medical conditions (NMCs) that require immediate reporting upon clinical or laboratory diagnosis followed by a written or electronic notification to the DoH within 24 hours of diagnosis. The reporting information flow is from the health facility to district to province to national level. Notification is guided by regulations on surveillance and control of NMCs, National Health Act, 2003 (Act No. 61 of 2003). Similarly, DAFF has a list of priority reportable conditions and the reporting flow is from local to provincial to national level veterinary services. Reporting is guided by the Animal Diseases Act, 1984 (Act No. 35 of 1984).

There is an established system for sharing information between the animal and human health sectors. In addition, there is a One Health Forum coordination mechanism and multisectoral outbreak response teams at all levels of the government.

Recommendations for priority actions

- Fast track the enactment, through parliament, of the National Public Health Institute of South Africa Bill to support surveillance and reporting of potential public health events of national and international concern.

- Conduct periodic simulation exercises to test the country's reporting networks and protocols.

- Develop an electronic system for sharing information between the animal and human health sectors.

- Conduct joint training of the relevant sectors, including security agencies, to improve the timely reporting of potential public health emergencies of national and international concern, including zoonotic events.

Indicators and scores

D.4.1 System for efficient reporting to WHO, FAO and OIE – Score 3

Strengths/best practices

- The reporting network is well established from the local, district, province to national level. Further, there is a well-established system for sharing information between the animal and human health sectors (though not currently in electronic format).

- Diseases are detected early by the notification systems in the DOH and the DAFF, after which all levels of government are notified.

- An NFP for IHR, though not a centre, exists within the Communicable Disease Chief Directorate in DOH and is operational.

- Similarly, an operational OIE contact point exists within the DAFF and is operational. South Africa maintains close ties with other countries in the region and around the world for the purpose of information exchange and collaboration.

- The IHR NFP and the OIE contact points maintain communication with WHO and OIE, respectively. Further, information is shared with all relevant stakeholders.

- All reports, as required by WHO and OIE, are completed accordingly.

- South Africa maintains formal and informal communication with NFPs and OIE contact points in other countries as well, particularly in SADC.

Areas which need strengthening/challenges

- South Africa needs to conduct periodic simulation exercises involving all relevant stakeholders at all levels of government to test the country's ability to identify a potential PHEIC and file a report to WHO and OIE.

- The country also needs to establish an electronic system for sharing information between the animal and human health sectors and with other relevant sectors.

D.4.2 Reporting network and protocols in country – Score 3

Strengths/best practices

- The country's reporting system, networks and protocols have been tested recently with the monitoring of travellers during the EVD outbreak in West Africa.

- Leadership is fully involved in decision-making, an effective incident management system (IMS) exists and there is timely systematic dissemination and sharing of information to all relevant stakeholders.

- The country uses the decision instrument (Annex 2 of IHR 2005) and other standard operating procedures for the reporting of potential PHEIC to WHO.

Areas which need strengthening/challenges

- Although the country has adopted WHO resolutions, there is an urgent need to domesticate the WHO resolutions and hence provide an enabling environment for reporting of potential PHEIC to WHO. For example, the country has a draft bill on the National Public Health Institute of South Africa (NAPHISA) which addresses reporting to WHO. The bill is in parliament for approval.

Workforce development

Introduction

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

Target

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

South Africa's level of capabilities

In 2012 South Africa developed a robust strategy for human resources for health to "implement a re-engineered primary healthcare service and ensure the service capacity for a health system with improved financing through national health insurance". The strategy recognized the need to "develop and employ new professionals and cadres to meet policy and health needs.[5] The country recognized the gap in the area of public health medicine and included the plans to develop the middle health care worker cadres while ensuring the traditional professional cadres.

The country's public health care system is 'nurse-driven' and although the country has determined the staffing norms for all the various types of health facilities and across all the cadres of health care workers, these targets have not been met. The medium-term plans included overseas recruitment of health care workers, and in 2011, about 10% of the workforce were recruited from abroad. There is a mismatch of health worker density between urban and rural centres; it is estimated that although 43.6% of the population in South Africa live in rural areas, they are served by only 12% of the doctors and 19% of nurses. The attrition of health care workers (due to a preference for private sector work, retirement and emigration) is projected to be about 25% annually, driven primarily by suboptimal working conditions and socioeconomic factors. The ambitious plans launched in 2012 to expand the workforce in the Human Resources for Health (HRH) Strategy 2012–2017 is currently being evaluated and updated for implementation in the next five years.

In September 2017, the DoH and the NICD undertook an epidemiological landscape assessment which found that the norms for epidemiology in South Africa had not been established, and recommended "further definition and elaboration of the current production and use of epidemiologists and those cadres with epidemiology competencies in the government public health sector". This has led to the development of an occupational framework for epidemiology and a road map for the implementation of a multidisciplinary public health workforce with well-defined, cadre-appropriate competencies in epidemiology, surveillance and public health leadership.

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5   Human Resources for Health Strategy 2012–2017.

Currently, there are seven well-established postgraduate courses in public health (three offer an epidemiology track). These programmes have all been in existence for more than 10 years, just like the South Africa Field Epidemiology Training program (SAFETP). SAFETP was formed in partnership with DoH, NICD, the NHLS, the US Centers for Disease Control and Prevention (CDC) and the University of Pretoria. About 40 of the 67 SAFETP graduates currently work at the NICD and the DoH (at national and district offices). Frontline FETP training has also been running for the same period, however, there is no intermediate level FETP training in place. Other initiatives aimed at capacity building include a distance-based training programme on Health Information Management and Applied Epidemiology, started in 2016, which aims to increase the capacity of health personnel to generate and utilize facility-level data (for HIV, TB and sexually-transmitted infection indicators). The DAFF has recognized the need to have veterinary epidemiologists to facilitate outbreak response and have consistently sponsored candidates to attend the advanced level FETP courses.

Recommendations for priority actions

- Assess the public health workforce requirements, map the existing human resources and include the mechanisms for increasing the public health workforce in the new HRH strategy in development.

- Fast track the institutionalization of the specialization of epidemiology (with a clear career trajectory within the public service) following a One-Health approach.

- Establish and implement the FETP intermediate-level training, targeted at the provincial or district level public health workforce gaps – in both human and animal sectors – while strengthening the advanced and basic levels of FETP.

- Ensure the provision of adequate financial resources to support the training, recruitment, retention and monitoring of an appropriately trained public health workforce for the country at national, provincial and district levels.

Indicators and scores

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

Strengths/best practices
- South Africa has a clear vision for the optimum human resources for health at all levels and continues to work towards achieving the proposed staffing norms.

- DoH and DAFF have invested resources to develop the public health workforce needed to meet the staffing norms and the international benchmarks that they aspire to.

Areas which need strengthening/challenges
- Staffing gaps still occur in the more remote areas and at some districts.

- There are limited numbers of health professional specialists at national and provincial levels with competencies in surveillance and epidemiology.

- Few dedicated surveillance roles exist at district and health facility levels, however the surveillance function is built into roles of health workers at provincial, district and institution levels.

DETECT

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

Strengths/best practices

- FETP has been running in the country for over 10 years and residents from other countries have been trained by the SAFETP.

- There has been increased national ownership of SAFETP, as evidenced by funding from DoH, DAFF and NICD.

- Frontline and advanced FETP training currently available in the country has been complemented by other university-level academic programmes in public health.

Areas which need strengthening/challenges

- Low throughput of residents in the advanced FETP, leading to an insufficient level of graduates to meet the national requirement of 250 epidemiologists.

- Multidisciplinary recruitment of residents into the SAFETP is required.

- Limited capacity for surveillance and response at the district level – introduction of the intermediate SAFETP will address this gap.

D.4.3 Workforce strategy – Score 2

It was noted during the plenary that since there is no epidemiology specialization in South Africa the score for this indicator was reduced from 3 to 2. Fulfilling the priority action associated with this gap will increase the score.

Strengths/best practices

- The country is in the process of reviewing the strategy for human resources for 2017–2019 and has identified its public health workforce needs.

- Due to the need for professionalizing the public health workforce, DoH has been implementing an epidemiology capacity-building project, which includes an epidemiology landscape assessment and an occupational framework for epidemiology.

- The country follows a multisectoral approach to issues of HRH development in the country; the military, private sector and the Department of Education are all part of the HRH committee of the DoH.

Areas which need strengthening/challenges

- While there are incentive packages for staff posted to rural areas, these need to be reviewed in order to address the high attrition rate of staff from public service in these areas.

- There is no career structure for clinicians or veterinarians trained as epidemiologists because the specialization has not been recognized by the Health Professions Council of South Africa, the South African Veterinary Council and the South African Council for Natural Scientific Professions.

- The HRH strategy currently in development must be reviewed to ensure it takes into consideration a multidisciplinary approach.

RESPOND

Preparedness

Introduction

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

Target

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

South Africa's level of capabilities

South Africa has a strong foundation for preparedness starting at the national level led by the National Disaster Management Centre (NDMC). The NDMC has a legislative mandate to coordinate preparedness and response to myriad disasters and emergencies that threaten the citizens of South Africa. The main objective of NDMC is "to promote an integrated coordinated system of disaster management, with special emphasis on prevention and mitigation by National, Provincial and Municipal organs of state, statutory functionaries, other role players involved in disaster management and communities".[6] This system is duplicated at the provincial, district and municipal levels.

The National Joint Operational and Intelligence Structure (NATJOINTS), the multisector national level decision-making body, meets on an approximately weekly basis to review and discuss relevant multisector events and activities that may have an impact on the country. The intelligence structures may request convening of NATJOINTS as the need arises and based on issues related to national threats/security. The NATJOINTS also has mirror structures at the provincial and local levels.

