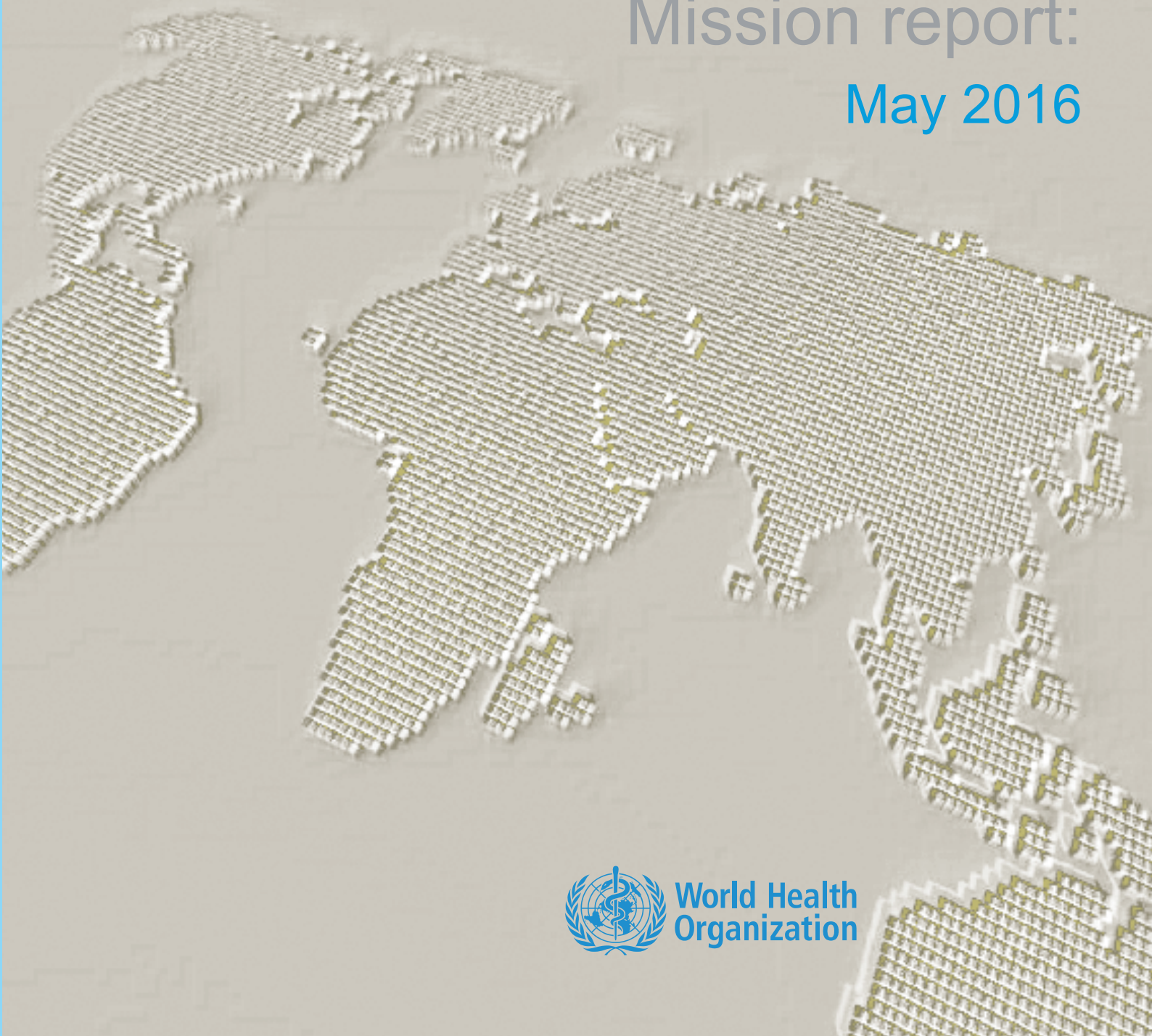
JOINT EXTERNAL EVALUATION OF IHR CORE CAPACITIES

of the

PEOPLE'S REPUBLIC OF BANGLADESH

Mission report:

May 2016



World Health Organization

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Contents

Executive summary

This evaluation was a joint exercise between a team of experts from the People's Republic of Bangladesh (Bangladesh) and an external team of experts, using the World Health Organization (WHO) International Health Regulations (IHR) (2005) joint external evaluation (JEE) tool. The multisectoral international JEE team, consisting of individuals selected on the basis of their recognized technical expertise from a number of countries and advisors representing international organizations, conducted the evaluation during 8–12 May 2016 in Dhaka, Bangladesh.

In 2016, the WHO worked with partners to create the JEE evaluation. Bangladesh is the fifth country to complete the JEE process, following Ethiopia, Mozambique, Pakistan and Tanzania.

The JEE process is based on peers assessing peers and uses a multisectoral One Health approach, which is imperative to combat global public health emergency threats. It provides an opportunity for the host country to combine findings and recommendations from other in-depth evaluations into one report and support the discussion of the country's strengths/good practices as well as challenges and opportunities. Each of the 19 technical areas within the tool is scored, and up to five priority actions for each technical area identified. Prior to the external evaluation, the Bangladesh team of experts had completed a self-assessment exercise (using the JEE tool) that was shared with the JEE team. This self-assessment report, in addition to host presentations, and supporting documentation were used to complete the JEE tool.

The JEE report has high visibility and is part of a wider global process to improve health security. The JEE process is based on openness and transparency including publishing and dissemination of evaluation results. The final mission report will be available on the following websites: Ministry of Health and Family Welfare (MoHFW; www.mohfw.gov.bd); Food and Agriculture Organization (FAO; www.fao.org); Institute of Epidemiology, Disease Control and Research (IEDCR; www.iedcr.org); World Organisation for Animal Health (OIE; www.oie.int); WHO (www.who.int)and GHSA (www.ghsagenda.org);

The JEE team lead and members would like to express their appreciation towards Bangladesh for volunteering for this evaluation and their commitment to .the implementation of IHR (2005).

Findings from the JEE

Overarching issues and priority actions

Bangladesh has made great strides in complying with the IHR (2005), but there are opportunities for improvement in each technical area, that require the country's highest commitment and support working closely together with development partners.

The evaluation identified the following overarching issues that need improvement:

Inter-and intra-ministerial coordination: It is evident that excellent professional interpersonal relationships were in place among many of the senior staff. However, there were no formal established liaison relationships and there was a lack of clarity around the roles, responsibilities, relationships and authorities of the key organizations and their senior staff. This presents a risk in the event of rapidly escalating situations where precious time is lost for ministerial-level decision-making to resolve such matters. Clarifying in advance through formal policy documents will ensure that all can act within clear lines of responsibility and authority.

Coordination across JEE elements: While it is evident that a lot of work went into the development of capabilities addressed within the JEE as a "whole-of-government" effort, many organizational "silos" got created within the organizations that posed artificial barriers to further development of these capacities. Establishing cross-cutting working groups to address common needs (such as workforce development, reporting mechanisms) will ensure that efficient holistic approaches are used to integrate capacities across organizational boundaries into a true set of national capacities.

Documentation: Ample work has been done in Bangladesh to develop national capacities required under the IHR, and considerable experience exists among the staff responsible for building these capacities. However, there is a significant risk of losing that institutional knowledge because very little of it is documented. Plans, procedures and other key documents should be drafted, validated and promulgated widely within and across the ministries to ensure rapid and efficient dissemination and use of these capabilities.

Bangladesh scores

Capacities	Indicators	Score
National legislation, policy and financing	P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR (2005)	3
	P.1.2 The State can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with the IHR (2005)	3
IHR coordination, communication and advocacy	P.2.1 A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR	3
Antimicrobial resistance	P.3.1 Antimicrobial resistance detection	2
	P.3.2 Surveillance of infections caused by antimicrobial-resistant pathogens	2
	P.3.3 Health care-associated infection (HCAI) prevention and control programmes	2
	P.3.4 Antimicrobial stewardship activities	2
Zoonotic diseases	P.4.1 Surveillance systems are in place for priority zoonotic diseases/pathogens	3
	P.4.2 Veterinary or animal health workforce	3
	P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases are established and functional	2
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	2
	P.6.2 Biosafety and biosecurity training and practices	3
Immunization	P.7.1 Vaccine coverage (measles) as part of national programme	3
	P.7.2 National vaccine access and delivery	5
National laboratory system	D.1.1 Laboratory testing for detection of priority diseases	4
	D.1.2 Specimen referral and transport system	4
	D.1.3 Effective modern point-of-care and laboratory-based diagnostics	3
	D.1.4 Laboratory quality system	1
Real-time surveillance	D.2.1 Indicator- and event-based surveillance systems	4
	D.2.2 Interoperable, interconnected, electronic real-time reporting system	4
	D.2.3 Integration and analysis of surveillance data	3
	D.2.4 Syndromic surveillance systems	4
Reporting	D.3.1 System for efficient reporting to FAO, OIE and WHO	4
	D.3.2 Reporting network and protocols in country	4
Workforce development	D.4.1 Human resources are 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	3
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	1

Emergency response operations	R.2.1 Capacity to activate emergency operations	**2**
	R.2.2 EOC operating procedures and plans	**1**
	R.2.3 Emergency operations programme	**1**
	R.2.4 Case management procedures are implemented for IHR relevant hazards	**1**
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	**1**
Medical countermeasures and personnel deployment	R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency	**1**
	R.4.2 System is 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.)	**2**
	R.5.2 Internal and partner communication and coordination	**3**
	R.5.3 Public communication	**3**
	R.5.4 Communication engagement with affected communities	**3**
	R.5.5 Dynamic listening and rumour management	**3**
Points of entry	PoE.1 Routine capacities are established at points of entry	**2**
	PoE.2 Effective public health response at points of entry	**2**
Chemical events	CE.1 Mechanisms are established and functioning for detecting and responding to chemical events or emergencies	**1**
	CE.2 Enabling environment is in place for management of chemical events	**1**
Radiation emergencies	RE.1 Mechanisms are established and functioning for detecting and responding to radiological and nuclear emergencies	**2**
	RE.2 Enabling environment is in place for management of radiation emergencies	**2**

Note on Scoring of technical areas of the JEE Tool:

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

The host country may suggest a score at this time or during the on-site consultation with the external team. The entire external evaluation, in particular the discussions around the score, the strengths, the areas that need strengthening, and the priority actions is collaborative, with external evaluation team members and host country experts seeking agreement.

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 External Evaluation Team Lead will decide on the final score and this will be noted in the Final Report, along with the justification for each party's position.

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 that identify national structures and responsibilities as well as the allocation of adequate financial resources are also important.

Target

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

Bangladesh: level of capabilities

The Bangladesh team gave a self-assessed score of 2. Discussions with relevant national staff and JEE team led to a consensus score of 3 for both indicators, mainly because a number of legislations and acts that were not identified and referred during the self-assessment were provided along with the Communicable Disease, Prevention, Control and Eradication Law 2016 that was drafted and introduced in the Parliament (draft cleared on 9 May 2016). The JEE team felt that the legislation and acts being implemented are relevant to IHR and satisfy the indicators as "developed capacity," with a subsequent score of 3. However, a caveat is to be added that Bangladesh has to follow up and ensure that the public health prevention act of 2015 is passed and comes into effect. Bangladesh has agreements and memorandums of understanding with neighbouring countries through bilateral and South Asian Association for Regional Cooperation (SAARC) mechanisms on cross-border communicable diseases control. IHR does not have specific finances for enforcing all the existing regulations, however funding from various sectors contributes to support the implementation. The country will be proposing funds for IHR in the coming budget.

Recommendations for priority actions

- Review and revise existing legislations and acts in the context of One Health principals.
- Oversee the passing of the Communicable Disease Prevention, Control and Eradication Law 2106 and its implementation.
- Ensure provision of adequate and sustainable funding for IHR implementation.

Indicators and scores

P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR (2005) – Score 3

Strengths/best practices

- Right to health is specified in the constitution of Bangladesh.
- An assessment of relevant legislation, regulation, administrative requirements and other government instruments for IHR has been carried out.
- The Cabinet in the presence of the Prime Minister cleared the draft of the Communicable Disease Prevention, Control and Eradication Law 2016. This law is based on the malaria eradication ordinance of 1977 and will cover emerging and re-emerging diseases along with all major communicable diseases.

Areas that need strengthening and challenges

- Monitoring, enforcement and full implementation of existing laws and regulations.
- National public health laws and legislation awareness and practice across all relevant ministries.

