WHO BENCHMARKS for International Health Regulations (IHR) Capacities

FEBRUARY 2019

World Health Organization

WHO Benchmarks for International Health Regulations (IHR) Capacities
ISBN 978-92-4-151542-9

© WORLD HEALTH ORGANIZATION 2019

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; https://creativecommons.org/licenses/by-nc-sa/3.0/igo).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

SUGGESTED CITATION. WHO Benchmarks for International Health Regulations (IHR) Capacities. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.

CATALOGUING-IN-PUBLICATION (CIP) DATA. CIP data are available at http://apps.who.int/iris.

SALES, RIGHTS AND LICENSING. To purchase WHO publications, see http://apps.who.int/bookorders. To submit requests for commercial use and queries on rights and licensing, see http://www.who.int/about/licensing.

THIRD-PARTY MATERIALS. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

GENERAL DISCLAIMERS. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Les Pandas Roux, France

TABLE OF CONTENT

ACRONYMS 4

ACKNOWLEDGEMENT 5

INTRODUCTION 6

- WHAT IS THE BENCHMARK TOOL? 6
- PURPOSE OF THE BENCHMARK TOOL 6
- WHO IS THE AUDIENCE? 6
- DEVELOPMENT PROCESS OF THE TOOL 7
- STRUCTURE OF THE TOOL 7
- DEFINITIONS 7
- BUILDING SYSTEM USING THE BENCHMARKS 8
  - WHEN TO USE THE BENCHMARK TOOL? 8
  - HOW TO USE THE BENCHMARK TOOL? 8
  - WHAT IS THE TOOL ABOUT? 11
  - WHAT IS THE TOOL NOT ABOUT? 11
- PROPOSED REVIEW AND UPDATING THE TOOL 11

BENCHMARKS: TECHNICAL AREAS 12

- 1. NATIONAL LEGISLATION, POLICY AND FINANCING 13
- 2. IHR COORDINATION, COMMUNICATION AND ADVOCACY AND REPORTING 21
- 3. ANTIMICROBIAL RESISTANCE 26
- 4. ZOONOTIC DISEASE 36
- 5. FOOD SAFETY 41
- 6. IMMUNIZATION 47
- 7. NATIONAL LABORATORY SYSTEM 54
- 8. BIOSAFETY AND BIOSECURITY 63
- 9. SURVEILLANCE 69
- 10. HUMAN RESOURCES 77
- 11. EMERGENCY PREPAREDNESS 89
- 12. EMERGENCY RESPONSE OPERATIONS 95
- 13. LINKING PUBLIC HEALTH AND SECURITY AUTHORITIES 102
- 14. MEDICAL COUNTERMEASURES AND PERSONNEL DEPLOYMENT 106
- 15. RISK COMMUNICATION 113
- 16. POINTS OF ENTRY 121
- 17. CHEMICAL EVENTS 127
- 18. RADIATION EMERGENCIES 131

ANNEX 1: GLOSSARY 135

ACRONYMS

AEFI	adverse event following immunization
AMR	antimicrobial resistance
BTWC	Biological and Toxin Weapons Convention
EMT	emergency medical team
EOC	emergency operations centre
FAO	Food and Agriculture Organization
GLASS	Global Antimicrobial Resistance Surveillance System
GOARN	Global Outbreak Alert and Response Network
IAEA	International Atomic Energy Agency
IHR	International Health Regulations
INFOSAN	International Food Safety Authorities Network
INTERPOL	International Criminal Police Organization
IPCAT	infection prevention and control (IPC) assessment tool
IT	information technology
JEE	joint external evaluation
MCV	measles-containing vaccine
NAPHS	National Action Plan for Health Security
NCC	National Coordinating Centre
NFP	IHR national focal point
OIE	World Organisation for Animal Health
OPCW	Organisation for the Prohibition of Chemical Weapons
PVS	performance of veterinary services
SOP	standard operating procedure
SPAR	IHR self-assessment annual reporting tool
VPDs	vaccine-preventable diseases
WASH	water, sanitation and hygiene
WASH FIT	water and sanitation for health facility improvement tool
WHA	World Health Assembly
WHO	World Health Organization

ACKNOWLEDGEMENT

The World Health Organization (WHO) would like to express sincere gratitude to all those who contributed to the development of the WHO Benchmarks for IHR Capacities (Benchmarks Tool).

The tool was developed by Dr Nirmal Kandel, Dr Qudsia Huda and Dr Stella Chungong with contributions from their colleagues – Mr Adam Bradshaw, Dr Benedetta Allegranzi, Mr David Bennitz, Dr Elizabeth Mumford, Ms Elizabeth Taylor, Mr Fernando Gonzalez-Martin, Dr Giorgio Cometto, Dr Ian Norton, Mr Jonathan Abrahams, Dr Jose Guerra, Ms Julie Storr, Ms Joanna H Tempowski, Dr Jostacio Lapitan, Dr Jun Xing, Dr Kazunobu Kojima, Dr Kersten Gutschmidt, Dr Lucy Boulanger, Dr Ninglan Wang, Mr Phillippe Gasquet, Dr Sebastian Cognat, Dr Sergez R Eremin, Dr Stéphane De La Rocque and Ms Yuki Minato – at WHO headquarters.

Special thanks go to Dr Ambrose Talisuna, Dr Ali Ahmed Yahaya, Dr Dalia Samhouri, Dr Gyanendra Gongal, Dr Karen Nahapetyan, Dr Masaya Kato, Dr Muang Muang Htike, Mr Nicolas Isla, Dr Nilesh Buddh, Dr Roberta Andraghetti and Mr Vasily Esenamanov, for providing inputs from WHO regional offices.