The MNORT is the technical body at both national and provincial levels that coordinates South Africa's surveillance, response and management of communicable disease outbreaks. Also currently in development is the creation of a Public Health Emergency Committee that will coordinate response and management of public health emergencies, in order to ensure effective delivery of health and medical services. The public health response is to be commensurate with and restricted to public health risks, and should avoid unnecessary interference with international traffic and trade.

The DAFF is also a key stakeholder in the NATJOINTS and is responsible for coordinating the surveillance, investigation and control of outbreaks of zoonotic diseases, including information sharing with other sectors.

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6   Disaster Management Act No. 57 of 2002.

As part of the enhanced precautionary measures to prevent the occurrence or spread of Ebola into the country, the DoH activated the National Health Operations Centre (NATHOC) to serve as a command centre to coordinate Ebola virus disease (EVD) preparedness and response plans and activities, including heightened surveillance to detect and diagnose cases early. The NATHOC operated on a shift system with six console operators and one duty shift manager, running over a seven-day period from Monday to Sunday, between 08h00 and 16h00. The following systems were set up and coordinated by NATHOC to guide the response and maintain situational awareness: requiring travellers from high risk countries to complete a health questionnaire that was assessed by port health officials upon arrival; developing NATHOC standard operating procedures, and producing daily and monthly reports. This model has been retained by the DoH. However, NATHOC does not operate continuously; it currently activates only when there is a public health threat or emergency that must be addressed.

South Africa has developed sector-specific plans at the national level to address the IHR (2005) hazards including chemical, biological and radiological events as well as events caused by fire, storm and drought. South Africa has myriad disease-specific national public health emergency and preparedness guidelines: e.g. on influenza, viral haemorrhagic fevers, cholera, typhoid, food-borne illnesses and most recently plague. The sector plans have been tested through simulation exercises, e.g. prevention of introduction of Ebola virus disease. Stakeholder engagement and cooperation at the national level appears strong and incorporates One-Health concepts into preparedness. While the sector plans are numerous, there is no national integrated multi-sectoral preparedness plan. While some risk assessments have been conducted, there has been no integrated national public health risk assessment, which includes mapping of resources and informing public health emergency preparedness and response planning. Lastly, the NATHOC is only activated when emergencies or events occur and it is noted there is a growing need for continuous operation.

Recommendations for Priority Actions

- Develop one overarching multi-sectoral national public health emergency preparedness and response plan that integrates the existing multisector plans, outlines how South Africa will respond to hazards and threats, incorporates the IHR NPF responsibilities, and defines roles and responsibilities of sectors.

- Conduct a risk assessment that identifies IHR and country priority diseases, maps resources needed to effectively respond to these priorities, and highlights current gaps.

- Prioritize development of the Public Health Emergency Committee to ensure public health interests are represented and addressed at national, provincial and district levels, and to advocate for full time operation of the NATHOC.

RESPOND

Indicators and Scores

R.1.1 Multi-hazard national public health emergency preparedness and response plan is developed and implemented –Score 2

Strengths/Best Practices

- South Africa has national public health emergency and preparedness guidelines that are disease specific.

- Emergency plans have been tested through simulation exercises, including the prevention of introduction of Ebola virus disease.

- Establishment of the National operating centres as listed below:

  ○ Safety & security

  ○ National joint operations and intelligence structure (NatJoints) responsible for safety and security of the country

  ○ National disaster management centre (NDMC): custodians and responsible for the implementation of disaster risk management act 57 of 2002

  ○ National health operation centre (NATHOC): responsible for coordinating public health emergencies in the country supported by emergency operations centre (EOC) managed under NICD

- There are various national joint operation centres in the country.

Areas which need strengthening/Challenges

- There is a need to develop a national multi-sectoral integrated preparedness plan

- NATHOC should be expanded to operate all the time.

- There is a need to complete the establishment of the Public Health Emergency Committee.

R.1.2 Priority public health risks and resources are mapped and utilized – Score 3

Strengths/Best Practices

- A system is in place to ensure availability of stockpiles when required (e.g. personal protective equipment and vaccines are kept in strategic areas at national and provincial levels, including in the private sector).

- Procurement – equitable shares need to be aligned to Standard Treatment Guidelines and the Essential Medicine List

- There is support from South African Military Health Services (i.e. a redundancy system exists should the public health system be overwhelmed).

- Emergency funding is available from the treasury in the event of need.

Areas which need strengthening/Challenges

- There is a need to conduct an integrated national public health risk assessment, including mapping of current resources and planning to address gaps.

RESPOND

Emergency response operations

Introduction

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

Target

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

South Africa's level of capabilities

South Africa established its Public Health Emergency Operations Centre (PHEOC) during the Ebola virus disease outbreak in West Africa to coordinate activities required for preparedness against that virus. It is located in the NICD and is designated to manage communicable diseases outbreaks; it has a dedicated manager. A National Health Operations Centre (NATHOC) also exists at the DoH. This centre coordinates response to public health emergencies resulting from natural and human-made disasters.

The PHEOC is equipped with the latest technology telecommunications facility such as teleconferencing and video conferencing capabilities. Its operations room includes 16 workstations and four display screens; a conference centre with dual screen for video and teleconferencing is also available. The centre has access to disease surveillance data and also conducts regular event-based surveillance. The centre has an established hot line that is always available, however it is for consultation of experts, not for reporting of incidents or alerts.

The centre has developed standard operating procedures (SOPs) that guide its response operations, but these need to be further developed to become more comprehensive.

Recommendations for Priority Actions

- Establish a legal framework defining clear mandate/roles and responsibilities of the PHEOC and its relationship with other operations centres and the National Disaster Management Centre (NDMC), and broaden its mandate to include all public health emergencies.

- Increase human resources of the PHEOC, and provide training to staff on PHEOC operations, management and multi-sectoral emergency response (via the incident management system, IMS), and conduct and evaluate a simulation exercise that includes multiple sectors.

- Update PHEOC handbook/SOPs to include activation levels and scaled levels of response with resource requirements for each level and procedures for acquiring additional resources.

- Establish a system to ensure that data and information from the health sector and other sources is available for timely decision-making.

- Cascade the PHEOC/IMS to lower levels.

Indicators and Scores

R.2.1 Capacity to Activate Emergency Operations – Score 2

Strengths/Best Practices

- There is strong high-level support for the further development and utilization of the PHEOC as a central hub for health operations support to the provinces.

- Dedicated and knowledgeable core staff are in place.

- The PHEOC is equipped with the necessary telecommunication infrastructure to establish real-time communication.

- The PHEOC has adequate space for operations.

- The PHEOC has access to relevant health data and situational awareness

Areas which need strengthening/Challenges

- Human resources are a constraint – only one staff member (PHEOC manager) is currently available. An increase in dedicated staffing for IMS-critical functions is required in monitoring and documentation (situation status), data management (epidemiological data), contextual mapping (Geographic Information System), support for a designated PHEOC manager (deputy), etc.

- Cascade EOCs to provincial and district level to enhance communication and information sharing.

- Data sharing is not currently multi-sectoral (i.e. does not include relevant information from other stakeholders such as the animal and environment sectors) and lacks operational information such as logistics, human resources, expenditures, etc.

R.2.2 Emergency Operations Centre Operating Procedures and Plans – Score 2

Strengths/Best Practices

- A basic PHEOC management SOP is currently being drafted and finalized.

- IMS is the national standard from which PHEOC works – this will enable interoperability with subnational health authorities and other agencies and sectors as they further develop their plans.

Areas which need strengthening/Challenges

- PHEOC plans and procedures need to include not just communicable diseases but all hazards.

- The PHEOC handbook needs further development to clearly define activation procedures, and include functional annexes such as a communications plan, business continuity plan, interactions with the national disaster management agency and other stakeholders.

- Staff and partners training in IMS needs strengthening, to increase human resources capacity for managing public health events.

R.2.3 Emergency Operations Programme – Score 4

Strengths/Best Practices

- The PHEOC has demonstrated its capacity by being activated in less than 120 minutes to support coordination of response to an emergency (involving mental health).

- The PHEOC can be quickly staffed from the outbreak team of the NICD to respond to outbreaks.

RESPOND

Areas which need strengthening/Challenges

- There is a need to develop training programmes for PHEOC staff and surge capacity followed by regular exercises to test response capabilities.

- No exercise of the PHEOC has ever been conducted. There is a need to conduct regular exercises simulating acute outbreaks and other public health emergencies followed by evaluation to test plans and procedures and response capacities.

R.2.4 Case management procedures are implemented for IHR relevant hazards – Score 4

Strengths/Best Practices

- A case management guideline is available.

- Guidelines exist for transport of potentially infectious patients at local level and points of entry.

- Staff are trained in case management of IHR-related emergencies.

Areas which need strengthening/Challenges

- All relevant existing guidelines and other documents (including for case management) need to be centrally available and accessible in the PHEOC.

Linking public health and security authorities

Introduction

Public health emergencies pose special challenges for law enforcement, whether the threat is manmade (e.g. the anthrax terrorist attacks) or naturally occurring (e.g. flu pandemics). In a public health emergency, law enforcement will need to quickly coordinate its response with public health and medical officials.

Target

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

South Africa's level of capabilities

South Africa has a strong security intelligence system in place: the National Joint Operational and Intelligence Structure (NATJOINTS) is the national coordinating body responding to all major incidents in South Africa. It plays a central role in coordinating all sectors to respond to incidents, including biological hazards. It is strongly linked with the DoH, DAFF, and other relevant sectors.