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

Strengths/best practices

- An assessment of relevant legislation, regulation, administrative requirements and other government instruments for IHR has been carried out and adjusted needs identified.
- Bangladesh has adopted and has been implementing the IHR core capacity requirements since 2007 and submitting its IHR self-assessment report on time annually from 2010.
- New and revised laws and legislations are in line with IHR.

Areas that need strengthening and challenges

- Existing laws and legislations are not all fully in-line with the IHR and GHSA under the One Health approach.
- Financial provision and sustainability are needed to implement and maintain IHR and GHSA core capacities.

Relevant documentation

- Epidemic Diseases Act, 1897
- Public Health Ordinance, 1944
- Animal Slaughter and Meat Control Act, 2011
- Fish Feed and Animal Feed Act, 2010
- Civil Aviation Ordinance, 1960
- Bangladesh Diseases of Animal Act, 2005
- Bangladesh Animal and Animal Product Quarantine Act, 2005
- Animal Disease Rule, 2008
- Bangladesh Fish and Animal Fish Feed Act, 2010

- Chittagong and Mongla Port Authority Ordinance, 1976
- Bangladesh Malaria Eradication Board (Repeal) Ordinance, 1977
- Prevention of Malaria (Special Provisions) Ordinance, 1978
- Animal and Animal Product Quarantine Act, 2013
- Animal Feed Rule, 2013
- Communicable Disease Prevention, Control and Eradication Law, 2016

IHR coordination, communication and advocacy

Introduction

The effective implementation of the IHR requires multi-sectoral/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

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

Bangladesh level of capabilities

- IHR coordination committees (multisectoral) exist with clearly written terms of reference, composition, and job description of the national IHR focal point, and the MoHFW has issued the necessary government orders to this effect.
- A mechanism has been established for the coordination of relevant sectors in the implementation of the IHR through the IHR Focal Technical Institute of Bangladesh and IEDCR.
- Bangladesh has requested an extension to the deadline for implementing core capacities until June 2016.
- All meetings of the IHR coordination committees including the decisions taken are documented.
- Multisectoral involvement in outbreak detection and response are documented.
- Communicable Disease Control (CDC)/Directorate General of Health Services (DGHS) and IEDCR conduct training and advocacy programmes each year.

Recommendations for priority actions

- Formalize the multisectoral group at a technical level to develop standard operating procedures (SOPs) for joint planning, including response to outbreaks and other public health emergencies, regular data sharing and information exchange between relevant ministries, as well as monitoring and evaluation. Update regularly on the basis of experience gained from a real event.
- Develop SOPs for communication and reporting between the national IHR focal point and relevant stakeholders.
- Conduct regular exercises to test the effectiveness of the multisectoral coordination mechanism (either from a real event or through a simulation) and develop an action plan to improve its effectiveness as appropriate.
- Conduct strong advocacy for separate budget allocation from the government sector and active engagement of other sectors in the coordination mechanism.

Indicators and scores

P.2.1. A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR (2005) – Score 3

Coordination mechanisms between relevant ministries are in place. National SOPs or equivalent exist for coordination between the national IHR focal point and relevant sectors.

Strengths/best practices

- The national IHR focal point is established, and there is a plan to restructure the IHR cabinet to improve its effectiveness.
- A multisectoral committee was established in 2008 for IHR implementation. An assessment was carried out and an action plan was finalized.
- There is good coordination among all relevant sectors during a public health event.
- Regular meetings are held between relevant stakeholders at provincial and district levels.

Areas that need strengthening and challenges

- Additional advocacy and planning between sectors is needed in recognition of IHR as a national responsibility across all sectors.
- Strengthen coordination between relevant ministries on events that constitute public health emergencies of national/international concern with clear terms of reference and identified roles and responsibilities.
- Review and strengthen functional mechanisms for inter-sectoral collaboration between animal health and human health surveillance units.
- Develop procedures and SOPs for IHR communication with WHO and stakeholders, which define communication mechanisms and protocols.

Relevant documentation

- Strategy and guideline for International Health Regulation (2005) in Bangladesh
- SOPs for public health emergencies of international concern (PHEIC)
- Strategy and guideline for management of PHEIC at points of entry and reporting of PHEIC at points of entry
- Action plan for implementation of IHR (2005) updated, 2013
- National avian and pandemic influenza preparedness and response plan, Bangladesh: 2011-2016 in the context of IHR 2005
- IHR assessment report

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

Bangladesh level of capabilities

Bangladesh has high-level multisectoral commitment to the antimicrobial resistance prevention and containment programme, as evidenced by the existence of a National Steering Committee, National Technical Committee and Core Working Group that send their terms of references for prevention and control of antimicrobial resistance to MoHFW.

Many initiatives have started in the country, such as: (i) designation of the nodal national institution for the antimicrobial resistance containment programme for the MoHFW; (ii) surveillance of antimicrobial resistance based on 10 sites; (iii) development of the national action plan that is soon to be endorsed by the MoHFW; (iv) standard treatment guidelines and antibiotic policy are under development; (v) some initiatives have been undertaken in the animal sector (ban on antibiotics as growth promoter in poultry, animal and aquaculture); and (vi) steps taken to ensure the production of qualified antibiotics.

Bangladesh is at an early phase of implementing antimicrobial resistance containment activities. Surveillance data showed limited capacity for detection and analysis of extended spectrum beta-lactamases and carbapenem-resistant strains, and serious steps are needed to reduce the increase of antimicrobial resistance through more rational use of antibiotics.

Recommendations for priority actions

- IEDCR to finalize the National Action Plan in a manner that is aligned with the Global Action Plan as requested by the Sixty-eighth World Health Assembly resolution and endorsed both by the public health and animal health authorities.
- IEDCR to rapidly operationalize antimicrobial resistance surveillance in humans following the WHO Global Antimicrobial Resistance Surveillance System (GLASS) protocols – generating robust national antimicrobial resistance data.

- MoHFW to clarify the complex, cross-cutting requirements for antimicrobial resistance stewardship via a more detailed situation analysis on this issue, identifying challenges and detailed next steps, including specific actions on both the animal side (prevent use of antimicrobial agents in poultry and fish as growth promoters; use antimicrobials in animals only after Culture and Sensitivity testing; discourage use of antimicrobials in animals that are prioritized for human use, and in humans (enact, enforce and follow-up laws for prevention of sale of antimicrobials over the counter without prescription; ensure good manufacturing practices and thereby manufacture of good quality antimicrobials by the manufacturers; finalize and implement standard treatment guidelines (STGs) for infectious diseases; finalize the national antibiotic policy).
- MoHFW to urgently consider the development of national guidelines and an implementation plan for IPC to control HAIC and emergence/spread of antimicrobial resistance in health care settings.
- Based on existing links between public health and the animal sector, IEDCR, Bangladesh Livestock Research Institute (BLRI) and Department of Livestock Services (DLS) should develop further collaborative projects focusing on surveillance of antimicrobial resistance and antimicrobial use.

(Note: see http://www.searo.who.int/entity/antimicrobial_resistance/documents/CDS_SEA-CD-258.pdf for recommendations made for antimicrobial resistance in Bangladesh in 2012.)

Indicators and scores

P.3.1 Antimicrobial resistance detection – Score 2

Strengths/best practices

- Antimicrobial resistance committees and workgroups formulated: National Steering Committee, National Technical Committee and Core Working Group.
- A National Strategy for Antimicrobial Resistance Containment (NSARC) developed and approved by National Steering Committee.
- A National Action Plan has been developed and is under process of approval; high-level commitment to finalize.

Areas that need strengthening and challenges

- The National Action Plan should be updated to align with the Global Action Plan for antimicrobial resistance and then finalized.
- Steps should be taken to implement the plan and indicators developed to follow progress.

P.3.2 Surveillance of infections caused by antimicrobial-resistant pathogens – Score 2

Strengths/best practices

- IEDCR mandated by Director of CDC, DGHS to conduct antimicrobial resistance surveillance.
- A protocol and SOPs were developed by IEDCR for antimicrobial resistance surveillance in 10 sites with approved funding; related activities are set to start within a month.

Areas that need strengthening and challenges

- Quality management system (QMS) accreditation for laboratories should be expanded.
- Laboratory capacity should be reviewed to identify and address gaps and needs.
- Protocols for collecting and analysing data need to be developed.

P.3.3 Health care-associated infection (HCAI) prevention and control programmes – Score 2

Strengths/best practices

- Some policies exist for certain elements of infection prevention and control (such as hand washing).
- There are infection prevention and control committees in health facilities across the country (although not always well resourced, active or effective).

Areas that need strengthening and challenges

- Comprehensive national guidelines on infection prevention and control should be developed and the implementation supported and followed up.
- Ensure functionality of infection prevention and control committees in health care settings.
- Initiate activities regarding infection prevention and control in the animal sector.
- Implement HCAI-related activities from policies and action plans listed under P.1.1 and P.1.4.
- Surveillance of HCAI has been initiated in some pilot areas.

P.3.4 Antimicrobial stewardship activities – Score 2

Strengths/best practices

- Livestock sector (animal and aquaculture) has banned growth promoter use.
- Tier-wise STG for infectious diseases is currently being developed.
- An antibiotic policy is currently being developed.
- As a country with antibiotic production capacity, the MoHFW is enforcing good manufacturing practices among manufacturers.
- Resistance pattern communication to prescribers is in place.

Areas that need strengthening and challenges

- Anyone, including drug sellers, can prescribe/suggest antimicrobials and self-medication; antimicrobials are available over the counter without prescription.
- Directorate of Pharmacy is responsible for actions on restricting over-the-counter use, but timeline for action is not clear.
- Most antimicrobial use is without the benefit of culture and sensitivity testing.
- According to stakeholder feedback, not all drugs are manufactured to high quality standards.
- No tier-wise restriction of antimicrobials prescription exists.
- There are no mechanisms of keeping new and/or valuable antimicrobials reserved for highest need cases; newly introduced antimicrobials are used very frequently.
- Antimicrobials used for prophylaxis are often unjustified.
- Antimicrobials are used in poultry and fish as growth promoters.
- Enforcement of policies in the animal sector is weak.
- Waste management in hospital settings needs to be improved, including dedicated staff.
- Surveillance and programme for rational antimicrobial use in the animal sector is yet to be established.
- Limited emphasis on antimicrobial resistance in medical education courses (see http://www.banglajol.info/index.php/BJP/article/viewFile/18831/13170, accessed September 7, 2016).
- Need to finalize antibiotic policy and a system of prescription audit at tertiary care hospitals.

- Relevant documentation
- National strategy for antimicrobial resistance containment
- National action plan for antimicrobial resistance containment
- Protocol for antimicrobial resistance surveillance in Bangladesh
- SOPs for antimicrobial resistance surveillance
- Regional workshop on antimicrobial resistance
- Antimicrobial resistance: Bangladesh experience

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.

Bangladesh level of capabilities

The Government of Bangladesh is committed to work in coordination with animal health and human (public) health sectors to prevent and control emerging and endemic zoonotic agents. Priority zoonotic diseases in Bangladesh are avian influenza, Nipah, anthrax, rabies and Japanese encephalitis.

There is a Government endorsed policy document titled "One Health strategic framework for infectious diseases" that utilizes the principles of the One Health approach for the prevention of zoonotic diseases. Responsibility for detection, surveillance, reporting and response are shared between animal health and human health sectors at national and subnational levels for several priority zoonotic diseases including avian influenza and anthrax. Examples of multidisciplinary collaborations and best practices of collaborations among human health, animal health, wildlife and agriculture to mitigate the impact of zoonotic diseases in humans, animals and livestock are provided.

The Government of Bangladesh has multidisciplinary research capacity in collaboration with national and international agencies to curb emerging infectious diseases of zoonotic origin.

Recommendations for priority actions

- Strengthen coordination and collaboration (including priority setting, policy setting, regulatory guideline development, information sharing, supporting joint training and educational programmes, and joint risk assessment) between the animal health and human health sectors at district and sub-district levels.
- Operationalize a One Health framework for animal health and human health surveillance and response system for routine and emergency zoonotic events and strengthen joint prevention and control capacity for zoonotic diseases, both within and outside of the government sector including other agencies (e.g. wildlife) as needed, to act at community, subnational, national and regional levels.
- Build and link veterinary and public health laboratory network to confirm identification of priority zoonotic diseases and real-time sharing of specimens and results.
- Build One Health education capacity on priority zoonotic diseases and improve awareness for working with a One Health approach in both human and animal sectors.
- Promote further development of One Health activities following models and good practices implemented in Bangladesh, such as multidisciplinary anthrax outbreak investigation and India/Bangladesh joint investigation and response platform, Nipah surveillance.