NATJOINTS is made up of the South African Police Service, South African National Defence Force, Metro Police, intelligence agencies and representatives of various government departments including health. It coordinates security issues among sectors and departments including the DoH. In the event of a biological incident the NATJOINTS is activated. There is a clearly defined coordination, collaboration, communication and information exchange mechanism in place, supported by legal instruments, between the DoH, DAFF and others and the NATJOINTS and the National Disaster Management Centre (NDMC). It has an operations centre, namely the National Joint Operational Centre (NATJOC) where all security intelligence, including biological, chemical and radio-nuclear threats, is managed. The NATJOINTS has senior representation from all departments. The intelligence committee in the NATJOC conducts regular risk assessment on any national threats including health threats to safeguard national safety and security. The NATJOINTS also has a representative on the MNORT.

The system is cascaded to provincial and district levels. At provincial level, the operations centres, the Provincial Joint Operations Centres (PROVJOCs), undertake intelligence activities and coordinate and exchange information with their respective provincial departments. Information systematically flows from the PROVJOCs to NATJOC and vice versa.

During the response to the Ebola virus disease outbreak in West Africa, police responded with Class A personal protective equipment and have detection capability for agents. The police can offer support during quarantine for other agencies, if necessary. In the past, the NATJOINTS successfully managed several biological incidents such as anthrax attacks. It treats any incident as a crime scene and brings all relevant departments together to the crime scene and onward investigation. Evidence is preserved in coordination with law enforcement. Once activities are complete to address immediate public safety concerns, all efforts are made to preserve evidence necessary for public health and law enforcement investigations. All materials are safely packaged and transported to the relevant laboratories for analysis.

NATJOINT is connected the International Criminal Police Organization (INTERPOL), and in 2015 South Africa was elected to be one of the 13 countries which form the Executive Committee of INTERPOL.

RESPOND

Recommendations for Priority Actions

- Conduct national emergency scenarios and simulation exercises with all stakeholders.

- Provision response teams with the necessary specialized equipment.

- Review SOPs to ensure they address procedures between departments for response to biological incidents, including contacts of representatives.

- Establish communication channels to share information during non-crisis situations and strengthen lower level coordination, collaboration and communication.

- Review policy on the management of chemical, biological, radiological and nuclear (CBRN) incidents.

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 – Score 4

Strengths/Best Practices

- NATJOINTS plays a central role in coordinating all sectors for all incidents including biological hazards in the country with real-time situational awareness at NATJOC

- Senior representatives in government are involved.

- There is a clearly defined collaboration, coordination and communication mechanism in place.

- The intelligence system is resilient: regular risk assessments are done by the intelligence committee in the NATJOC.

- Police services respond to unknown substances and outbreaks by deploying the relevant sectors to provide security.

Areas which need strengthening/Challenges

- Interdepartmental training and development needs to be strengthened.

- Review of policies and procedures needs to be conducted.

- Regular updating of points of contacts of key representatives needs to be done.

- Training of specialized response teams needs to be strengthened.

- Collaboration, coordination and communication at provincial and district levels need to be strengthened.

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 MCM create opportunities to improve overall public health. In addition, it is important to have trained personnel who can deploy in 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.

South Africa's level of capabilities

South Africa has experience with both the successful importation of medications and the deployment of public health personnel to international public health emergencies. The country also has robust domestic systems for managing medical countermeasures, and deploying qualified response personnel which provides a framework for similar cross-border activities. While these systems are functional and several relevant plans and policies exist, South Africa has not yet finalized comprehensive plans for sending and receiving medical countermeasures or personnel.

With regard to medical countermeasures, South Africa has a legal framework to import and distribute medications using the Medicines and Related Substances Act 101 of 1965. Section 21 of this Act allows for the authorized use of unregistered medicines. Once imported, South Africa can manage the distribution of medications, using a functional supply chain management system which traditionally has performed well with rare (<2%) stock outs. These capacities were evident during a site visit to the Gauteng Province medical depot, where clear policies and procedures were being implemented by competent staff. The country also maintains a stockpile of medical countermeasures for national use during a public health emergency and capacity to produce vaccines and laboratory supplies and equipment.

South Africa also has recent experience with the deployment of public health and medical personnel among international partners during public health emergencies. For example, the country recently signed an MoU with the African Union to support the West African Ebola epidemic. This outlined terms and conditions for the contribution of volunteer personnel to support the response and included the provision of supplies and equipment. In 2017 South Africa assisted Niger with the procurement of a mobile laboratory to assist with a meningitis outbreak. Other active regional and international agreements include a training agreement with the Southern African Development Community (SADC), the Wits Health Consortium and membership in the Global Outbreak Alert and Response Network (GOARN).

Recommendations for Priority Actions

- Finalize the comprehensive plan for a system to send and receive medical countermeasures.
- Finalize the comprehensive plan for a system to send and receive health personnel.
- Review experiences and conduct simulation exercises of both medical countermeasures and health personnel plans, and implement the plans for future events.
- Examine the regulatory framework for sub-regional exchange of medical countermeasures and personnel and update to include if necessary.

RESPOND

Indicators and Scores

R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency –Score 2

Strengths/Best Practices

- The county has experience with importing pharmaceuticals using the Medicines and Related Substances Act 101 of 1965, Section 21 (authorizing sale of unregistered medicine).

- There is demonstrated capacity, an experienced workforce and functional systems in place to manage domestic distribution of medicine.

- Domestic capacity to produce antibiotics and medical supplies and equipment is present.

Areas which need strengthening/challenges

- There is no finalized comprehensive plan for a system to send and receive medical countermeasures. This includes plans for:

  ○ addressing regulatory concerns of receiving drugs or devices from an international source;

  ○ addressing logistic concerns related to sending, receiving and distributing medical countermeasures;

  ○ addressing security concerns that may emerge related to sending/receiving/distributing medical countermeasures during a shortage.

- Documentation of lessons learned from experiences with international transfer of staff, medical and non-medical equipment is lacking.

R.4.2 System is in place for sending and receiving health personnel during a public health emergency – Score 2

Strengths/best practices

- The dountry has experience deploying personnel to support regional and international outbreak response, including the recent Ebola outbreak in West Africa.

- South Africa is an active member in regional and international organizations, including SADC, GOARN.

Areas which need strengthening/challenges

- There is no comprehensive plan for a system to send and receive health personnel. This includes addressing:

  ○ regulatory and licensure concerns of receiving health personnel from outside the country;

  ○ training criteria and standards for health personnel who will be sent or received;

  ○ liability concerns related to using medical personnel during deployment;

  ○ safety concerns for health personnel during deployment;

  ○ financial concerns for health personnel during deployment;

  ○ inclusion of other sectors (i.e. security authorities, animal health) in the plan.

- Documentation of lessons learned from experiences with international transfer of staff, medical and non-medical equipment is lacking.

Risk communication

Introduction

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

Communications of this kind promote the establishment of appropriate prevention and control action through community-based interventions at individual, family and community levels. Disseminating the information through 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 for building trust between authorities, populations and partners. Emergency communications plans need to be tested and updated as needed.

Target

State parties should have risk communication capacity which is multi-level and multi-faced 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.

South Africa's level of capabilities

South Africa has a well-established risk communication framework: all government ministries work together during emergencies. The communication experts within South Africa were given an award during the Pandemic Influenza response. South Africa works proactively to develop risk communication toolkits in order to have information readily available during emergencies. Additionally, social media is monitored for rumours to be able to mitigate false public health information as soon as it is discovered. During outbreaks, there are meetings with village leaders to assist with public health risk communication to reach marginalized communities in their local language — a best practice.

Recommendations for Priority Actions

- Develop national-level risk communication preparedness and response plans.
- Perform a risk communication simulation exercise at all levels to test the communication response capacity.
- Build risk communication surge support for outbreaks and other public health emergencies.
- Develop a plan to ensure resources are sustainable.

RESPOND

Indicators and Scores

R.5.1 Risk Communication Systems (plans, mechanisms, etc.) – Score 3

Strengths/best practices

- South Africa has national response plans with specified risk communication sections, emergency risk communication plans, and shared agreements with response agencies.

- During emergencies, the South African Government provides funds to ensure communication messages are provided to the public.

Areas which need strengthening/challenges

- There is a need to strengthen risk communication at the district and regional levels.

- There are no shared agreements and/or standard operating procedures between other response agencies, such as public safety, law enforcement, hospitals, emergency response, Red Cross/Crescent and/or government agencies such as ministries of defence, agriculture, and food/drug.

- In addition, training and testing of plans for risk communication personnel for response at the local level is required.

R.5.2 Internal and Partner Communication and Coordination – Score 3

Strengths/best practices

- The DAFF has a Directorate – Stakeholder Relations and Communications – that is responsible for all press releases by the Department.

- DAFF also has the Food Import and Export Standards Directorate, which has an assistant director in charge of Animal Health Promotion. This Directorate is very active in the design of leaflets on animal health information (with the inputs from Directorate Animal Health) and making them available in both electronic and hard copy format.

- The South African Veterinary Council as well as the South African Veterinary Association has in the past assisted with sending out urgent risk communication messages to veterinarians and para-veterinarians across the country.

Areas which need strengthening/challenges

- There is a need for dedicated human resources at all levels to address public health risk communication.

- A formal communication mechanism is needed with the hospital and health care sector during an emergency.

- Sharing experiences and new strategies with partner organizations should be done to continually improve public health risk communication response.

R.5.3 Public Communication – Score 4

Strengths/best practices

- There is proactive public outreach on a mix of platforms (newspapers, radio, TV, social media and the web), as appropriate, according to national and local preferences; and in relevant national and local languages and otherwise understandable to populations.