- Enable funds (public, donors) for One Health activities including research, surveillance and capacity building.
- Prioritize improvement in response, development and implementation of a funded, joint contingency plan that allows for real-time data sharing between health, animal, environment and relevant sectors.

Indicators and scores

P.4.1 Surveillance systems are in place for priority zoonotic diseases/pathogens – Score 3*

Caveat*: Zoonotic surveillance systems are in place for up to four zoonotic diseases/pathogens of greatest public health concern.

Strengths/best practices

- Surveillance systems for zoonotic diseases are in place both for humans and animals.
- Joint public health/animal health priority zoonotic diseases surveillance in place, such as for avian influenza, rabies, anthrax, Nipah and Japanese encephalitis.
- One Health surveillance systems exist for anthrax, avian influenza and Nipah.
- Multidisciplinary approach for disease detection and response.
- Facilities and services for laboratory confirmation of samples collected during outbreak investigations or surveillance activities.
- Existence of collaborative, multidisciplinary research capacity on anthrax, Nipah, Japanese encephalitis and avian influenza involving IEDCR, Bangladesh Agricultural University (BAU), Chittagong Veterinary and Animal Sciences University (CVASU), BLRI, Central Disease Investigation Laboratory (CDIL), US Centers for Disease Control and Prevention (US CDC), United States Agency for International Development, FAO, WHO and academia.

Areas that need strengthening and challenges

- Gaps in response capacity to zoonotic diseases were identified.
- Real-time data sharing between sectors is limited.
- Activities and programmes are driven by resource-intensive research protocols and may not function in the future without external funding threatening sustainability.
- Detection, surveillance and response of zoonotic disease events in animals and humans are resource-intensive often exceeding the national resources allocated for health.
- Challenges related to the passive reporting mechanisms for priority zoonotic disease events in animal populations were identified and need to be strengthened for developing an active, coordinated priority zoonotic diseases surveillance and response.
- Expanding surveillance activities for priority zoonotic diseases to ensure nationwide coverage and/or representative high-risk populations.
- Strategies for collaborative management of emerging zoonotic diseases including Ebola virus disease.

P.4.2 Veterinary or animal health workforce – Score 3*

Caveat*: Animal health workforce capacity within the national public health system and less than half of subnational levels.

Strengths/best practices

- Animal health workforce exists in the country.
- Excellent research capacity in the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) and support from international technical and development partners and academia including One Health Institute at CVASU, Sylhet and Massey University.
- Veterinarians are included in the country's FETP.
- There is sufficient animal health workforce capacity to support public health at the national level once coordination mechanisms are in place, and for specific zoonotic diseases where an established One Health response framework already exists.
- The veterinary workforce and all veterinary capacities have been evaluated using OIE Performance of Veterinary Services (PVS) evaluation and an OIE PVS gap analysis and this information is available to the Government of Bangladesh.

Areas that need strengthening and challenges

- Animal health workforce involved in public health activities need to be trained for better collaboration and coordination for zoonotic disease-related activities at sub-district level.
- Training in FETP needs to be better adapted to include veterinarians.
- Insufficient veterinary field staff and community animal health care providers to cover all needs at the district and sub-district levels.
- There is lack of awareness and promotion of the One Health approach among clinical and medical service providers in human health and animal health workforce for enhancing zoonotic diseases prevention and control.

P.4.3 Mechanisms for responding to infectious and potential zoonotic diseases are established and functional –Score 2

National policy, strategy or plan for response to zoonotic events is in place.

Strengths/best practices

- Both the animal health and public health sectors respond to zoonotic diseases events, sometimes together.
- There is good capacity and mechanisms are in place for responding to specific zoonotic diseases; but the responses are reactive in nature, driven by occurrence of outbreaks or emergencies.
- Vaccine production and delivery mechanisms exist, e.g. Japanese encephalitis vaccination in pigs – piloting stage.
- Investigations, detection and response mechanisms for anthrax and a comprehensive avian influenza preparedness plan are in place.

Areas that need strengthening and challenges

- There is no strategy, plan or systematic coordinated mechanism for establishing multidisciplinary interagency response teams in the event of a suspected zoonotic disease outbreak.

- Diseases in animals are often not reported by farmers/owners to community health workers or veterinarians. Active community search by relevant sector workers or community reporting is required for early detection and response.
- There is no plan to encourage reporting of animal diseases and address factors, which may prevent farmers/owners from reporting.
- Personnel and training in veterinary public health and veterinary epidemiology is required to improve effectiveness in the control and prevention of zoonotic diseases.

Relevant documentation

- Strategic framework and action plan: One Health for infectious diseases in Bangladesh
- National guideline for management, prevention and control of Nipah virus infection including encephalitis
- National guidelines for the prevention and management of anthrax, July 2015
- Epidemiological, animal, environmental and anthropological Investigations of outbreaks and risk factors for anthrax in humans and livestock in Bangladesh
- Avian influenza preparedness plan

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.

Bangladesh level of capabilities

The Government of Bangladesh is committed to ensuring safe and quality food for its citizens. Currently, about 15 ministries and approximately 20 concerned agencies, governed by a number of laws and regulations, share food safety and quality control activities. The Government has enacted the Bangladesh Food Safety Act, 2013 aimed to control food safety and quality activities, through effective coordination among the involved agencies. Under the Act, the Government constituted the Bangladesh Food Safety Authority (BFSA) in February 2015. The BFSA is in action along with its supervisory body – the National Food Safety Management Advisory Council – and supporting technical committees. The key role of the BSFA is to coordinate the activities of the agencies involved in food safety and quality control, monitoring and food safety management.

Of the 15 ministries, nine ministries and their concerned agencies are directly involved in food inspection and enforcement activities including participation in prevention and detection of food safety risks and response to food safety events, emergencies or outbreaks. Nearly 600 trained and well-equipped sanitary inspectors work under the DGHS. Seven Institutes of Health Technology (IHT) are producing sanitary inspectors through a four-year diploma course that includes one-year internship. It is planned to convert the diploma course into a BSc degree course. Introduction of a BSc Food Safety course in Institute of Public Health is in process.

To support inspection activities as well as to detect risks in food and water, a number of analytical laboratories are working under various ministries. A National Food Safety Laboratory (NFSL) – an international standard laboratory established with the support of FAO, under the MoHFW with the capability of analysing a wide range of chemicals including heavy metals, pesticides, veterinary drugs, antibiotics, hormones and pathogens – is established. Aimed at sharing data, information, expertise and collaboration in analysis, a laboratory network has been established, comprising members from both public and private sectors.

The Bangladesh Standards and Testing Institution (BSTI) of the Ministry of Industries is the mandated body for food standards formulation, adoption and harmonization from the codex or other international or regional standards. Under the MoHFW, the national Foodborne Illness Surveillance (FBIS) system led by the IEDCR has been established with the help of FAO. This functions through 10 sentinel sites with

laboratory-supported web-based surveillance that collects data from all upazila health complexes and mobile phone-based surveillance using six mobile phone operators across the country. Responses to food safety emergencies led by the IEDCR are timely, efficient, well coordinated, and in close collaboration with other agencies including support from their laboratories for detection of risks.

Improvement of safety in poultry, fisheries and horticulture value chains, provision of training of trainers, lead trainers and lead farmers, as well as establishing proper record keeping and documentation system are being done through implementation of Good Agricultural Practices. Monitoring and supervision of these activities are digitized.

Aimed at improving the safety and quality of street food, a total of 1100 food carts are under distribution among trained street food vendors in different cities. Studies showed a positive impact of food carts on safety and quality of food as well as on the income of vendors.

The FAO has been supporting food safety activities, including institutionalization of food safety, formulation of food safety policy and plan, strengthening of laboratory capacity and capabilities for food and water analysis, risk-based food inspection, standards settings, consumer awareness, FBIS, and value chains of poultry, fisheries and horticulture.

Recommendations for priority actions

- Strengthen multisectoral collaboration, and information sharing among stakeholders and regulatory entities involved in food safety.
- Enhance robust coordination at the technical level for a rapid multisectoral operational response to detect and respond to foodborne emergencies and outbreaks.
- Enhance capacity and capability of food analysis laboratories to diagnose food safety risks including pesticides and other chemicals along the food chain in all relevant ministries involved in food safety (production, importation and distribution).
- Improve capacity of food safety controls at points of entry to strengthen implementation of IHR.
- Strengthen food standards formulation, adoption and harmonization.

Indicators and scores

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

Strengths/best practices

- Bangladesh Food Safety Act, 2013 and Bangladesh Food Safety Authority constituted and functioning.
- Establishment of a FBIS (10 sentinel sites with laboratory-supported web-based surveillance and mobile phone technologies for reporting cases of foodborne events).
- Laboratory capabilities exist for detection of food safety contaminants and adulterants.
- A network of laboratory services is available and functioning (that of IEDCR, Institute of Public Health (IPH), Institute of Food Science and Technology (IFST), Department of Livestock Services, Department of Fisheries, Bangladesh Agricultural Research Institute (BARI), etc.).
- Training and education programmes for sanitary inspectors exist.
- Improvement in safety of the agricultural value chain (poultry, fisheries and horticulture).

Areas that need strengthening and challenges

- Risk assessment of food safety along the food chain for identifying areas of intervention to mitigate risks and providing support during food safety emergencies and outbreaks.
- Strengthening of capacities and capabilities and real-time data sharing of laboratories involved in food analysis including the analysis of chemicals, pesticides and residues.
- Review and update of food safety rules and regulations that cover all aspects along the food chain including food standards formulation and/or adoption.

Relevant documentation

- Bangladesh Food Safety Act 2013
- SOPs for foodborne illness surveillance/enteric disease surveillance in Bangladesh
- Outbreak investigation and response manual, IEDCR, 2014
- Manual on food safety investigation in Bangladesh, DGHS, MoHFW, 2014
- Manual on risk-based food inspection in Bangladesh, DGHS, MoHFW, 2014
- Guidelines for food recall, DGHS, MoHFW, 2014
- Outbreak investigation and response manual. Foodborne Illness Surveillance (FBIS), 2015
- Foodborne Illness Surveillance (FBIS) in Bangladesh, Newsletters
- National Food Safety Emergency Response Plan, Bangladesh, 2013 (draft)
- National Food Policy, 2006 and National Food Policy Plan of Action (2008-2015), Food Planning and Monitoring Unit (FPMU) Ministry of Food and Disaster Management, Dhaka, Bangladesh, August 2008
- Animal Slaughter and Quality Control of Meat Act, 2011
- Bangladesh National Nutrition Policy, 2015

Biosafety and biosecurity

Introduction

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

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

Target

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

Bangladesh level of capabilities

In Bangladesh, pathogens such as influenza viruses, paramyxoviruses and enteric diseases, are sampled for use and analysed within public and private sector laboratory settings.

The Government of Bangladesh has worked on biosafety since the 1990s but biosafety legislation and guidelines (2006) are focused on genetically modified organisms (GMOs). National biosecurity legislation does not exist and only private laboratories need a license to operate.

Bangladesh has three biosafety level 3 (BSL-3) facilities (IEDCR, icddr,b and Chittagong University), however none of these are currently operational (the Chittagong BSL-3 laboratory is functional but is not in operation). To identify the gaps in biosafety and biosecurity, a biorisk assessment (Report on biorisk assessment for laboratories in Bangladesh) was performed in medical diagnostic laboratories by IEDCR with the technical support of WHO in 2015. This assessment included a questionnaire and visits to 14 public and private laboratories. The results showed that the availability of personal protective equipment and other essential equipment is a challenge for many laboratories and sustainable laboratory capacity and infrastructure in the districts needs strengthening.

Bangladesh has multisectoral committees on biosafety, such as the National Committee on Biosafety (NCB), which has members from several ministries and institutes and is chaired by the Ministry of Environment and Forest (MoEF). The functions of the NCB include formulating policies and guidelines on biosafety. The Biosafety Core Committee (BCC) monitors the implementation of biosafety guidelines, policies and rules. Historically, both these committees are focused on GMO-related biosafety. The NCB has convened to update the guidelines to include bio-hazardous materials but it is still in the beginning stages. The

Bangladesh Biosafety & Biosecurity Association (BBBA) has been established to foster best and sustainable biosafety and biosecurity practices in Bangladesh for human health, animal health and agricultural sectors. BBBA also hosts national symposiums on biosafety and biosecurity.

SOPs for biosafety, biosecurity and infection control have been developed by the IEDCR with technical support from WHO (2014) for human laboratories. Biosafety and biosecurity training is provided by IEDCR. In addition, icddr,b has a training programme on biosafety and biosecurity that is offered to laboratories in all sectors including veterinary and agricultural laboratories. The icddr,b keeps in contact with the trained persons and offers refreshment courses.

Visits to BLRI, IEDCR and icddr,b laboratories were conducted during the assessment.

Recommendations for priority actions

- Biosafety and biosecurity guidelines should be updated to include microorganisms other than GMOs, and include the proper collection, transportation, handling, management and disposal of dangerous pathogens and toxins. Biosecurity legislation should be developed and adopted at the national level for both the public and private sectors. Once these measures are undertaken, exercises should be implemented to measure compliance and identify institutional needs.
- The current biosecurity capacity should be mapped out, including recording and updating an inventory of facilities that store or process dangerous pathogens and toxins, recording and updating an inventory of dangerous pathogens and toxins within these facilities, and maintaining an active roster of professionals who have been trained in biosafety and biosecurity.
- Sustained funding for maintenance of laboratories including biosafety and biosecurity training and the availability of personal protective equipment is needed.
- Review the need for a new BSL-3 laboratory at the central level and identify where it should be installed (public or private sector) and if it should be used for both human health and animal health.

Indicators and scores

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

Strengths/best practices

- A multisectoral approach and network exists for developing and updating the framework and guidelines for biosafety, which currently focuses on GMOs.
- SOPs have been developed on biosafety and biosecurity for human and animal health laboratories.
- Collection protocols are being used to protect laboratory workers, including from Nipah virus samples, which are collected and placed in the inactivation buffer as indicated by the enzyme linked immunosorbent assay protocol.

Areas that need strengthening and challenges

- Update regulations to cover all existing gaps in biosafety and address biosecurity.
- Ensure adequate funds for the implementation of biosafety and biosecurity measures in all laboratories.

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

Strengths/best practices

- Biosafety and biosecurity training is offered by IEDCR and icddr,b, using US National Institutes of Health biosafety and biosecurity protocols for laboratory professionals. Trained professionals are offered continuing education opportunities to refresh their biosafety and biosecurity training.
- Individuals from both public health and animal health laboratories are included in the biosafety and biosecurity training.
- BBBA hosts national symposiums on biosafety and biosecurity.

Areas that need strengthening and challenges

- Biosafety and biosecurity training is primarily focused at the central level within both the public and private sectors. Training should be conducted at all levels to ensure that proper protocols are implemented across all facilities housing or working with dangerous pathogens and toxins.
- Currently biosafety and biosecurity training is only provided to laboratory professionals. Both the public health and animal health sectors should consider incorporating biosafety and biosecurity in academic training. A new Masters on Public Health programme in conjunction with IEDCR and Massey University in New Zealand will incorporate aspects of biosafety and biosecurity in the curriculum.

Relevant documentation

- National Biosafety Framework of the Government of the People's Republic of Bangladesh
- Biosafety Guidelines of Bangladesh, MoEF
- SOPs for laboratory biosafety, biosecurity and infection control in Bangladesh (IEDCR, DGHS, MoHFW, Government of People's Republic of Bangladesh)
- Report on biorisk assessment for laboratories in Bangladesh (IEDCR)

Immunization

Introduction

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

Target

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

Bangladesh level of capabilities

Bangladesh launched the Expanded Programme on Immunization (EPI) in 1979 and since then has added vaccines on a number of occasions. The programme now encompasses nine of the EPI target diseases namely tuberculosis, polio, measles, diphtheria, pertussis, tetanus, pneumococcal pneumonia, pneumonia, meningitis due to haemophilus influenza type b and hepatitis due to hepatitis B virus. The country also recently started a pilot for human papillomavirus vaccines and has plans to add further vaccines in the future. Vaccines are administered on a voluntary basis. Bangladesh has a national vaccination action plan, which is aligned with the WHO Global Vaccine Action Plan as well as Decade of Vaccines, and targets children under one year of age and women of childbearing age (15-49 years), including pregnant women.

Through programmes designed both for rural and urban areas and with a combination of routine delivery and targeted campaigns, high levels of coverage have been attained. Based on the latest coverage surveys (2014), the vaccine coverage of measles-containing vaccine (MCV1) and diphtheria, pertussis and tetanus (DPT-3/Penta 3) were estimated to be 87% and 93%, respectively. Urban areas were identified as having lower coverage and measures are being taken to improve coverage.

External donors (mainly Global Alliance for Vaccines and Immunization) are financing the country's vaccines and delivery system. Bangladesh has just started the process to take over financing of vaccine procurement. The system reaches all parts of the country and recently an expansion of the capacity was implemented but it will need to be further increased if more vaccines, such as the rotavirus vaccine, are introduced. The quality of vaccines is monitored throughout the system.

Connected to IHR, special vaccination efforts have been implemented, as suggested, for the prevention of international transmission of wild poliovirus and vaccine derived poliovirus.

Recommendations for priority actions

- Increase efforts towards government financing of the vaccination programmes.
- Develop sustainable financing for vaccination programmes at all levels.
- Develop strategies to reach groups with low coverage (below 80% HiB penta3 coverage), i.e. improved supervision of epidemiologic surveillance in city corporations, including activities by nongovernmental organizations.
- Strengthen vaccine preventable disease surveillance including implementation of environmental surveillance and supplemental EPI surveillance.

- Include animal diseases vaccinations, especially anthrax and rabies vaccinations, for zoonotic diseases control.

Indicators and scores

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

Strengths/best practices

- The EPI schedule is aligned to the Global Vaccine Action Plan.
- Bangladesh has an EPI Comprehensive Multi Year Plan 2014-2018.
- There is strong national leadership and coordination.
- Strong surveillance and reporting on coverage to steer extra efforts.
- Polio eradication and high sensitivity of acute flaccid paralysis surveillance.
- Good coverage by EPI services/infrastructures in urban and rural areas.
- In 2014, 87% of the country's 12-month-old population received at least one dose of MCV1, as demonstrated by coverage surveys.
- Immunization of the target group is mandatory for under-one-year-olds.

Areas that need strengthening and challenges

- Strategies for improving vaccine coverage in hard-to-reach and high-risk populations.
- Concerns regarding increasing coverage in some urban areas.

P.7.2 National vaccine access and delivery – Score 5

Strengths/best practices

- There is increasing co-financing of the programme.

Areas that need strengthening and challenges

- Human resource capacity and training need to be enhanced.
- Vaccine storage and transport capacities need to be increased.

Relevant documentation

- National Immunization Programme of Bangladesh 2011-2016
- Jamil K, Bhuiya A, Streatfield K, Chakrabarty N. The immunization programme in Bangladesh: impressive gains in coverage, but gaps remain. Health Policy Plan 1999
- Immunization, measles

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.

Bangladesh level of capabilities

Public health laboratory resources include laboratories in 36 government medical colleges (including pathology, microbiology and virology), 64 district hospitals, 489 primary hospitals (limited laboratory capacity) and 43 specialized institutes including the IEDCR/National Influenza Center (NIC), IPH, Bangabandhu Sheikh Mujib Medical University (BSMMU), and the National Tuberculosis Reference Laboratory (NTRL), plus major laboratory resources at icddr,b, which can be drawn upon by the public health system. There are also 4458 laboratories in the private health sector; some of these that are attached to large private hospitals are significant, but many others have minimal scope. Animal health laboratories include the BLRI, the CDIL (including the pathology, parasitology, and toxicology laboratories), the Veterinary Public Health Laboratory (VPHL), and seven Field Disease Investigation Laboratories (FDILs).

Bangladesh has strong laboratory capabilities at the national level, with extensive testing abilities at IEDCR and icddr,b for human health, and BLRI and CDIL for animal health. There is good coverage of core tests that include IHR mandatory diseases and defined SOPs for this testing. There is also good country coverage due to its reasonable size that allows timely transport. However, systems could be more formalized with use of couriers and/or dedicated staffing.

Routine clinical testing is used more for routine programmatic data than for surveillance. There is an opportunity to strengthen the incorporation of routine clinical testing in the broader surveillance system. One major challenge is to reduce the reliance on centralized strategies. Although there are many laboratories at different levels of the health system, there is a need to establish a better-defined national health laboratory network for both animal and human health, with strengthened regional facilities, defined requirements and abilities at each level, as well as cascaded systems of quality assurance, training and supervision. A strategy for this network planning has been started, and will soon be finalized and implemented.

Recommendations for priority actions

- DGHS and IEDCR to finalize a laboratory network strategic and operational plan that defines what laboratory functions should exist at each level, and how the different levels will support each other via supervision, training and external quality assurance.
- IEDCR to establish regional laboratories for diagnosis of priority emerging infectious diseases, as identified in the national risk assessment (see preparedness section).
- IEDCR and icddr,b to analyse the needs and opportunities for BSL-3 laboratory capacity, and to formalize a plan to establish this working capacity in the country.

Indicators and scores

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

Strengths/best practices

- Well-established national laboratories (IEDCR/IPH/NTRL/icddr,b). Laboratory services for animal health include facilities at CDIL, FDIL, VPHL and BLRI. The icddr,b Science Lab provides laboratory services for environmental contamination and food testing.
- Ability to conduct higher level diagnostic testing at national laboratories. The specific tests conducted include: polymerase chain reaction (PCR) testing for influenza virus (IEDCR/icddr,b); virus culture for poliovirus (National Polio Laboratory/IPH); serology for HIV (IEDCR/BSMMU/icddr,b/designated laboratories at medical colleges); microscopy for *Mycobacterium tuberculosis* (district hospitals/medical college hospitals/NTRL/Regional Tuberculosis Reference Laboratory (RTRL)); rapid diagnostic testing for Plasmodium spp. (district hospitals/malaria laboratory); and bacterial culture for *Salmonella enteritidis* serotype Typhi (medical colleges/IEDCR/icddr,b/BSMMU).
- Clear responsibilities by disease:
    - MoHFW/DGHS/IEDCR/NIC as the mandated organization for disease surveillance, outbreak investigations, and laboratory-based surveillance for influenza, Nipah, dengue, Japanese encephalitis, BSL-2 laboratory, BSL-3 laboratory, Nipah laboratory, HIV laboratory, and molecular laboratory with conventional and real-time PCR, and sequencing
    - MoHFW/DGHS includes the NTRL, malaria laboratory, polio laboratory /IPH
    - Ministry of Fisheries and Livestock/DLS: avian influenza, anthrax, rabies, etc.
    - MoFL/BLRI: avian influenza
- Well-established diagnostic capabilities at IEDCR for Nipah, Japanese encephalitis, Middle East respiratory syndrome, novel coronavirus (MERS-CoV), Ebola and Zika.
- Agreements with US CDC/WHO reference laboratory to ensure that further testing is available if necessary.
- Personal protective equipment are available at the national level and in some regional laboratories.
- Defence sector has 17 laboratories for the armed forces, but during emergencies they can provide surge testing capacity and logistical support.

Areas that need strengthening and challenges

- Laboratory services for public health, animal health and environment have been expanding but without any linkages until recently.
- The ability to conduct higher level diagnostic testing is limited to national laboratories; regional laboratory capacities are needed.

- Further work is required for connection to routine clinical testing, as these results are used more for routine programmatic data than for surveillance. Awareness among clinicians is limited, and results from hospital laboratories may not be available to IEDCR for monitoring. There is an opportunity to incorporate routine clinical testing in the broader surveillance system.

D.1.2 Specimen referral and transport system – Score 4

Strengths/best practices

- Ability to transport specimens safely and quickly from 95% or more of intermediate levels/districts to national laboratory facilities for advanced diagnostics. Regional laboratories have a mechanism for transport, while for outbreaks staff use their own or public transport.
- SOPs are in place for specimen collection, packaging and transport.
- Some courier contracts are supported by partners (WHO/US CDC), but most hospital staff use public transportation.
- IEDCR and icddr,b have trained manpower at surveillance sites to facilitate sample collections in emergency/outbreak situations.
- There is close collaboration with icddr,b and US CDC, WHO.
- In Bangladesh, even public transport is sufficient to reach Dhaka within 24 hours.
- Defence laboratory network can provide sample transport, which has been used during outbreaks.

Areas that need strengthening and challenges

- No formal specimen referral system from district/sub-district to national level. The real need is for a courier service (where available and reliable) and/or dedicated staffing assigned for transport.
- No regular, national budget for ongoing surveillance (including ongoing sample transport).

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

Strengths/best practices

- SOPs on diagnosis of emerging infectious diseases developed (15 distinct SOPs within one guidance).
- Trained laboratory personnel on diagnosis of emerging infectious diseases at district level points-of-care (dengue and chikungunya).
- Early drafting stage of the National Laboratory Strategic Plan defining the tiered laboratory network.