- As a best practice, during outbreaks there are meetings with village leaders to assist with public health risk communication to reach marginalized communities in their local language.

- In addition, there is the use of locally relevant technologies for public communication (mobile phones, etc.).

- When it comes to changes in current policy decisions pertaining to animal disease risks, the proposed documents are published for public comment within the Government Gazette and stakeholder meetings are also held to discuss the proposed changes.

- The risk communication framework is developed with external stakeholders (e.g. WHO).

Areas which need strengthening/challenges

- There is a need for provision of regular information sharing and training opportunities between experienced community engagement experts and volunteers in order to have potential surge capacity to be used during emergencies.

- A plan should be developed to scale up existing community engagement capacities to be deployed during emergencies.

R.5.4 Communication Engagement with Affected Communities – Score 3

Strengths/best practices

- The Department and its stakeholders won an award for H1N1 outbreak response.

- The public has been informed previously about the following outbreaks: influenza, measles, polio, Ebola, malaria, plague, etc.

- Health awareness days are also used to educate the public about the importance of prevention of communicable diseases and vaccination.

Areas which need strengthening/Challenges

- There is a need to scale up and retain community engagement relating to risk communication for public health emergencies. Workshops can be held at the community level to increase public engagement.

R.5.5 Dynamic Listening and Rumour Management – Score 4

Strengths/best practices

- South Africa monitors rumours on social media and through rumour control coordinators, public information officers and community members.

- Surveillance standard operating procedures are in place.

Areas which need strengthening/challenges

- It would be beneficial to have regular evaluation of the public health risk communication response and ability to determine actions that changed behaviour.

RESPOND

OTHER IHR-RELATED HAZARDS AND POINTS OF ENTRY

Points of entry

Introduction

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

> ***Target***
>
> *States Parties 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.*

South Africa's level of capabilities

South Africa monitors arriving international conveyances and passengers and conducts environmental health inspections on conveyances and imported goods. The country has an effective system to detect, assess, report and respond to potential threats and events at designated points of entry (PoE). The mandate for provision of port health services is embedded in the National Health Act 2003, Act No. 61 of 2003. The Port Health Service is defined as the first line of defence to protect the public against the health risks associated with cross-border movement of people, conveyances, baggage, cargo and imported consignments. The programme is implemented by environmental health practitioners serving as Port Health officials and assisted by other health professionals. Port Health officials regularly collaborate and communicate with their counterparts and other relevant stakeholders in the border environment. Currently, human resources (HR) are constrained and additions to the strong Port Health workforce to support their continuous presence at the PoE should be considered for long-term programme planning, particularly given the extensive responsibilities allocated to a competent authority in PoE by the IHR, 2005. In addition it is envisioned that the workload of Port Health will continue to increase with current globalisation trends.

South Africa has 72 points of entry into the country, 44 of which are staffed either continuously or on an adhoc basis by Port Health officials. A risk assessment process has been used by the country to identify 36 of the 44 PoE to determine if those should be officially designated as IHR compliant, 2005, some of which were designated under the IHR Act, 1974. The Country is currently in the process of designating PoE in line with IHR (2005). The country further conducts annual audits to assess and maintain core capacities at identified international airports, seaports and ground crossings in order to prevent, control and respond to public health risks

In 2015, the Port Health Authority was transferred from the provincial Departments of Health to the DoH in order to give a direct link to the IHR national focal point and align PoE activities as they pertain to public health with DoH supervision.

Site visits were conducted at three locations: Golela ground crossing between South Africa and Swaziland, King Shaka International Airport in Durban, and the Port Health seaport offices in Durban (the actual port can only be visited by non-staff after attending a one-day security training about the port). In all locations, staff were highly trained, competent and very organized. Staff at Golela land crossing had all documentation showing the PoE met the requirements of IHR. At King Shaka International Airport thermal scanners are in place to monitor arriving international travellers and the airport has comprehensive contingency plans in place to respond to public health events and emergencies there. A simulation exercise of an accident and infectious disease outbreak was conducted at King Shaka International Airport in 2014. During the visit to the Port Health seaport offices of the national DoH, it was found that contingency plans are in place and, in particular, there are very strong vector surveillance programmes in place for the Durban seaport and King Shaka International Airport PoE.

It was noted during the plenary that with concerted efforts, particularly with respect to HR increases, South Africa could increase its scores in this technical area to 5 within the next year.

Recommendations for Priority Actions

- Thorough review of HR capacity for PoE.

- Finalize draft Memoranda of Understanding (MoUs) for the safe referral and transport of ill travellers to appropriate medical facilities.

- Review, evaluate and disseminate public health contingency plans covering all relevant sectors and services at PoE and establish mechanisms to improve compliance.

Indicators and Scores

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

Strengths/best practices

- Annual internal audits are conducted at PoEs on core capacities to determine readiness and ensure implementation of the action plans developed to address the identified gaps.

- Robust vector control programmes are in place around key PoEs.

- Strong partnerships have been established among key port health staff and other port staff (e.g. staff from the DAFF).

- Appropriately trained competent authorities have been appointed at PoEs.

Areas which need strengthening/challenges

- There is a need to address long-term human resource requirements, as demands for inspections and preparedness and response activities will increase in the coming years.

PoE.2 Effective Public Health Response at Points of Entry – Score 4

Strengths/best practices

- PoE contingency plans are in place.

- Referral systems and transportation of sick passengers are in place.

- There is a communication link between the competent authority at PoE and the IHR national focal point.

- Assessments of PoE core capacity have been conducted.

Areas which need strengthening/challenges

- There is a need to disseminate contingency plans to stakeholders at the PoE where this has not yet been done.

- Mechanisms need to be established to improve IHR compliance as identified by annual assessments and set forth in action plans.

- MoUs between PoE and health facilities need to be finalized for referral of ill travellers.

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

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.

South Africa's level of capabilities

South Africa has a strong regulatory and policy base relating to the use of chemicals in the country. South Africa also participates in a number of international treaties including the Chemical Weapons Convention (CWC), Biological and Toxin Weapons Convention (BTWC), the Rotterdam Convention on the Prior Informed Consent Procedure for certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention), Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention), among others.

In addition, South Africa has worked to develop a policy framework which strengthens the chemical event response capacity for the country, with a component that stresses multi-sectoral government engagement. The country has provided internal and international training on chemical events.

In case of a chemical event, Protechnik Laboratories, under the Department of Defence, serves to detect and identify chemical agents. The MNORT is also involved in the response. Additionally, the Chemical and Allied Industries perform assessments and provide safety training and awareness for chemical facilities.

South Africa needs to strengthen their ability to provide a timely and systematic response to chemical events. There is also a need for simulation exercises to be performed at all levels. Additionally, the Government Departments and Private Institutions are working independently and it would be beneficial to develop coordinated training and response activities.

Recommendations for Priority Actions

- Develop mechanism for timely and systematic information exchange between appropriate chemical units, surveillance units and other relevant sectors about urgent chemical events and potential chemical risks and their response.

- Perform simulation exercises to test the chemical response capacity at all levels in the country.

- Formalize agreements for the Government and private institutions to collaborate and share information.

OTHER

Indicators and scores

CE.1 Mechanisms are established and functioning for detecting and responding to chemical events or emergencies – Score 3

Strengths/best practices

- Prevention of chemical events is the primary focus and mitigation of events is the secondary focus.
- The Non-proliferation Council for Weapons of Mass Destruction has a Chemical Weapons Working Committee in order to monitor and deter the use of chemicals as weapons.
- South Africa also collaborates with the Organisation for the Prohibition of Chemical Weapons (OPCW).

Areas which need strengthening/challenges

- There is a need to develop a mechanism for timely and systematic information exchange between appropriate chemical units, surveillance units and other relevant sectors about urgent chemical events and potential chemical risks and their response.
- It would strengthen the response capacity to perform a simulation at all levels to test the chemical response.
- There should also be formalized agreements for the Government and Private Institutions to work together.

CE.2 Enabling environment is in place for management of chemical Events – Score 3

Strengths/best practices

- South Africa passed the Non-Proliferation of Weapons of Mass Destruction Act, 1993 (Act 87 of 1993); as a part of the Act the Government established the Non-Proliferation Council (NPC).
- The NPC implements the CWC, appoints inspectors, provides controlled goods and has the power to seize goods as well.

Areas which need strengthening/challenges

- While there are a number of chemical event courses provided annually, there needs to be more awareness of the available trainings among personnel.
- It would be beneficial to have stakeholders from departments and sectors other than health to participate in the trainings, in order to ensure multi-sectoral training and coordinated response.

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

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.

South Africa's level of capabilities

South Africa has extensive experience and policies associated with nuclear sources of radiation. It has signed the International Atomic Energy Agency (IAEA) Convention on Early Notification of a Nuclear Accident and Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. The Department of Energy has established the National Nuclear Disaster Management Plan (NNDMP) for Nuclear Installations, which covers Koeberg Nuclear Power Station (KNPS) and the Research Reactor for the South African Nuclear Energy Corporation (NECSA). The NNDMP and emergency plans of KNPS and NECSA are regularly tested by the National Nuclear Regulator (NNR) every two years. After these exercises, provisions to update the plans are made as a means of implementing the corrective actions that are raised during the emergency exercises. While there is no authority with primary responsibility for radiation and surveillance and monitoring, KNPS and NECSA emergency plans make provision for nuclear monitoring, and the monitoring and implementation of protective actions for foodstuffs and water. KNPS and NECSA also have procedures for assessment of emergency conditions during an accident, and KNPS is supported by the Koeberg Environmental Surveillance Laboratory. While there is no broad inventory of health care facilities for radiation emergencies, the KNPS emergency plan is supported by Tygerberg Hospital.