Areas that need strengthening and challenges

- The "Guideline and SOP for government and private laboratories" gives equipment requirements for laboratories at different levels, but there is no laboratory plan that matches the tier-wise medical and surveillance needs to the resources required to undertake those activities. A strategic implementation plan is needed to confirm who does what, with training requirements, resource requirements, infrastructure requirements, and external quality assessment (EQA) system at different levels of the health system (for EQA details, see D.1.4).
- Need more training and creation of more posts for laboratory medicine specialists, but this requires resources and revision of the human resources plan.

- Field laboratories for animal health are at lower capacity. BLRI can manage five diseases (including rabies, and foot and mouth disease), but regional laboratories are do not have such capacity and need strengthening.

D.1.4 Laboratory quality system – Score 1

Strengths/best practices

- IEDCR/NTRL/icddr,b national laboratories participate in international External Quality Assessment Programme (EQAP) for laboratories (WHO, US CDC, Australian Laboratory). Some laboratories are accredited for disease-specific testing by WHO (e.g. polio, measles/IPH, H5N1/IEDCR).
- IEDCR developed SOPs on biosafety and biosecurity and infection control in laboratories and trained laboratory personnel.
- SOPs in place for transporting specimens safely throughout the country.
- IEDCR received certificates of EQA results within the previous six months for core tests (Influenza by IEDCR).

Areas that need strengthening and challenges

- National accreditation body recently formed but yet to be functional.
- Internal quality control requires considerable strengthening. There is a licensing process for private laboratories under DGHS, which requires a check on infrastructure, but not a full quality check that includes specific standards to be met.
- No existing national EQA programme that cascades from national level to lower levels, and with proficiency testing and rechecking, outside of tuberculosis smear microscopy.
- The director of hospitals and clinics is in charge of laboratory inspection, but there is no regular quality audit and only occasional monitoring and inspection is done by a team.
- The existing BSL-3 laboratories are non-operational: at IEDCR due to technical issues; at icddr,b due to earthquake-related damage; and at Chittagong due to insufficient training and certification.
- Data sharing between departments is still informal.
- No registration procedure for in vitro diagnostic medical devices (i.e. kits and reagents).
- No overall laboratory focal point at DGHS to drive quality agenda. At facility level, the directors of hospitals may be empowered but they do not control public health laboratories. MoHFW's Director of CDC and IEDCR may need to work on this issue to define ownership and establish the guidance and activities for a strong, cascaded EQA system. Once such a system is established, private laboratories should also be incorporated into the system.

Relevant documentation

- SOPs on diagnosis of emerging infectious diseases
- Guideline and SOPs for government and private laboratories
- SOPs on sample collection, storage and transportation to NIC, 2014
- SOPs on biosafety and biosecurity and infection control in the laboratory
- Laboratory strategy for networking among public health laboratories in Bangladesh (draft)

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 subnational, national and international levels of authority regarding surveillance of events of public health significance; improved country and intermediate level regional capacity to analyse and link data from and between strengthened, real-time surveillance systems, including interoperable, interconnected electronic reporting systems. This would include epidemiologic, clinical, laboratory, environmental testing, product safety and quality and bioinformatics data; and advancement in fulfilling the core capacity requirements for surveillance in accordance with the IHR and OIE standards.

Bangladesh level of capabilities

The country has attained reasonable capacities for detection of events of significance for both human and animal health as well as for other health security threats of concern through establishing and enhancing an indicator-based national disease surveillance system with an automated and real-time data entry and data analysis capability. The country has rolled out a human health web-based disease surveillance system covering all of its 64 districts and 490 upazilas (sub-districts), and the system operates by capturing diseases that are reported in health care facilities in the public sector. The country is using DHIS-2 software for data entry, analysis and reporting of its surveillance data on a real-time basis. The completeness and timelines of reporting of Bangladesh's national disease surveillance system is at a satisfactory level. In addition, the country has established an event-based surveillance system with a hotline that works on a 24/7 basis to capture events that would not have been picked up by its indicator-based surveillance system. The event-based surveillance system in Bangladesh periodically monitors media rumours on public health events and a method is in place for appropriate verification on a timely basis.

Bangladesh also has a mobile phone-based surveillance system, which is active in monitoring health events in communities that would otherwise be missed out or not picked up by national disease surveillance systems. The country has also established a number of sentinel-based surveillance systems that monitor the trend of specific diseases as well as the change, if any, of circulating pathogens causing these diseases using a syndromic approach. These include surveillance systems for dengue fever, Nipah virus, Japanese encephalitis, rotavirus, foodborne illnesses and severe acute respiratory infection. These sentinel surveillance systems capture both epidemiological and laboratory data in an integrated manner for disease-specific health conditions.

There is a good level of collaboration with the animal health sector for exchange of information and data in the event of any animal disease with substantial risk of spill over to humans. However, the absence of any electronic system for surveillance of animal diseases remains a limiting factor for sharing data between these two sectors on a real-time basis.

The IEDCR is the mandated agency and the owner of the national disease surveillance system in the country. Despite substantial progress made by Bangladesh in real-time surveillance, there are areas that can be further enhanced, such as attaining the capability to conduct real-time analysis of data using a set of alert and epidemic thresholds for disease-specific conditions, setting triggers for informed public health actions and automating the surveillance system for the animal health sector.

Recommendations for priority actions

- Establish one robust, integrated and inclusive routine disease surveillance system. Considering that Bangladesh has a number of sentinel-based surveillance systems in addition to its own national disease surveillance system, it would be plausible that the country conducts an in-depth assessment of its disease surveillance system to capture good lessons and best practices with a view to establishing "one robust, integrated and inclusive routine disease surveillance system" covering both public and private sectors as well as any other existing surveillance streams in the country (such as for tuberculosis, malaria, HIV/AIDS, etc.). Having one integrated disease surveillance system rather than numerous fragmented ones will also ensure efficiency gains. This assessment should review the existing coverage, effectiveness and sensitivities of the systems to detect any public health event reported early either in the community or in health facilities.
- Establish an "early warning component" for disease surveillance systems urgently by setting and defining various "base-line values" as well as various alert thresholds for epidemic-prone diseases by analysing the trend of these disease-specific health conditions. Such thresholds and baseline values will help the country to set triggers for informed public health actions when such actions are pro-actively warranted to protect public health in the event of a slowly or rapidly evolving threat.
- Allocate a separate budget (to be done by MoHFW) from the public sector for sustaining the capacities attained by the country for managing its national disease surveillance system. At the moment, there is no separate budget line for IEDCR to maintain this capacity in the long term as most of the sentinel-based surveillance systems are driven by donor funds.
- Ensure that electronic surveillance system for animal diseases is in collaboration and communication with the IEDCR. The existing DHIS-2 system used by the IEDCR can be a good platform to automate the current paper-based surveillance system for animal diseases used by the animal health sector.

Indicators and scores

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

Strengths/best practices

- Indicator- and event-based surveillance system for human health is functioning well.
- All disease outbreaks reported have been responded to appropriately, both locally and centrally.
- Good levels of collaboration between human health and animal health sectors for sharing and exchange of key information.
- Multisectoral responses to events of public health concern.
- Timely dissemination of surveillance reports through website.
- A 24/7 hotline used to capture any informal report or event.
- Involvement of FETP fellows in outbreak detection, investigation and response.
- Media monitoring for all newspapers and media.

- Mobile phone surveillance piloted in Dhaka in 2012. Random selections of phone numbers are autodialed, 8 am to 8 pm every day, three times a year. The overall success rate is 25%. If the right person answers the call, the response rate is 82%.
- Sentinel hospital-based influenza surveillance (HBIS) is established in 12 hospitals and national influenza surveillance (NISB) is established in 10 district hospitals. Avian influenza (H5N1 and H9N2 viruses) was detected even with mild disease. Contact investigation and wet market surveillance were also conducted after outbreaks.
- Japanese encephalitis surveillance is established at five sites, and also five sites for dengue, Nipah and rotavirus surveillance (plus intussusception rates as baseline for vaccine introduction).
- Event-based and routine indicator surveillance results are first communicated to EOC and IEDCR, and then assigned back to the upazila response team.
- Dengue, influenza and rotavirus surveillance are included in some private hospitals.
- For mass gatherings, IEDCR targets specific flights from the Haj; they meet with airport authorities and circulate informational yellow cards to passengers with phone numbers for symptomatic people to call.

Areas that need strengthening and challenges

- Enhancing the surveillance system for animal diseases, such as automating the system to enable sharing and exchange of data with the human health sector on a real-time basis as well as analysing data on animal disease in real-time for an effective and timely response.
- Improving the timeliness of reporting.
- Continuing to create and maintain a critical mass of public health officers skilled in surveillance and response for emerging diseases.

D.2.2 Interoperable, interconnected, electronic real-time reporting system – Score 4

Strengths/best practices

- The real-time disease surveillance and reporting system was established in 2009, which is now down to the sub-district (upazila) level countrywide, and uses standard, web-based forms based on DHIS-2.
- Mobile phone-based health services and e-Health reporting services exist.

Areas that need strengthening and challenges

- There is an urgent need to establish an "early warning component" for disease surveillance systems by setting and defining various "baseline values" as well as various alert thresholds for epidemic-prone diseases by analysing the historical trend of these health conditions.
- The web-based disease surveillance system needs to be expanded to cover all private hospitals and large clinics.
- All data stemming from the sentinel based surveillance system need to be integrated into the national disease surveillance system, especially for diseases under the laboratory-based surveillance system.
- A common electronic platform (possibly DHIS-2) needs to be established between the animal health and human health sectors for sharing and exchanging information on diseases of public health concern on a real-time basis.

D.2.3 Integration and analysis of surveillance data – Score 3

Strengths/best practices

- Skilled manpower exists for data analysis, and information is shared online.
- Three levels of rapid response teams exist with good collaboration and information sharing mechanisms between the surveillance team and the rapid response teams.

Areas that need strengthening and challenges

- Acquiring the capacity to analyse surveillance data on a real-time basis.
- Publishing and disseminating surveillance reports or bulletins on a weekly basis.

D.2.4 Syndromic surveillance systems – Score 4

Strengths/best practices

- Syndromic surveillance systems exist for foodborne illnesses, severe acute respiratory infections, encephalitis, as well as for some other epidemic pathogens (such as dengue and Nipah viruses), and Bangladesh has the capacity to establish, run and operate the syndromic surveillance system in the event of any emerging health need.

Areas that need strengthening and challenges

- Syndromic surveillance systems remain somewhat fragmented and there is a need for multiple efforts to implement an integrated strategy and system under a common platform. The challenge is individual vertical programmes with different reporting frequencies and priorities.

Relevant documentation

- Presentation on "real-time surveillance" by the national level technical lead
- SOPs for conducting surveillance for foodborne illness
- SOPs for conducting surveillance for severe acute respiratory infections and influenza-like illnesses
- SOPs for conducting surveillance for encephalitis

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.

Bangladesh level of capabilities

Timely and accurate disease reporting, according to WHO requirements, and consistent coordination with FAO and OIE are critical elements for an effective response (within 24 hours of onset) to outbreaks of PHEIC/OIE reportable diseases. Bangladesh has a national IHR focal point (Director, CDC, DGHS) and the IEDCR is mandated to respond on any human disease outbreak to the national IHR focal point. Similarly, the DLS is mandated to participate in outbreak responses that involve the human/animal interface and report within the department on zoonotic diseases. Currently, the country has event-based surveillance, a sentinel surveillance system, media surveillance, and two 24/7 hotlines to monitor potential outbreaks. However, there is limited formal collaboration and communication across departments focusing on human health, animal health, livestock, fisheries and with the military. Also, the reporting platform can be strengthened between the peripheral levels and the national level and with the country's laboratory network.

Recommendations for priority actions

- Establish written protocols, processes and regulations to govern reporting and processes for multisectoral coordination in response to potential public health events of national and international concern.
- Establish formal communication mechanisms between key ministries (such as MoHFW, Ministry of Fisheries and Livestock, MoEF, Ministry of Food) and conduct exercises to test their effectiveness.
- Establish a documentation system to file incident reports to WHO and OIE within 24 hours of an outbreak. The documentation system should include a reporting system that facilitates improved reporting from peripheral levels to the national level across human health authorities, animal health authorities and laboratory networks.

Indicators and scores

D.3.1 System for efficient reporting to FAO, OIE and WHO – Score 4

Strengths/best practices

- Event-based surveillance exists for rumour detection and verification. In addition, a private agency is assigned to scan all rumours from print and electronic media on a daily basis.