In comparison, there are less robust emergency plans and procedures for non-nuclear sources of radiation. The DoH Directorate Radiation Control regulates radioactive sources used outside the nuclear fuel cycle (medical and industrial) and generators of ionizing (e.g. radiation oncology, nuclear medicine, diagnostic radiology) and non-ionizing radiation (medical and industrial). These include medical imaging devices, linear accelerators, lasers, incubators, radio frequency (RF)-senders and other sources. The Directorate has four sub-directorates covering ionizing radiation, radionuclides, inspection, and non-ionizing radiation and electro-medical devices. There are several regulations in place which cover these non-nuclear sources of radiation, including the Hazardous Substances Act 15 of 1973. In 2017, there were over 11 000 license holders representing over 37 000 licensed units nationwide. Most licenses are for industrial purposes including mining, security, research and manufacturing.

Recommendations for Priority Actions

- Finalize comprehensive national plan for detection, assessment and response to radiation emergencies.

- Link radiological and nuclear regulatory bodies with DoH/IHR NFP.

- Establish improved health surveillance and case management for radio-nuclear emergencies.

OTHER

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Indicators and scores

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

Strengths/best practices

- Extensive plans and procedures for responding to radiation emergencies from nuclear sources have been established.

- Response to nuclear events is exercised frequently.

- Strong regulatory frameworks exist for nuclear/radiological emergencies.

Areas which need strengthening/Challenges

- Radiation emergency detection and response systems at areas of lower risk need strengthening.

- Coordination among stakeholders needs strengthening, especially between Department of Energy and the Department of Health/IHR national focal point to facilitate a timely response to any nuclear/radiological emergency.

- Department of Health preparedness to mount a multisector response to mitigate the adverse health impacts of a radiation emergency needs to be improved.

RE.2 Enabling environment is in place for management of Radiation Emergencies – Score 2

Strengths/best practices

- There is a longstanding relationship with International Atomic Energy Agency (IAEA).

- A Memorandum of Understanding exists between the Department of Health and Department of Energy.

- South Africa is the recognized leader with respect to nuclear energy in Africa.

Areas which need strengthening/challenges

- Resource mobilization and allocation to address process improvement or staff shortages is needed.

- Areas of highest risk with limited national outlook to planning require stronger systems.

- Coordination among stakeholders needs to be strengthened, especially between the Department of Energy and Department of Health/IHR national focal point.

Annex 1: JEE background

Mission place and dates

Johannesburg, South Africa, 27 November–1 December 2017.

Mission team members:

- Ambrose Talisuna (Lead), Congo, World Health Organization Regional Office for Africa
- Anders Tegnell (Co-Lead), Sweden, Public Health Service
- Emmanuel Agogo, Abuja, Nigeria, Nigeria Centre for Disease Control
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- Jennifer Brooks, USA, Unites States Centres for Disease Control and Prevention
- Senait Tekeste FEKADU, Congo, World Health Organization Regional Office for Africa
- Kai Lashley, Further Consulting
- Olubunmi Ojo, Abuja, Nigeria, Nigeria Centre for Disease Control
- Cyrus Shahpar, USA, Resolve to Save Lives
- Baba Soumare, Ghana, Food and Agriculture Organization of the United Nations
- John Stratton, France, World Organisation for Animal Health
- Roland Wango, Congo, World Health Organization Regional Office for Africa
- Susan Weekly, USA, Consultant Department of Defence

Objective

To assess (host country's) capacities and capabilities relevant to the 19 technical areas of the JEE tool for providing baseline data to support (host country's) efforts to reform and improve their public health security.

The JEE process

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

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

Limitations and assumptions

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

- It is assumed that the results of this evaluation will be publically available.

- The evaluation is not just an audit. Information provided by <host country> will not be independently verified but will be discussed and the evaluation rating mutually agreed to by the host country and the evaluation team. This is a peer-to-peer review.

Key host country participants and institutions

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- Baker, Lee, South African Society of Travel Medicine

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- Cleghorn, Ms Joy, Life Healthcare

- Cordier, Nicky, Department of Justice

- Dabula, Patience, National Health Laboratory Service

- De Frey, Dr Albie, Travel Doctor Corporate

- De Jong, Minda, National Department of Health, Centre for Disease Control

- De Klerk, Grietjie, Department of Agriculture, Forestry & Fisheries

- Dekeda, Thandiwe, Department of Health, Eastern Cape

- Dibane, Aaron, National Department of Health, Emergency Medical Services

- Dladla, Ms Thuli, Department of Trade & Industry, Pharmaceutical

- Dlamini, Dr Nonhlanhla, National Department of Health, Child Health

- Dlamini, Prudence, Department of Cooperative Governance, National Disaster Management Centre

- Dlamini, Thomas, Department of Health, Eastern Cape

- Dongo, Jacoba, Department of Agriculture, Rural Development, Land and Environmental Affairs Mpumalanga

- Doyle, Timothy, US CDC

- Du Toit, Briette, Medi Clinic, Meulmed

- Dube, Sinah, National Department of Health, Port Health (ORTIA)

- Duse, Prof Adriano, University of the Witwatersrand

- Ebonwu, Joy, National Institute for Communicable Diseases

- Essel, Vivien, National Institute for Communicable Diseases

- Fox, Dr George Miller, United States Department of Agriculture

- Frankish, Trevor Dr, Life Healthcare

- Furumele, Ms Tsakani, National Department of Health, Centre for Disease Control

- Gaebee, Selebaleng, Department of Water and Sanitation

- Goosen, Ms Suseth, National Hospital Network

- Gouws, Dr Joey, National Department of Health Medicines Control Council

- Govender, Nevashan, National Institute for Communicable Diseases

- Govender, Premi, Department of Health, KwaZulu-Natal

- Govender, Vashnee, Department of Agriculture, Forestry & Fisheries

- Govindsasamy, Krpasha, Department of Health, Gauteng, Gauteng Department of Agriculture and Rural Development

- Greenblatt, Dr Brian, Sanofi Pasteur

- Groepe, Ms Mary Anne, World Health Organization

- Grove, Ms Alida, National Department of Health, Forensic Pathology Services

- Gumede, Mr Siphiwe, National Department of Health, Health Promotion

- Hargreaves, Antoinette, National Department of Health

- Harris, Dr Bernice, University of Pretoria

- Hlungwani, Mr Patrick, National Department of Health, Centre for Disease Control

- Hopkins, Robert, US Embassy, Defence Threat Reduction Agency

- Hunter, Jeanette, National Department of Health

- Hyams, Dr David, South African Society of Travel Medicine

- Hyera, Dr Francis LM, University of Limpopo, Pietersburg Hospital Head: Department of Public Health Medicine

- Jacobs, Ockert, National Department of Health
- Port Health
- Jacobs, Paulus, National Department of Health
- Jamaloodien, Ms Khadija, National Department of Health, Affordable Medicines
- Jimoh, Sinenhlanhla, National Institute for Communicable Diseases
- Jugathpal, Janine, National Department of Health, Affordable Medicines
- Kamupira, Dr Mercy, World Health Organization
- Katz, Meisie, National Regulator for Compulsory Specification
- Kekane, Ms Vuyiswa, Biovac Institute
- Kesebilwe, Caroline, Department of Health, Gauteng
- Kgalushi, Nomthandazo, National Department of Health, Centre for Disease Control
- Khosa-Lesola, E, World Health Organization
- Khoza, Benjamin, National Department of Health
- Quality Assurance
- Khumalo, Lungile, National Department of Health
- Kistnasamy, Dr Barry, National Department of Health
- Kruis, Steve J, Department of International Relations and Cooperation
- Kumalo, Pinky, South African Society of Travel Medicine, Gauteng Travel Clinics
- Kutu, Maphuti, National Regulator for Compulsory Specification
- Lancaster, Ruth, National Department of Health, Affordable Medicines
- Laubscher, Dr Anchen, Netcare
- Lawrence, Charlene, Department of Health, Western Cape
- Lebeko, Chriseldah, Department of Health, North West
- Leburu, Nombulelo, National Department of Health, Communications
- Ledwaba, Deborah, National Department of Health, Port Health
- Letele, Adv Seeng, Department of Human Settlements
- Letsholonyane, Nelly, Department of Human Settlements
- Lingwati, Mandla, Department of Justice
- Litsibane, Abel, Department of Health, RTB Sub-district
- Loykisoonlal, Ramsook, National Department of Health, Environmental Health
- Mabe, Ms Mirriam, Department of Correctional Services
- Machaba, Ms, Department of Higher Education & Training
- Machika, Ms Lerato, Department Government Printing Works
- Madiba, Mr Willy, Department of Agriculture, Forestry & Fisheries
- Madlala, Sidu, National Department of Health Centre for Disease Control
- Mafa, Morena, South African Military Health Service