- An algorithm exists to validate information on events reporting using a standardized protocol.
- Adequate levels of cross-collaboration exist with other ministries/sectors.
- Information on PHEICs is shared with WHO within 24 hours of diagnosis.
- Hospitals, even at the peripheral levels, share reports on a suspected case using the 24/7 call centre.
- Training on IHR has been conducted at national and regional levels.
- A list of ministries and corresponding focal points that would participate in a response is available.

Areas that need strengthening and challenges

- Departments of human health, animal health, livestock, fisheries, agriculture and forestry have limited joint collaboration at the ministerial level.
- The areas of One Health approach need to be strengthened for better reporting and compliance.
- Coordination between districts and the national level needs to be formalized to cover all zoonotic diseases as well as for all IHR PHEIC events.
- A separate budget that focuses on reporting is needed to improve reporting capacity.
- An electronic repository needs to be established for all public health events that are reported under the IHR (2005) to document the process, timeline and lessons learned to improve reporting capacity.

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

Strengths/and best practices

- Reporting on a potential PHEIC within 24 hours to WHO; the last event was Ebola.
- Capability to report notifiable animal health outbreaks from veterinarians to OIE within 24 hours.
- Established protocols and processes for multisectoral coordination in reporting.

Areas that need strengthening and challenges

- Individual departments have separate funding sources and thus immediate access to funds can be limited and challenging.
- Diagnostic capacities in different department are not always adequate.

Relevant documentation

- Bangladesh joint external evaluation (capability category: detect/technical area: reporting)

Workforce development

Introduction

Workforce development is important in order to develop a sustainable public health system over time by developing and maintaining the 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).

Bangladesh level of capabilities

A multisectoral, skilled and competent workforce is critical for the effective implementation of IHR core components. Bangladesh has a limited number of trained public health personnel to prevent, detect and respond to public health events. Cross training between animal health and human health needs to be further enhanced. Currently, Bangladesh has a national level FETP and has just started training the third cohort of epidemiologists, which includes two veterinarians. Year-2 FETP officers support outbreak response efforts in the country and gain valuable experience in applied public health. A recently launched FETP frontline programme will run for three months for each cohort and repeated three times a year. The plan is to have one trained epidemiologist at each sub-district (upazila) level to enhance the field epidemiological capacity at the peripheral level. Other training courses are conducted throughout the year (rapid response team at district and sub-district level). IEDCR plans to run three to four courses per year and build up the national workforce over the next five years.

A two-year course on "public health for impact" as a joint master's degree programme with Massey University in New Zealand, a six-week clinical epidemiology course, and a recently standardized 18-month Master of Public Health curriculum is being introduced.

Recommendations for priority actions

- Revise the Bangladesh Health Workforce Strategy to include animal health workers (such as veterinarians) as well as specific public health disciplines called for in the IHR, such as epidemiologists, laboratory staff, and allied disciplines such as public health emergency management specialists.
- Develop a career pathway that promotes retention of the public health workforce especially at the peripheral levels.
- Identify a sustainable funding mechanism for FETP beyond the current donors that support the programme.
- Offer field epidemiology courses in veterinary schools that promote the One Health approach where human health and animal health sectors intersect.

Indicators and scores

D.5.1 Human resources are available to implement IHR core capacity requirements – Score 3

Multidisciplinary human resources capacity is available at national and intermediate levels

Strengths/best practices

- There is some collaboration between veterinarians and public health staff at both the national and intermediate levels.

Areas that need strengthening and challenges

- There is a lack of incentives in place to employ and promote new graduates of Master of Public Health programmes and new FETP graduates. The IEDCR seeking to assign such individuals as deputy programme managers.

D.5.2 FETP or other applied epidemiology training programme is in place – Score 4

Two levels of FETP (Basic, Intermediate, and/or Advanced) or comparable applied epidemiology training programme in place in the country or in another country through an existing agreement

Strengths/best practices

- Launched the FETP frontline training programme for three months that will be repeated in different locations three times a year.
- Collaborated with Dhaka University to provide training in applied epidemiology to those seeking a Master of Science degree.
- Participated in the IMPACT (Improving Public Health Management for Action) Programme (Bangladesh is one of the two countries to participate) that seeks to train fellows in public health planning, management and operations with the goal to have graduates in deputy programme manager positions or equivalent in national public health programmes.

Areas that need strengthening and challenges

- Currently, the FETP is driven by the availability of funds. The programme needs to explore ways to become financially sustainable through government funding rather than from donor funds.

D.5.3 Workforce strategy – Score 3

Strengths/best practices

- The Bangladesh Health Workforce Strategy 2016-2030 has been developed and its publication is in process. The Strategy includes health workforce in both the formal and informal sectors, and those working in public and private sectors.
- An action plan is being developed for implementation of the Bangladesh Health Workforce Strategy.

Areas that need strengthening and challenges

- The Bangladesh Health Workforce Strategy focuses primarily on health care workers and refers to public health workers once in the document but does not provide additional details.
- A career pathway for the public health workforce (veterinarians, epidemiologists, nurses, public health emergency response, health communicators, etc.) needs to be developed for retention of the public health workforce, especially at the peripheral levels.

Relevant documentation

- Nuruzzaman M. Bangladesh workforce strategy—2015

RESPOND

Preparedness

Introduction

The effective implementation of the IHR (2005) requires multisectoral/multidisciplinary approaches through national partnerships for effective alert and response systems. Coordination of nationwide resources, including the sustainable functioning of a national IHR focal point, which is a national centre for IHR (2005) communications, is a key requisite for IHR (2005) implementation. The national IHR focal points 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 national IHR focal points, continuously update and annually confirm them.

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.

Bangladesh level of capabilities

Bangladesh has developed reasonable capacities as required under IHR (2005) for enhancing its public health preparedness and planning response to public health events of potential concern. Handling of repeated outbreaks from Nipah virus, anthrax and avian influenza is ample testimony to the capacities gained by the country in handling small- to large-scale public health emergencies.

Historically, Bangladesh has managed natural disasters such as floods and cyclones with outstanding success in terms of reducing mortality and morbidity from these natural events. Such capacities are institutionalized in the country, in different governmental organizations and ministries, which need to be capitalized and scaled up for enhancing preparedness, planning and response to events that have potential public health consequences, irrespective of the source.

Recommendations for priority actions

- Urgently conduct a comprehensive public health risk assessment using a multisectoral approach to identify and prioritize a list of hazards and threats of public health concern (irrespective of sources of occurrence), stakeholders, resource mapping as well as other needs for effective planning for emergency preparedness and response.
- Develop a national multi-hazard public health emergency preparedness and response contingency plan following the findings of public health risk assessments, which would be context specific for the country. The plan should clearly delineate the roles and responsibilities of the MoHFW, other ministries, the military, and the private sector in operationalization of its functions in the event of any public health emergency. The contingency plan should also have mechanisms to harness inter-sectoral coordination and communication and triggers for activating the Incident Command System with fully functional and coordinated event management procedures.

- MoHFW should develop and pass appropriate national legislation that provides a robust framework for operationalization of the national multi-hazard public health emergency preparedness and response contingency plan similar to the Disaster Management Act in the country.
- MoHFW should periodically conduct exercises to test the efficacy of its contingency plan and update the plan based on the findings of the exercise. In addition, separate and additional SOPs would be required to activate various components of the plan.

Indicators and scores

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

Strengths/best practices

- A strategic preparedness plan that takes into consideration a "whole-of-society approach" with participation from other key ministries and stakeholders was drafted in December 2015. The document, along with other topics, also addresses plans for the management of points of entry for sea ports, airports and roads.
- Various stakeholders actively participate with the MoHFW in planning for emergency preparedness and response to public health events.
- Disease-specific contingency plans for preparedness and response (e.g. H1N1, Nipah) are in place and can be added to an overall preparedness plan.

Areas that need strengthening and challenges

- No contingency public health emergency preparedness and response plan covering all hazards that is required under the IHR (2005).
- Lack of awareness amongst policy makers on the need to allocate appropriate resources for national emergency planning.

R.1.2 Priority public health risks and resources are mapped and utilized – Score 1

Strengths/best practices

- Risk assessments for avian and pandemic influenza were conducted using a multisectoral approach.
- Public health risks and resources for emerging diseases, such as Nipah virus, Japanese encephalitis and avian influenza, have been mapped with a plan to utilize the available local resources effectively.

Areas that need strengthening and challenges

- Conducting a public health risk mapping using a multi-hazard approach.
- Using the findings of the comprehensive risk mapping to feed into development of the national multi-hazard emergency preparedness and response plan.

Relevant documentation

- Presentation on "real-time surveillance" by the national level technical lead
- Multi-hazard Plan Lead by Ministry of Health and Family Welfare
- Pandemic Influenza Preparedness Plan, MoHFW and Ministry of Fisheries and Livestock

- National plan for disaster management, 2010-2015, Disaster Management Bureau, Disaster Management & Relief Division
- Ebola preparedness plan, MoHFW (draft)
- Anthrax national guideline, MoHFW
- National guideline for management, prevention and control of Nipah virus infection including encephalitis, MoHFW

Emergency response operations

Introduction

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

Target

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

Bangladesh level of capabilities

Key infrastructure requirement of a dedicated physical space for an Emergency Operations Centre (EOC) is in place, supported by two event-reporting 24-hour/7-day hotlines, and Bangladesh will now establish a suite of SOPs for the EOC. The JEE team acknowledged the ad hoc procedures that exist to respond to emergencies, which the IEDCR assured were mature and had served Bangladesh well in the past, including through the 2009 H1N1 influenza pandemic.

However, these ad hoc arrangements rely on a small network of experienced staff and an informal communications process. There are no documented procedures for activating the EOC, nor is there a procedure for ensuring that emergency watch officer duties are rostered between a trained and qualified pool of staff. This potentially exposes the organization to the risk of the absence of core-qualified staff during an emergency, whether through transfer, staff turnover or travel/leave commitments.

The JEE team feels that Bangladesh would benefit from the establishment of formalized processes between an expanded pool of qualified officers to ensure a capable workforce is in place at all times to facilitate a seamless transfer of responsibilities. The existing EOC space could also benefit from investment in technology to support response activities, including the implementation of a simulation exercise programme.

Recommendations for priority actions

- Establish legal authorities to declare a public health emergency under existing and new public health legislation.
- Develop and document appropriate emergency management procedures, including key steps for activating the EOC.
- Develop and document intra-government and subnational liaison processes.
- Revise case management guidelines for IHR-relevant hazards to incorporate documented liaison processes.
- Plan and conduct tabletop and functional exercises that apply and implement EOC guidelines and document real events to ensure effectiveness.

- Enhance existing infrastructure (i.e. EOC) using the WHO "Framework for a public health emergency operations centre" as reference.

Indicators and scores

R.2.1 Capacity to activate emergency operations – Score 2

Strengths/best practices

- Well-known but ad hoc and undocumented emergency response procedures.
- Two 24-hour/7-day hotlines for reporting outbreaks and health emergencies.
- Dedicated room for EOC with telephone, conference and computer facilities.

Areas that need strengthening and challenges

- Establish and document formalized processes among an expanded pool of qualified officers to ensure that a capable workforce is in place at all times for emergency operations.
- Invest in technology to support EOC response activities.
- Develop and implement an emergency response simulation exercise programme.

R.2.2 EOC operating procedures and plans – Score 1

Strengths/best practices

- Established, but undocumented practices in place to respond to public health outbreaks and emergencies.

Areas that need strengthening and challenges

- Processes should be documented and circulated to a wider group of personnel.

R.2.3 Emergency operations programme – Score 1

Strengths/best practices

- Procedures for responding to emergencies are well known to a small group of key personnel.

Areas that need strengthening and challenges

- Documentation of procedures and establishment of a programme to conduct exercises to test operations scenarios.

R.2.4 Case management procedures are implemented for IHR relevant hazards – Score 1

Strengths/best practices

- Case management guidelines are in place for foodborne illnesses.

Areas that need strengthening and challenges

- A suite of guidelines should be developed to assist in the response to IHR relevant hazards.

Relevant documentation

- Outbreak investigation and response manual – Foodborne Illness Surveillance
- SOPs for foodborne illness surveillance/enteric disease surveillance in Bangladesh

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.

Bangladesh level of capabilities

Bangladesh has various committees and plans with law enforcement authorities. These include the IHR Committee and the influenza pandemic preparedness and response plan, where there are representatives from the Ministry of Home Affairs and the Ministry of Defense. Stakeholders related to linking public health and security authorities are well identified from national to subnational levels. While policy allows coordination with law enforcement authorities, there is no formal protocol or SOPs for coordination and mobilization. There is also no risk analysis for potential deliberate release of hazardous materials in the country.

During various outbreaks, the national rapid response team approached security authorities, especially the police, through local health authorities when needed. There is evidence of coordination and mobilization of law enforcement authorities, such as stamping out of avian Influenza during poultry outbreaks, and mobilization of security authorities during tuberculosis prevalence surveys. Points of contacts have been identified from these sectors and are well established at various levels of governing structures; however, there is no mechanism for regular information sharing. There are rules and policies in place for quarantine at various levels both in animal health and human health sectors.

Recommendations for priority actions

- Develop SOPs for working together with law enforcement authorities for public health emergencies and testing of SOPs through drills/exercises.
- Establish an information sharing mechanism with law enforcement authorities.
- Ensure advocacy at various levels of governance structure on linking public health with security authorities to coordinate public health emergency response.
- Conduct risk analyses of potential intentional/deliberate release of pathogens and other hazardous materials.

Indicators and scores

R.3.1 Public health and security authorities (e.g. law enforcement, border control, customs) are linked during a suspect or confirmed biological event – Score 1

Strengths/best practices

- Evidence of informing and mobilizing law enforcement authorities like security during outbreaks (e.g. stamping out H5N1 outbreak).
- Well-established points of contact between health and security authorities at many levels with coordinating committees; stakeholders are identified.
- Rules for quarantine are in place in both animal health and human health sectors.
- Representation of law enforcement authorities in various committees such as the IHR Committee, pandemic preparedness plan; and stakeholder mapping has been done.

Areas that need strengthening and challenges

- The policy allows coordination with law enforcement authorities; however, no formal protocols or SOPs exist for mobilization and coordination between public health and law enforcement authorities. Therefore there is a need to develop protocols and test them through exercises.
- Risk analysis for deliberate release of hazardous materials could be developed.
- Ad hoc activities can be formalized and systematized.

Stakeholders

- Armed forces
- Police
- Rapid Action Battalion
- Armed Police Battalion
- Ansar
- Village Defence Party
- Private security agencies
- Intelligence agencies
- Volunteers
- Health authorities at all tiers
- Livestock authorities at all tiers
- Peoples Representatives at all tiers
- Deputy Commissioners
- Upazila Nirbahi Officers

Relevant documentation

- Presentation on linking public health and security authorities, MoHFW
- National Disaster Management Authority documents

Medical countermeasures and personnel deployment

Introduction

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

Target

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

Bangladesh level of capabilities

Bangladesh has demonstrated reasonably good capacities in this field. Although most of the arrangements for medical countermeasures and personnel deployment are done on an ad hoc basis, the country has a well-built Health Emergency Preparedness and Response (HEPR) programme with the necessary manpower, knowledge base and skills set to formalize arrangements for medical countermeasures and personnel deployment.

The broad objective of the HEPR programme in Bangladesh is to strengthen the overall capacity and capability of the health sector to prevent and mitigate the adverse health consequences of emergencies and disasters. This objective is well reflected in the work of the Government, such as developing contingency plans targeting at different natural disasters, developing SOPs and manuals, conducting needs assessment as well as conducting training courses on emergency management as part of capacity building for its health workforce.

Recommendations for priority actions

- Develop a written plan for medical countermeasures and personnel deployment as part of the national multi-hazard emergency preparedness and response contingency plan and formally endorse this plan through the involvement and participation of other stakeholders of the MoHFW.
- Test the plan periodically by conducting tabletop exercises and updates based on the result and findings of the exercises.
- MoHFW should develop and formalize a national plan for drug donation during the event of any public health emergency.
- MoHFW should maintain an actively revolving national stockpile of emergency drugs and medical supplies through a formal agreement with local manufacturers and suppliers.

Indicators and scores

R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency – Score 1

Strengths/best practices

- Existence of effective coordination and information sharing mechanisms among the partners of the MoHFW through a health-cluster approach (Government of Bangladesh, donor agencies, UN agencies, international nongovernmental organizations, academicians, etc.).
- Maintenance of adequate quantities of buffer stock of emergency medicines both at national and subnational levels.
- Past country experience for deploying influenza vaccines in response to the 2009 H1N1 influenza pandemic.
- National drug regulatory authority exists with the capacity to develop policies for drug donation in emergency situations.

Areas that need strengthening and challenges

- Formalizing the policy of active stockpiling of emergency drugs and medical supplies on the basis of an assessed need.
- Developing a policy for medical countermeasures including drug donation in emergency situations.

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

Strengths/best practices

- The IEDCR is actively participating in the Global Outbreak Alert and Response Network (GOARN) of WHO and its staff have been deployed in the past for international response to outbreaks elsewhere.
- The MoHFW regularly sends medical teams to the countries affected by natural disasters (such as during the recent earthquake in Nepal) on the basis of requests received from the affected countries to provide emergency medical care services to the affected populations.
- As part of the contingency preparedness measure for natural events in the country with public health consequences (such as floods and cyclones), the MoHFW has a system of stand-by arrangement for medical teams who can be rapidly deployed from the national and district levels to the affected sub-districts or upazilas.

Areas that need strengthening and challenges

- MoHFW should develop a protocol as part of its plan for personnel deployment (health workforce) both for responding to national as well as to any international public health events with a written team composition and terms of reference for deployment.
- MoHFW should organize regular hands-on pre-deployment training to its health workforce covering all hazards and threats in the country.

Relevant documentation

- Presentation on "real-time surveillance" by the national level technical lead
- Health Sector Contingency Plan for Earthquake Preparedness and Response
- Hospital Emergency Preparedness and Response Plan
- National Policy on Health Emergency Management
- Standard operating procedures: Management of health in emergencies in Bangladesh
- Addressing health in emergencies: The context of a developing country
- Mass casualty management training manual
- Country emergency situation profiles, Bangladesh
- Disaster Management Strategic Plan

Risk communication

Introduction

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

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

Target

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

Bangladesh level of capabilities

Risk communication has been successfully used to respond to the 2009 H1N1 influenza pandemic, H5N1 outbreaks, Nipah outbreaks, as well as anthrax and unintentional pesticide poisoning events. The country does not have a multi-hazard risk communication plan; however, risk communication is part of the influenza/pandemic influenza preparedness plan. Designated units exist for risk communication in animal and human health sectors (such as Bureau of Health Education, agriculture and livestock information services) with designated spokespersons. There is a communication plan in place for dealing with emergencies. There have been several instances when the Bureau of Health Education produced appropriate communication materials addressing various threats. Different stakeholders are identified for collaboration and coordination for risk communication.

IEDCR conducts regular media monitoring for rumour management, and regular media orientation on events of national and international public health importance. The public health system uses various available media –including print, visual, audio and mobile phone (text) – for dissemination of risk communication messages. Various information, education and communication materials are produced and disseminated at all levels of the public health system. There are community clinics consisting of three health workers, who are available to support risk communication activities as priority activity of the MoHFW. There is a system in place for risk communication at points of entry for inbound and outbound travellers, especially at airports.

There is a need for developing an integrated multi-hazard multisectoral risk communication plan and testing it. Establishing a mechanism of more proactive engagement with various internal and partner communication and coordination based on the risk profile of Bangladesh (including all related hazards) could further strengthen the country's capacity on risk communication. Evaluation of ongoing activities of risk communication like communication engagement, messages and rumour management with affected communities could help in findings gaps and areas that need further strengthening.

Recommendations for priority actions

- Develop one integrated multi-hazard multistakeholder risk communication strategy and plan for all IHR-related hazards.
- Develop SOPs for implementation of risk communication plan and its testing.
- Evaluate community stakeholders and acceptance of the risk communication messages to enhance community engagement.
- Establish media resource centres for all sectors and coordination mechanisms.
- Evaluate the effects of communication efforts during a public health response, such as during the 2009 H1N1 influenza pandemic.

Indicators and scores

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

Strengths/best practices

- Risk communication is part of the influenza/pandemic influenza preparedness plan. This has helped in managing H5N1 outbreaks and the 2009 H1N1 influenza pandemic.
- Designated units for risk communication exist within animal and human health sectors (Bureau of Health Education, agriculture and livestock information services).
- Designated spokespersons exist in human health and animal health sectors.
- Communication plan is in place for dealing with emergencies.

Areas that need strengthening and challenges

- Development of an integrated multi-hazard, multisectoral risk communication plan, testing it, and regularly updating it.
- Training and refresher training of spokespersons on risk communication.

R.5.2 Internal and partner communication and coordination – Score 3

Strengths/best practices

- Availability of appropriate communication materials, which are produced by the Bureau of Health Education targeting various threats and audiences.
- Stakeholders identification is complete.
- Communication plan is in place for dealing with emergency public health events.

Areas that need strengthening and challenges

- Establishment of a mechanism for more proactive engagement with various internal and external partners on communication and coordination based on risk profile of the country (including all related hazards).
- Memorandum of understandings or SOPs with defined roles and responsibilities for communication partners would further strengthen coordination and collaboration with other sectors.

R.5.3 Public communication – Score 3

Strengths/best practices

- Regular media orientation on events of public health importance.
- All available sources (print, television, radio, internet and webpage) used at national level for the dissemination of messages.
- Appropriate communication materials are in place for various public health events.
- Announcement of events of public health emergency is carried out as per the directive of the MoHFW.
- Community clinic health workers disseminate messages to the community.
- During an emergency there is a designated unit for public communication in the Prime Minister's Office.

Areas that need strengthening and challenges

- Need for training and refresher training of mass media personnel on public health emergency and surveillance.
- Evaluation of public communication could help to identify the gaps and strengths of existing mechanisms.

R.5.4 Communication engagement with affected communities – Score 3

Strengths/best practices

- Three health workers are available at each community clinic to support risk communication activities on priority activities of the MoHFW. These community clinics cover 8000–12 000 population per clinic.
- SMS based text messages for community awareness exists.
- Mechanism is in place for risk communication with people travelling in and out of the country at points of entry (especially airports).

Areas that need strengthening and challenges

- Limited resources are available for dissemination of risk communication messages at district and upazilla levels.
- Evaluation of communication engagement with affected communities can help to further identify gaps and strengths.

R.5.5 Dynamic listening and rumour management – Score 3

Strengths/best practices

- Mechanism is in place in IEDCR on media monitoring and rumour management with regular media orientation on various events of national and international concern.

Areas that need strengthening and challenges

- Evaluation of the rumour management system of IEDCR can help identify gaps and strengths.
- Expansion of rumour management to regional and district levels.

Relevant documentation

- Presentation on risk communication by local technical leads
- Bangladesh national communication strategy and action plan for avian influenza and human pandemic influenza, 2007-08
- National communication strategy and action plan for reduction of NCD high-risk behaviours in Bangladesh, 2014-2016. Bureau of Health Education, Bangladesh, 2013
- Visit to Narsindhi District Hospital
- Various information, education and communication materials for different threats

OTHER IHR-RELATED HAZARDS AND POINTS OF ENTRY

Points of entry

Introduction

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

Target

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

Bangladesh level of capabilities

Bangladesh shares a 4096-kilometer long international border with India (the fifth-longest land border in the world) and a 420-kilometer border with Myanmar. Government of Bangladesh has designated three of the 18 points of entry as IHR designated points of entry: Hazrat Shahjalal International Airport (Dhaka), Chittagong sea port and Benapole ground crossing. Coordination committees have been formed at the designated points of entry, which are linked to the nearest health care facility for medical services. Country teams completed core capacity assessments based on the IHR assessment tool in 2013 at designated points of entry and select points of entry for implementation of IHR.

Recommendations for priority actions

- Strengthen IHR obligations at designated points of entry individually including routine surveillance and quarantine facilities and response, and test the system.
- Enhance communication, advocacy and coordination among relevant sectors and with non-designated points of entry.
- Ensure technical guidance and operational procedures at all points of entry, both designated and non-designated.
- Ensure procedures and SOPs are developed in regard to aircraft disinfection and other vector control measures.
- Designate points of entry to ensure IHR obligations are routinely practiced and cross-border issues are addressed.

Indicators and scores

PoE.1 Routine capacities are established at points of entry – Score 2

Strengths/best practices

- Coordination committees are formed at the designated points of entry including health, immigration, customs and agriculture.
- Designated points of entry are linked to the nearest health care facility for medical services.
- Availability of public health and quarantine services at Hazrat Shahjalal International Airport and Chittagong sea port.
- Procedures and SOPs are developed in regard to aircraft disinsection and other vector control measures applied as per WHO guidelines.
- Technical guidance and operational procedures are developed at all points of entry, both designated and non-designated.