- Magwedere, Kuda, Department of Agriculture, Forestry & Fisheries
- Mahalefa, Penelope, National Department of Health, Port Health, Lanseria Airport
- Mahomed, Anwar, National Department of Health, Emergency Medical Services
- Maifadi, Manti, National Department of Health, Centre for Disease Control
- Mainganye, Mashudu, National Department of Health, Port Health
- Maja, Mr Popo, National Department of Health, Communications
- Makafola, Mr Billy, Department of Agriculture, Forestry & Fisheries
- Makena, Stephina, National Health Laboratory Service
- Makgale, Ms Mpho, Department of Energy, Nuclear Policy
- Makgae, Reuben, National Nuclear Council
- Makhoana Morena, Biovac Institute
- Makobe, Flavia, National Department of Health, Environmental Health
- Makungo, Unarine, National Institute for Communicable Diseases, Limpopo
- Makwela, Mashaole, Department of Health, Gauteng
- Malan, Anemé, Department of Tourism
- Malefetse, Nellie, National Department of Health
- Maltase, Linda, Department of Justice
- Manana, Pinky, National Institute for Communicable Diseases, South African Field Epidemiology Training Programme
- Mangate, Liesbeth, National Department of Health
- Mangojane, Mokhobo, Department of Health, Environmental Health Programme – Moses Kotane Sub-district
- Marais, Dr Thinus, Sanofi Pasteur, Medical Advisor
- Maringa, Mandlankosi, National Department of Health, Environmental Health
- Markotter, Prof Wanda, University of Pretoria
- Masemola, Lieutenant General SF, South African Police Service
- Maseti, Ms Elizabeth, National Department of Health, Expanded Programme of Immunization
- Masha, Valery, Department of Health, RTB Sub-district
- Mashinni, Mr Sibusiso, Department of Higher Education & Training
- Masilela, Ms Pam, National Department of Health, Environmental Health
- Masindi, Livhuani, Chemical Weapons Working Committee
- Masindi, Pfarelo, National Department of Health
- Masuku, Mr Zibusiso, National Institute for Communicable Diseases
- Matabane, Vector S, Department of Health, Limpopo, Public Health Programmes
- Mathema, Hlengani, National Institute for Communicable Diseases, Western Cape
- Matlala, Florah, National Department of Health

- Matyila, Phumza, Department of International Relations and Cooperation
- Mawonga, Mzukisi Edward, Department of Health, Eastern Cape
- Mayet, Dr Natalie, National Institute for Communicable Diseases, Global Disease Detection Co-Director
- Mazibuko, Ms Ntombi, National Department of Health, Child, Youth & School Health
- Mbange, Zoleka, Department of Health, Eastern Cape
- Mbelle, Prof, National Institute for Communicable Diseases
- McCarthy, Dr Kerrigan, National Institute for Communicable Diseases
- McMorrow, Dr Meredith, Centre for Disease Control SA, Influenza Programme Director
- Mdlalose, Siyabonga, National Department of Health
- Mendelson, Marc, University of Cape Town
- Menyatso, Albertina, National Department of Health, Environmental Health
- Mgobo, Nosiphiwo, Department of Health, Eastern Cape
- Mgwebi, AZ, Department of Health, Eastern Cape
- Mhahlehla, Eugene, World Health Organization
- Milisana, Koleka, University of KwaZulu-Natal
- Miller, Mr, Department of Justice
- Mitchell, Dr Emily, National Zoological Gardens
- Mlotha, Kanozi, Department of Human Settlements
- Modisane, Botlhe, Department of Agriculture, Forestry & Fisheries
- Modise, Keneilwe, National Department of Health, Hospital Management
- Modise, Motshabi, National Institute for Communicable Diseases
- Modise, Ms Michelle, Department Government Printing Works
- Modisenyane, Moeketsi, National Department of Health
- Mogakabe, Elijah D, Department of Water and Sanitation
- Mogomotsi, Sharon, Department of Environmental Affairs
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- Mokgadi, Monwa, Department of Health, Limpopo, Public Health
- Mokgatle, Johannes, Department of Health, Free State
- Mokoena, Sibongile, World Health Organization
- Molaudzi, M, Department of Justice
- Moodley, Vimla, National Department of Health, Health Promotion
- Moonasar, Dr Patrick, National Department of Health, Malaria
- Morewane, Mr Ramphelane, National Department of Health, District Health Services
- Morwa, Maleka, National Department of Health, Port Health, Lanseria Airport
- Motopi, Lineo, National Department of Health

- Mpanza, Mr, Department of Higher Education & Training

- Mphahlele, Jeffery, Medunsa

- Msibi, Mr Bafana, Office of Health Standards and Compliance

- Msimango, Sharon, Department of State Security Agency, Biological Weapons Working Committee

- Mudau, Mashudu, Department of Health, Limpopo, Centre for Disease Control

- Mudau, Wanga, Department of Transport

- Mudgunga, Mr M, Department of Agriculture, Forestry & Fisheries

- Mudzanani, Mr Leonard, National Department of Health, Health Promotion

- Mugero, Dr Charles, National Department of Health, Communicable Diseases

- Muller, Ms Carina, Department of Basic Education, (Food Safety)

- Mulumba, Misheck, Agricultural Research Council Onderstepoort Veterinary Research

- Mutevedzi, Portia, National Institute for Communicable Diseases

- Mutowembwa, Paidamwoyo, Agricultural Research Council Onderstepoort Veterinary Research

- Mvusi, Dr Lindiwe, National Department of Health, TB

- Myburgh, Ms Erica, National Department of Health, Communicable Diseases

- Naidoo, Mr Raveen, National Department of Health, Emergency Medical Services

- Naidoo, Rajen, Department of Health, KwaZulu-Natal: Emergency Medical Services

- Narwal, Dr Rajesh, World Health Organization

- Ndala, Mr Paul, National Department of Health, Malaria

- Nel, Elisbe, Mediclinic

- Nemungadi, Ms Takalani, National Department of Health, Centre for Disease Control

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- Ngobeni, Hetani, National Institute for Communicable Diseases

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- Nkagapele, Mr Julius, National Department of Health, Health Information System

- Nkomo, Muromo, Department of Trade & Industry

- Ntshoe, Ms Genevie, National Institute for Communicable Diseases, Outbreak Response Unit

- Ntsie, Rebone, National Department of Health, Nutrition

- Nyokong, Beatrice, Department of Health, Free State

- Parring, Ms Shirley, National Department of Health, Food Control

- Paweska, Janusz, National Institute for Communicable Diseases

- Perovic, Olga, National Institute for Communicable Diseases

- Phihlela Lebogang, Department of Trade & Industry, Non-Proliferation Secretariat

- Phungwayo, Mr Mokete, National Department of Health, TB

- Pillay, Brigadier Mark, South African Police Service

- Qitsi, Nomvana, Department of Health, Eastern Cape

- Radebe, Ntombi, Department of Health, Environmental Health Programme – Moses Kotane Sub-district

- Radikonyana, Ms Modiegi, Department of Cooperative Governance, National Disaster Management Centre

- Rakgantso, Andronica, National Institute for Communicable Diseases, Outbreak. Response Unit

- Rakimana, Mr Tshepo, National Department of Health, International Relations

- Ramakhale, Mpho, Department of Transport

- Ramathuba, Mr Murdock, National Department of Health, Environmental Health

- Ramerafe, Mr Mothusi, National Nuclear Council

- Ramkrishna, Mr Wayne, National Department of Health, Malaria

- Ranoto, Queen, Department of Health, Limpopo, Public Health Programmes

- Rantloane, Arthur, University Pretoria, Facility Health Services

- Ranwedzi, Ms Mavis, Department of Basic Education, (Food Safety)

- Ratya, Mr Lusizo, National Department of Health, Surveillance

- Reddiar, Ms Melanie, Department of Trade & Industry, Biological Weapons Working Committee

- Rossouw, Dr Jennifer, National Institute for Communicable Diseases, South African Biorisk Association.

- Semenya, Tembeka, Department of Health, Limpopo

- Seretse, Mr Matabane, Department of Sport & Recreation South Africa

- Shabalala, Nombuso, National Institute for Communicable Diseases

- Shamrock, Wanda, Arwyp Medical Centre

- Shikwambane, Ms Tintswalo, Department of Basic Education

- Shai, Ms Lillian, Department of Energy, Nuclear Non-Proliferation

- Shishaba, Dr Nonhlanhla, South African Airways

- Shumba, Wonderful, Provincial Veterinary Services · Agriculture and Rural Development

- Slabbert, Ms Sharon, Hospital Association of South Africa

- Smit, Eljo, National Department of Health: Radiation Control

- Soldo, Mrs Anada, Department of Basic Education, Immunization

- Spokazi, Manakele, Department of Trade & Industry, Non-Proliferation Secretariat

- Steel, Gavin, National Department of Health, Sector-Wide Procurement

- Strydom, Dr Sunelle, Department of Agriculture, Forestry & Fisheries, Epidemiology

- Thokoa, Refiloe, National Treasury

- Trataris-Rebisz, Ms Anastasia, South African Biorisk Association

- Treurnicht, Florette, National Institute for Communicable Diseases

- Tshegofatso Manyathela, National Department of Health, Legal Services

- Tshilamulele, Bruce, Department of Science and Technology

- Van Helden, Lesley, Department of Agriculture, Forestry and Fisheries Western Cape

- Van Rensburg, Billy, National Department of Health

- Van Zyl, Dr Renier, Life Healthcare

- Venter, Prof Marietjie, University of Pretoria

- Von Gottberg, Anne, National Institute for Communicable Diseases

- Walsh Jaclyn, Medi Clinic, Kloof

- Warries, Ms Tarryn, Department of International Relations and Cooperation

- Wessels, Vernon, ER24

- Weyer, Dr Jacqueline, National Institute for Communicable Diseases

- Wood, Tim, Protechnik, Armaments Corporation of South Africa

- Yeni, Buli, National Department of Health, Port Health Lanseria Airport

- Zwane, Mandla, Department of Health, Mpumalanga, Centre for Disease Control

Supporting documentation provided by host country

National legislation, policy and financing

- IHR Bill (before parliament)

- NAPHISA Bill (before parliament)

- National Health Act, 2003 (Act No. 61 of 2003)

- Foodstuffs, Cosmetics and Disinfectants Act, 1973 (Act no. 54 of 1972)

- National guidelines on epidemic preparedness and response

- International Health Regulations Act, 1974: Designation of Airports as Sanitary Airports

- Port Health standard operating procedures

- National Environmental Health Norms and Standards

- Relating to the Management of Human Remains.

- Hazardous Substances, 1973 (Act No. 15 of 1973)

- Agreements, protocols and MoUs with SADC countries

- Yellow Fever policy

- MNORT terms of reference

- MoUs with the National Joint Operational Centre (NATJOC)

- Department of Health budget report (from the Basic Accounting System, BAS) for National Treasury)

- Disaster Management Act, 2002 (Act No. 57 of 2002), Chapter 6 – Funding of post-disaster recovery and rehabilitation

- Intergovernmental framework No. 13 of 2005

- Risk communications workshop with US CDC, 2012: https://www.cdc.gov/globalhealth/countries/southafrica/progress/workshop.htm

IHR coordination, communication and advocacy

- MNORT terms of reference and reports and attendance registers from monthly meetings

- One-Health terms of reference and meeting reports and attendance registers

- OIE reports (World Animal Health Information System, WAHIS)

- IHR reports to the World Health Assembly (2011, 2012, 2014, 2016 and 2017)

- Detailed procedures for the prevention and management of chemical, biological and radiological incidents during major events

Antimicrobial resistance

- Antimicrobial resistance national strategy framework: 2014–2024 (http://nda.agric.za/docs/media/A5%20Antimicrobial%20Resistance%20National%20Strategy%20Framework%202014-2024_final.pdf, accessed 6 December 2017)

- Implementation Plan For The Antimicrobial Resistance Strategy Framework in South Africa: 2014-2019, DOH Sept 2015

- *AMRL Q2 2016 GA* – Provincial Quarterly Statistics: Antimicrobial Resistance Laboratory Quarter 4 2016 Gauteng Province

- National DoH AMR implementation plan for the Antimicrobial Resistance Laboratory Quarter 4 2016 Gauteng Province

- World Antibiotic Awareness Week (WAAW) - 2017National Report on AMR surveillance and antibiotics consumption

- 2017 norms and standards regulations

- The National Infection Prevention and Control (IPC) Policy and Strategy, 2007, DOH

- Global Antimicrobial Resistance Surveillance System (GLASS) poster 2017 – South Africa

- Draft surveillance report

- Surveillance presented at WAAW

- NICD AMR maps 2016

- Infection Control Assessment Tool (ICAT) manual, Management Sciences for health and DOH, 2012

- South African veterinary strategy 2016–2026 (http://www.nda.agric.za/docs/media/Vet%20strategy%20final%20signed.pdf, accessed 6 December 2017)

- OIE PVS report. Paris: World Organisation for Animal Health; 2012

- World Antibiotic Awareness Week (WAAW) 2015 – Medicine Use Evaluation (MUE) Audit Results presentation to Head of Pharmaceutical Services (HOPS)

Zoonotic diseases

- MNORT/One Health Steering Committee/One Health Forum/Rabies Advisory Group/Vector-Borne Diseases Committee terms of reference

- Notifiable avian influenza plan – HPNAI Contingency Edition 3, June 2009, VPN4.6

- List of controlled measures [Table 2]. In: Controlled and notifiable diseases in South Africa. Department of Agriculture, Forestry and Fisheries

- The Meat Safety Act, 2000 (Act No. 40 of 2000): regulations on ostrich, poultry and red meat

- South African veterinary strategy

- Regulations to prevent anthrax infections (See document VPN40)

- Interim tuberculosis manual (October 2016)

- Brucellosis in cattle interim manual (September 2016)

- OIE country PVS evaluation report, 2012

- OIE country PVS gap analysis report, 2014

- List of zoonotic priority pathogens for public health

- Descriptions of existing zoonotic surveillance systems

- National guidelines for epidemic preparedness and response

- National pandemic preparedness plan

- National influenza policy and strategic plan

- National anthrax guidelines

- National guidelines on management and control of foodborne diseases

- Rabies guide for the medical, veterinary and allied professions

- National guidelines for control of plague

- Yellow fever policy for South Africa

- Standard operating procedure emergency operations centre

- Outbreak response reports for recent zoonotic events – CCHF, rabies, brucellosis

Food safety

- URLs to the various competent authorities, websites which link to different pieces of legislations, guidelines and promotional material

- Various pieces of legislation (on sweeteners; Hazard Analysis and Critical Control Points, HACCP; miscellaneous additives; hygiene)

- Regulations dealing with prevention of foodborne illness (R962/2012 and R908/2003) as amended by R1060/2009; Basic Hygiene and HACCP certification

- Codex sub-committee coordinators list

- Food-borne illnesses incidents/outbreak report register

- Emails of European Union RASFF Notifications received

- Notifications and emails send to relevant authorities to investigate and to take remedial action if/as necessary and their feedback

- Food analysis report (2016)

- Official letter to INFOSAN to update contact details for the Emergency Contact Appointment; updated INFOSAN Emergency Contact points list 2009

- Questionnaire and exchange with INFOSAN related to a workshop. Strengthening INFOSAN in SADC countries in support of the development of an African Rapid Alert System for Food and Feed, November 2016

- Slide showing communication link to IHR focal point

- MNORT attendance register

- Quick reference guide: Submission of specimens for suspected food/waterborne disease outbreaks to NHLS/NICD laboratories. National Institute for Communicable Diseases; 2016 http://www.nicd. ac.za/assets/files/Quick%20reference%20guide_submission%20of%20specimens_suspected%20 foodborne%20disease%20outbreaks_%202016(1).pdf, accessed 20 December 2017)

- NICD-NHLS Quick reference guide for the investigation of foodborne disease outbreaks (2012)

- NICD-NHLS Handbook for diagnosis of foodborne illness clusters/outbreaks (2016)

- Food-borne illness event case investigation form (2010)

- Food-borne illness event specimen collection guide & packaging (2016)

- Line-list for the investigation of food-borne illness events (2012)

- Food safety alert teams. In: Food safety alert guideline. Page 6

- Email thread following RASFF Notification

- Nomination letter from DAFF; South African National Consumer Union (SANCU) agenda

- Food safety alert address book

- URL to compulsory specifications: http://www/nrcs.org.za

- Self-assessment on food safety

Biosafety and biosecurity

- https://www.google.co.za/search?q=regulation+178+national+department+of+health&oq= Regulation+178&aqs=chrome.1.69i57j69i59l2j0l3.4635j0j4&sourceid=chrome&ie=UTF-8)

- https://www.sabs.co.za/

- https://www.assaf.org.za/files/2017%20reports/The%20State%20of%20Biosafety%20%20Biose-curity%20Report%20FINAL.pdf

- http://sabioriskassociation.org/

- https://www.thedti.gov.za/nonproliferation/legislation.htm

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- National Health Act, 2003 (Act No. 61 of 2003)

- Animal Diseases Act, 1984 (Act No. 35 of 1984)

- Veterinary and Para-veterinary Professions Act, 1982 (Act No. 19 of 1982)

- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

- Non-Proliferation of Weapons of Mass-Destruction Act, 1993 (Act No. 87 of 1993)

National laboratory system

- National Health Laboratory Services: http://www.nhls.ac.za

- National Institute for Occupational Health: http://www.nioh.ac.za

- National Institute for Communicable Diseases: http://www.nicd.ac.za

- Board of Health Care Funders: http://www.bhfglobal.com

- South Africa National Accreditation System: http://www.sanas.co.za

- Health Professions Council of South Africa: http://www.hpcsa.co.za

- National Institute for Communicable Diseases annual overview 2016/2017

- National Health Laboratory Services annual report 2016/2017

- National Health Laboratory Services Act, 2000 (Act No. 37 of 2000)

- Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act No. 19 of 2006)

- SANAS A 05-06: A general description of SANAS

- SANA PM 01-08: SANAS policy manual

- NHLS primary health care laboratory handbook

Reporting

- National Institute for Communicable Diseases: http://www.nicd.ac.za/index.php/nmc/

- List of controlled and notifiable animal diseases, in terms of the Animal Diseases Act, 1984 (http://www.daff.gov.za/vetweb/Disease%20Control/Listofcontrollednotifiable.pdf, accessed 20 December 2017)

- IHR reports to the World Health Assembly: 2011, 2012, 2013, 2014, 2015, 2016, 2017

- Regional reports:

  ○ Annual Malaria SADC[7] report

  ○ African Leaders Malaria Alliance, 2015, 2016, 2017

  ○ Elimination 8 annual report, 2016, 2017

- Legislation:

  ○ International Health Regulations (2005)

  ○ Regulations relating to the Surveillance and the Control of Notifiable Medical Conditions (National Health Act, 2003 (Act No. 61 of 2003)

- OIE reports, World Animal Health Information System (WAHIS), including the years 2005-2017

- Regional reports: report to SADC and the African Union-Interafrican Bureau for Animal Resources (AU-IBAR) on a monthly basis since the implementation of their systems

- Legislation and protocols related to reporting to OIE

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7 Southern African Development Community

Workforce development

- Occupational framework for epidemiology (draft)

- Epidemiology landscape document

- Human resources for health strategy 2012–2017 (https://www.gov.za/sites/www.gov.za/files/hrh_strategy_0.pdf, accessed 12 December 2017)

Preparedness

- The South African disaster risk management handbook series

- Disaster Management Act No. 57 of 2002

- National epidemic preparedness and response guidelines

- Emergency preparedness and response plan for Eskom Waste Disposal site and temporary hazardous waste handling facility at Matimba Power Station

- Guidelines: storm surge early warning system for South Africa; Standard operating procedure for the prevention and management of chemical, biological and radiological incidents during major events;

- Detailed procedures for the prevention and management of chemical, biological and radiological incidents during major events

- Viral haemorrhagic fevers guidelines

- Typhoid Guidelines

- Cholera Control Guidelins

- Standard operating procedures for notification of priority conditions 2010

- 2014 surveillance final report following the 2014 African Nations Championship (CHAN)

- CHAN 2014 SOP of the Epidemiology and Surveillance Directorate

- PHC 2013 Africa Cup of Nations (AFCON). Final report published March 2013

- Emergency response plan

- Chemical, Biological and Radiological CBR Procedures

- Emergency response plan at Flexilube (http://www.jaws.co.za/C182%20EIR%20Addendum/D485%20Flexilube%20DEIR/D382%20Environmental%20Authorisation/KiPower%20Final%20Addendum/Lonmin%20DEIR/Phola%20Coal%20Draft%20Scoping%20Report/Flexilube%20FEIR/Sub-Appendix_F2%20-%20HS%2017%20Emergency%20Response%20Plan%20(Rev%206).pdf, accessed 12 December 2017)

- Alternative financing mechanisms for disaster risk management in South Africa. In: [XX:]163–198.