Areas that need strengthening and challenges

- Train personnel for inspection conveyances at sea port.
- Sanitation should be done at points of entry.

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

Strengths/best practices

- Good communication between points of entry and national IHR focal point.
- Informal communication with neighbouring countries.
- Operational links with other national authorities.

Areas that need strengthening and challenges

- Simulation exercises for public health-related events at designated points of entry need to be conducted.
- Inter-sectoral collaboration should be facilitated between public health and security authorities at non-designated points of entry.
- Enhance awareness and strengthen communications with border communities to enhance cross-border security.

Relevant documentation

- Action plan for implementation of International Health Regulation (2005) in Bangladesh, 2014-2016
- Report of re-assessment of core alert and response capacity of designated and some selected points of entry for implementation of IHR in Bangladesh
- WHO assessment tool for core capacity requirements at designated airports, ports and ground crossing.
- Handbook for inspection of ships and issuance of ship sanitation certificates

Chemical events

Introduction

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

Target

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

Bangladesh level of capabilities

The responsibility for on-demand testing of chemicals and toxins in food, drugs and water rests with the Bangladesh Council of Scientific and Industrial Research (BCSIR), which has been in place since 1955. However, there is no plan or policy for national surveillance for chemical exposures. BCISR does not have a public health mandate and has limited manpower skilled in sampling and testing for public health threats. The MoEF, which includes the Department of Environment, has responsibility for pollution control, but it is not clear if this Ministry interacts with the MoHFW to coordinate human health exposure and effects monitoring. Although the armed forces have some limited toxicology and poison control capacity within the military branches of the Government, no regular monitoring for chemical exposures, either environmental or occupational, is mandated to be conducted by any of these governmental agencies as part of an integrated national policy of either routine or emergency surveillance, and no governmental agency has lead proponency for chemical responses.

Recommendations for priority actions

- Develop a national policy that assigns roles and responsibilities for the detection of and response to chemical emergencies, including the MoHFW, BCSIR, MoEF and other relevant government agencies.
- Include chemical hazards in national multi-hazard risk assessment activities and national emergency response plans, to include mapping of chemical risks and establishment of a coordination mechanism among relevant multisectoral stakeholders.
- Establish a national poison control centre capacity and integrate it into the national chemical emergency detection and response structure.

Indicators and scores

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

There are no mechanisms currently in place in Bangladesh for detecting and responding to chemical events or emergencies.

Strengths/best practices

- BCISR provides testing support for food, drug and water samples upon request of other parts of the Government; BCISR's laboratories are ISO 17025:2005 accredited.
- BCSIR has a medical centre that is capable of providing public health related services if it is strengthened through the establishment of a diagnostic centre.
- Some toxicology and poison control capacity does exist within the armed forces for major poisonings.

Areas that need strengthening and challenges

- BCISR sample testing is limited to specific tests rather than to a broad-spectrum panel of tests; appropriate panels for routine surveillance of priority chemical threats should be developed.
- BCSIR, MoHFW and MoEF need to identify their appropriate respective roles under their existing authorities and identify a mechanism for data sharing and response coordination.

CE.2 Enabling environment is in place for management of chemical events – Score 1

National policies, plans or legislation for chemical event surveillance alert and response do not exist.

Strengths/best practices

- Different ministries and government agencies have some limited, albeit uncoordinated, capacities for ad hoc responses to chemical events.

Areas that need strengthening and challenges

- The National Plan for Disaster Management (2010–2015) calls for development of this capacity, but it has not yet been integrated into a national response plan.
- No national risk mapping of chemical threats has been conducted, and chemical threats have not been integrated into a national health risk assessment; both of these need to be conducted as part of broader integrated national planning for chemical emergencies.
- The MoHFW, MoEF and BCSIR, need to establish routine daily working liaison relationships and clarify lead responsibilities during a national chemical response.

Relevant documentation

- National Plan for Disaster Management, 2010-2015, Disaster Management Bureau, Disaster Management & Relief Division, 2010

Radiation emergencies

Introduction

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

Target

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

Bangladesh level of capabilities

The Bangladesh Atomic Energy Commission has taken a lead role in preparing a draft National Nuclear or Radiological Emergency Response (NNRER) Plan, which outlines the roles and responsibilities of all ministries and agencies responsible for response activities related to nuclear or radiological emergencies. This Plan also includes roles for stakeholders in nongovernmental sectors. The Plan is currently in draft form, and has neither been promulgated for use by these government bodies, nor has it been validated through any exercises. Although individual monitoring services are provided, ad hoc screening at points of entry and routine monitoring of milk products and foodstuffs has been conducted. These activities are not part of an integrated national public health surveillance system.

Recommendations for priority actions

- Finalize the NNRER Plan to include clarifications on the coordination mechanism for all the agencies and stakeholders in the Plan.
- Initiate ministry-level planning on how to provide necessary clinical care and other actions called for in the NNRER Plan, and how to include the development of SOPs for the response activities contained in the NNRER.
- Conduct a series of inter-ministerial trainings and exercises to familiarize staff on how to respond to a radiological emergency and to validate the NNRER Plan.

Indicators and scores

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

National policies, strategies or plans for the detection, assessment and response to radiation emergencies are established and a radiation-monitoring mechanism exists for radiation emergencies that may constitute a public health event of international concern.

Strengths/best practices

- National legislation and regulations governing nuclear/radiological sources have been established; Nuclear Safety and Radiation Control rules have incorporated the recommendations of the FAO,

International Atomic Energy Agency, International Labour Organization and WHO, and endorsed international basic safety standards.

- The Bangladesh Atomic Energy Commission (BAEC), which has an established history of successful response to several radiological events, has been given the mandate to develop the NNRER Plan, which has been drafted.
- National mapping of nuclear and radiological risks has been conducted.
- BAEC has a strong training programme. There are four courses on "emergency preparedness and response" organized with the Japan Atomic Energy Agency. BAEC regularly organizes training programmes on radiation protection as well as on emergency preparedness and response for registered clinical officers/medical doctors/medical technologists/operators and technicians of relevant disciplines. The BAEC has also organized a training programme that includes emergency response for workers with occupational radiation exposures.
- BAEC provides "individual monitoring services" throughout Bangladesh, and conducts radioactivity testing of milk, milk products and other foods

Areas that need strengthening and challenges

- Monitoring for radiation in the environment, which currently occurs after an event is recognized, should be expanded to a routine national surveillance system, including periodic reporting of results to designated national authorities.
- Trainings and exercises need to be conducted, especially for those outside BAEC who have not been engaged in the development of the NNRER Plan.

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

National authorities responsible for radiological and nuclear events have a designated focal point for coordination and communication with the MoHFW and/or national IHR focal point.

Strengths/best practices

- The Bangladesh Atomic Energy Regulatory Authority (BAERA) was established under the NSRC Act No. 21 of 1993. BAERA is empowered by the law to authorize and inspect activities that involve ionizing radiation and to enforce the legislation.
- The BAEC is the designated responsible body for nuclear and radiological event responses.
- The draft NNRER Plan describes the capabilities, responsibilities and authorities of different government agencies, as well as concept for integrating the activities of these agencies to protect public health and safety; one government agency is referred to as the "lead technical agency" for major coordination and technical support functions.

Areas that need strengthening and challenges

- Staff, in the various organizations outside of BAEC are not familiar with the NNRER Plan; integration of the NNRER with the National Plan for Disaster Management has not yet occurred; cascading ministerial/agency level plans for implementation of the NNRER Plan have not yet been developed, nor has the overall NNRER Plan been tested/validated.
- Director, Physical Science, BAEC should be assigned to work as the focal point for radiation emergencies.
- Processes for the assessment and regular reporting of radiological risks to the appropriate authorities need to be established.

Relevant documentation

- National Plan for Disaster Management, 2010-2015, Disaster Management Bureau, Disaster Management & Relief Division, 2010
- Nuclear Safety and Radiation Control Act, 1993 (Act No. 21 of 1993)
- Bangladesh Atomic Energy Regulatory (BAER) Act-2012, Chapter-VI
- Nuclear Safety and Radiation Control (NSRC) Rules-1997, Chapter-VIII
- Draft National Nuclear or Radiological Emergency Response (NNRER) Plan (yet to be approved)

Appendix 1: JEE background

Mission place and dates

Dhaka, Bangladesh: 8 – 12 May, 2016

Mission team members

- Issa Makumbi, Uganda, Ministry of Health (Team Lead)
- Rajesh Sreedharan, World Health Organization, Geneva (Team Co-Lead)
- Terry Phelan, Australia, Office of Health Protection (Team Co-Lead)
- Iqbal Djakaria, Indonesia, Ministry of Health
- Nirmal Kandel, World Health Organization, Geneva
- Mamunur Rahman Malik, World Health Organization, EMRO
- Bayu Teja Muliawan, Indonesia, Ministry of Health
- Nguyen Thi Bich Thuy, Viet Nam, Ministry of Health
- Julio Pinto, Food and Agriculture Organization of the United Nations, Rome
- Peter Rzeszotarski, USA, US Centers for Disease Control and Prevention
- Barden Jung Rana, World Health Organization, SEARO
- Susanna Sissonen, Finland, National Institute for Health and Welfare
- Anders Tegnell, Sweden, Public Health Agency
- Sirena Vong, World Health Organization, SEARO
- William Wells, USA, US Agency for International Development
- Sue Lin Yee, USA, US Centers for Disease Control and Prevention
- Ricardo Echalar, USA, US Agency for International Development (Observer)
- Kimberly Switlick Prose, USA, Deloitte Consulting (Observer)
- Daniel Barker, USA, Deloitte Consulting (Observer)

Objective

To assess Bangladesh's capacities and capabilities relevant for the 19 technical areas of the JEE tool in order to provide baseline data to support Bangladesh's efforts to reform and improve its public health security, and to meet its obligations under the WHO IHR (2005).

Preparation and implementation of the mission

Prior to the visit, teleconferences were held weekly with assessment team members and Deloitte Consulting from January 2016 through May 2016 to review the agenda, responsibilities and logistics.

Limitations and assumptions

- The evaluation was conducted in 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 made publically available.
- The evaluation is not an audit and information provided by Bangladesh was not independently verified. Information was discussed and an evaluation rating was mutually agreed to by Bangladesh and the JEE team. This is a peer-to-peer review.

Key participants and institutions from Bangladesh

Bangladeshi lead representative:

- Mahmudur Rahman, PhD, Director, Institute of Epidemiology, Disease Control and Research

Participating institutions:

- Ministry of Health and Family Welfare (MoHFW)
- Department of Livestock Services (DLS)
- Ministry of Environment and Forest (MoEF)
- Department of Disaster Management
- Institute of Epidemiology Disease Control and Research (IEDCR)
- Field Epidemiology Training Program, Bangladesh
- Institute of Public Health Nutrition
- Institute of Public Health
- National Tuberculosis Control Program
- National Tuberculosis Reference Laboratory
- Director General Health Services (DGHS)
- Director General Medical Services (DGMS), Army Medical Core
- Bangladesh Council for Scientific and Industrial Research (BCSIR)
- National Institute of Preventive and Social Medicine (NIPSOM)
- Dhaka Medical College & Hospital
- Kurmitola General Hospital
- Infectious Diseases Hospital
- National Institute of Diseases of Chest and Hospital
- Mymensingh Medical College & Hospital
- Livestock Research Institute, Mohakhali, Dhaka (LRI)
- Bangladesh Livestock Research Institute, Savar (BLRI)
- Bangladesh Atomic Energy Commission (BAEC)
- Bangladesh Council of Scientific and Industrial Research
- Bangladesh National Women's' Lawyers Association (BNWLA)

- International Center for Diarrheal Diseases, Bangladesh (icddr,b)
- Shah Jalal Airport Health Authority)
- Chittagong sea port
- Benapole ground port, Jessore
- CDC Bangladesh
- WHO Bangladesh
- FAO Bangladesh
- Ecohealth Alliance Bangladesh

Supporting documentation

Documents:

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Presentations:

- Bangladesh's health system
- National legislation, policy and financing
- Coordination, communication and advocacy
- Antimicrobial resistance
- Zoonotic disease
- Food safety
- Biosafety and biosecurity
- Immunization
- National laboratory system
- Real-time surveillance
- Reporting
- Workforce development
- Preparedness
- Emergency response operations
- Linking public health and security authorities
- Risk communication
- Other IHR related hazards and points of entry
- Chemical events
- Radiation emergencies

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