- Department of Health strategic plan 2014–2019

- Operational risk action plan

- IRMSA risk report: South Africa risks 2016. Second edition. Institute of Risk Management South Africa; 2016

- Management of Communicable Disease in PoE_1

- National climate change and health adaptation plan (A4 sheet)

- Norms and standards (Chapter 5 dealing with Port Health) available from: http://www.samed.org.za/Filemanager/userfiles/NATIONAL%20ENVIRONMENTAL%20HEALTH%20NORMS%20AND%20STANDARDS.pdf

- Standard operating procedures handling EVD travel related inquiries and processing travel applications

- National Department of Health national health operations centre Ebola virus disease SOPs

- Standard operating procedures for medical evacuation of suspected or confirmed Ebola cases into South Africa

- Standard operating procedures for enhanced active case-based surveillance for Ebola virus disease in South Africa, 2014 (http://gohealthcentre.co.za/wp-content/uploads/2015/04/SOP-for-Ebola-Surveillance.docx, accessed 12 December 2017)

- National health operations centre EVD summary report, 25 August 2014–22 March 2016

- Priority public health conditions detected during the 2010 World Cup

- SANA Report, 29 November 2013

- Service level agreement cooperative governance DM Amendment Bill, Nov 2014

- SOPs for [IHR] core capacity assessments

- Yellow fever standard operating procedure

- Yellow fever policy for South Africa

- Treasury regulations:

    ○ Division of Revenue Act, 2013 (Act No. 2 of 2013)

    ○ Public Finance Management Act, 1999 (Act No. 1 of 1999)

Emergency response operations

- EOC floor plan

- Emergency operations centre incident management system backbone document

- Public Health Emergency Operations Centre incident response plan SOP

- Public Health Emergency Operations Centre forms SOP

- Public Health Emergency Operations Centre roles and responsibilities SOP

- Multi-sectoral National Outbreak Response Team (MNORT): Terms of reference

- Disaster Management Act, 2002 (Act No. 57 of 2002)

- Green paper on disaster management, 1998

- South African national disaster management framework

- EOC discussion-based exercises

- SOP for the 2014 African Nations Championship (CHAN) by the Epidemiology and Surveillance Directorate

- Surveillance final report for CHAN 2014

- Standard operating procedures for handling EVD travel-related inquiries and processing travel applications

- National Department of Health National Health Operations Centre Ebola virus disease SOPs

- Standard operating procedures for medical evacuation of suspected or confirmed Ebola cases into South Africa

- Standard operating procedures for enhanced active case-based surveillance for Ebola virus disease in South Africa, 2014

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- Priority public health conditions detected during the 2010 World Cup

- SOPs for core capacity assessments

- Yellow fever standard operating procedure

- Yellow fever policy for South Africa

- PHC 2013 Africa Cup of Nations (AFCON). Final report published March 2013

- Final standard operating procedures for notification of priority conditions, 2010

- Guidelines for conditions such as viral haemorrhagic fevers, cholera, plague, typhoid, meningococcal meningitis, foodborne illnesses, rabies, anthrax, influenza

- NATHOC EVD report May 2016

Linking public health and security authorities

- MoU between Western Cape Department of Health and South African Police Service (Western Cape)

- South Africa elected to INTERPOL Executive Committee. South Africa Journal. 6 November 2015 (http://www.gov.za/speeches/south-africa-elected-interpol-executive-committee-6-nov-2015-0000, accessed 18 December 2017)

- A policy framework for disaster risk management in South Africa

- Standard operating procedures for enhanced active case-based surveillance for Ebola virus disease in South Africa, 2014

- Standard operating procedures for medical evacuation of suspected or confirmed Ebola cases into South Africa, 2014

- National Health Operations Centre Ebola virus disease (EVD) summary report, 25 August 2014–22 March 2016

- Border Control Operating Coordinating Committee (BCOCCC), South Africa

- Manual: joint management of incidents involving chemical or biological agents or radio-active materials

- Detailed procedures for the prevention and management of chemical, biological and radiological incidents during major events

- The legal and constitutional framework of incident command in South Africa (MS PowerPoint presentation)

- Introduction: a policy framework for disaster risk management in South Africa

Medical countermeasures and personnel deployment

- Medicines and Related Substances Act 101 of 1965, Section 21 (http://www.hpcsa.co.za/Uploads/editor/UserFiles/downloads/legislations/acts/medicines_and_related_sub_act_101_of_1965.pdf, accessed 13 December 2017)
- NICD 4th Ebola Mobile Laboratory Unit report
- Progress report for South Africa response to EVD in West Africa & other countries in the African continent, July 2015
- African Union support for Ebola, signed agreement 2015
- SADC training overview, September 2014
- African Union Support to Ebola Outbreak in West Africa (ASEOWA) pre-deployment training

Risk communication

- National response plans – communication sections
- Organizational chart
- Emergency risk communication staff plans
- Job descriptions for communication staff members
- Shared agreements with response agencies
- Emergency response budget sample
- Exercise plans and results
- Training workshops objectives/results
- Message clearance plan
- Plan alterations
- Mechanism of sharing plan alterations
- Long-term budget plan
- Internal and external coordination events
- Response reports
- News stories during past emergencies
- Plans for communication coordination with external agencies
- After-action reports from exercises or emergency responses
- Agreed upon response plan and coordinated budget plan for emergency communication
- Reports on local at-risk populations
- Risk assessments that address most likely local public health threats
- Communication campaign strategy examples
- Surge capacity plan
- Data from public health hotline (relevant questions from the public, etc.)
- Community outreach plan
- Media response plans

Points of entry

- National Health Act, 2003 (Act 61 0f 2003) (http://www.chr.up.ac.za/undp/domestic/docs/legislation_55.pdf, accessed 14 December 2017)
- National guidelines on epidemic preparedness and response
- King Shaka International Airport integrated public emergency contingency plan
- International Health Regulations Act, 1974: Designation of Airports as Sanitary Airports
- Port Health standard operating procedures
- National Environmental Health Norms and Standards
- Regulations Relating to the Management of Human Remains.

Chemical events

- Chemical Weapons Convention (CWC)
- Biological and Toxin Weapons Convention (BTWC)
- The Vienna Convention on the Protection of Ozone Layer
- International Oil Pollution Compensation fund
- International Convention on Liability for Bunker Oil Pollution Damage
- Rotterdam Convention on the Prior Informed Consent Procedure for certain Hazardous Chemicals and Pesticides in International Trade
- The Non-Proliferation of Weapons of Mass Destruction Act, 1993 (https://www.thedti.gov.za/nonproliferation/pdf/20050520NPAct.pdf, accessed 14 December 2017)
- Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (http://www.nda.agric.za/doaDev/sideMenu/ActNo36_1947/AIC/ACT%2036%20OF%201947%202017-2018%20TARIFFS.PDF, accessed 14 December 2017)
- Disaster management white paper
- Provincial disaster/emergency plans
- Joint management of incidents involving chemical, biological and radioactive materials manual
- Department of Defence policies on chemical and biological defence
- Detailed procedures for the prevention and management of chemical, biological and radiological incidents during major events

Radiation emergencies

- Department of Energy National Nuclear Disaster Management Plan (NNDMP)

- KNPS and NECSA emergency plans

- National Nuclear Regulation Act, 1999 (Act No. 47 of 1999); Section 38(b) (http://www.nnr.co.za/wp-content/uploads/2015/02/No-927-NNR-Regulation-Licencing-of-sites-for-new-nuclear-power-plants.pdf, accessed 14 December 2017)

- Hazardous Substances Act 15 of 1973:
  - Regulations R246 & 247 of 1993 – Group IV (Radioactive sources)
  - Regulations R690 of 1989 – Group III (Electronic generators of ionizing & non-ionizing radiation)
  - Regulations R1332 of 1973 – Electronic products
  - Regulations R1302 of 1991 – Schedule of listed electronic products

- Regulations for the safe transport of radioactive material (IAEA SSR-6; http://www-pub.iaea.org/MTCD/publications/PDF/Pub1570_web.pdf, accessed 14 December 2017)

- IAEA code of conduct for safety & security of radioactive sources. Vienna: International Atomic Energy Agency; 2004 (http://www-pub.iaea.org/MTCD/publications/PDF/Code-2004_web.pdf, accessed 14 December 2017) – signed by the Director General of South Africa's Department of Health October 2012

- Manual: joint management of incidents involving chemical or biological agents or radioactive materials. National Gazette Vol. 488, 3 Feb 2006, R28437 (http://www.msukaligwa.gov.za/docs/20080725161813.pdf, accessed 14 December 2017)