Sincere gratitude to all the members of a technical working group: Dr Janneth Mghamba, Dr Jaouad Mahjour, Dr Mahmudur Rahman, Dr Nirmal Kandel, Dr Stella Chungong, and Dr Thomas R Frieden.

The WHO is grateful to the following partners and their teams who provided technical inputs in the tool: African Centres for Disease Control and Prevention (Africa CDC), United States Centers for Disease Control and Prevention (US CDC), Public Health England (PHE), Resolve to Save Lives, and The South Asia Field Epidemiology and Technology Network (SAFETYNET).

INTRODUCTION

WHAT IS THE BENCHMARK TOOL?

Benchmarking is a strategic process often used by businesses and institutes to standardize performance in relation to best practices of their sector. World Health Organization (WHO) and its partners have developed a tool with a list of benchmarks and corresponding actions that can be applied to increase the performance of countries in emergency preparedness through the development and implementation of a National Action Plan for Health Security (NAPHS). The WHO Benchmarks for International Health Regulations 2005 (IHR/IHR (2005)) Capacities are broad in nature to improve IHR capacities for health security and integrate multisectoral concerns at subnational (local and regional/provincial) and national levels. This means that if all benchmarks are achieved and sustained, the level of preparedness of the country would be optimum to prevent, detect and respond to threats and events.

PURPOSE OF THE BENCHMARK TOOL

This document guides States Parties, partners, donors and international and national organizations on suggested actions needed to improve IHR capacities for health security. States Parties and other entities working to reduce the risk of global health threats can use these benchmarks and suggested actions to address gaps, including those identified by IHR monitoring and evaluation framework[1] components such as the States Party self-assessment annual reporting tool, voluntary external evaluation such as the joint external evaluation (JEE), after-action reviews and simulation exercises. This document can help countries delineate the relevant steps they can take to reach capacity levels as defined in each benchmark.

WHO IS THE AUDIENCE?

The main audiences for this benchmark document are:

- States Parties to the IHR, to develop activities for the NAPHS.
- Clinical agencies, civil society and specialized organizations at local, subnational, national, regional and global levels, to support the implementation of the NAPHS.
- Development partners, to confirm that their health security assistance is consistent with evolving needs and to provide objective milestones to help guide and determine the effectiveness of assistance.
- WHO Secretariat, to be able to promote and monitor consistency of IHR progress and NAPHS implementation.
- WHO country and regional offices, to be able to prioritize assistance.

[1] *IHR monitoring and evaluation framework (https://www.who.int/ihr/publications/WHO-WHE-CPI-2018.51/en/, accessed 30 January 2019).*

DEVELOPMENT PROCESS OF THE TOOL

Following the recommendation of the IHR review committee on second extensions for establishing national public health capacities and on IHR Implementation, the WHO Secretariat developed the IHR monitoring and evaluation framework and through global consultations developed monitoring and evaluation tools such as the new IHR States Parties self-assessment annual reporting tool (SPAR) and the JEE.

In May 2018, as per the decision of the Seventy-first World Health Assembly decision on the implementation of the IHR five-year global strategic plan to improve public health preparedness and response, 2018–2023,[2] the WHO Secretariat commenced to develop the benchmark tool with suggested actions at each capacity level for the technical areas or capacities that can capture the outcome of the different monitoring and evaluation processes (such as the SPAR and the JEE), which inform the development of national action plans for health security.[3] These suggested actions can provide guidance to develop activities to build capacity needed to move from one capacity level to the next; stepping up from level 1 to 2, and 2 to 3 and beyond.

A preliminary draft of this document was shared with a working group of technical experts. Feedback was incorporated, and the revised tool was subsequently piloted and finalized.

STRUCTURE OF THE TOOL

The tool covers all 13 IHR capacities described in the SPAR and 19 technical areas described in the JEE tool that are needed to prevent, detect, assess, notify and respond to public health risks and acute events of domestic and international concern. For each area, one to four indicators is used to assess the country's progress towards implementation of the individual capacity, as assessed at five levels. The benchmark tool reflects the amalgam between the JEE and the new annual reporting tool so that all the essential actions required for each level are captured. Where necessary, all essential actions that are not reflected in both the tools are added to corresponding capacity levels of each benchmark. Some capacities and technical areas requiring similar types of actions for incremental progress have been combined, notably IHR coordination and reporting, national laboratory system and biosafety and biosecurity.

DEFINITIONS

For the propose of this document the following definitions are used:

BENCHMARK

Denotes a standard or point of reference for the capacity. Setting benchmarks facilitates the development of plans to increase capacity levels (limited, developed, demonstrated and sustainable) and adopt best practices with ***a target of reaching sustainable capacity for each benchmark.***

ACTION

Denotes ***a set of activities*** in each capacity level of the benchmark. These actions define the steps that need to be taken to progress from one level to the next for the given benchmarks.

[2] *Implementation of the International Health Regulations (2005): five-year global strategic plan to improve public health preparedness and response, 2018–2023. Seventy-First World Health Assembly Provisional Agenda Item 11.2. WHA71(15) 26 May 2018 (http://apps.who.int/gb/ebwha/pdf_files/WHA71/A71(15)-en.pdf, accessed 30 January 2019).*

[3] *Public health preparedness and response. Seventy-First World Health Assembly Provisional Agenda Item 11.2. 11 April 2018 (http://apps.who.int/gb/ebwha/pdf_files/WHA71/A71_8-en.pdf, accessed 30 January 2019).*

BUILDING SYSTEM USING THE BENCHMARKS

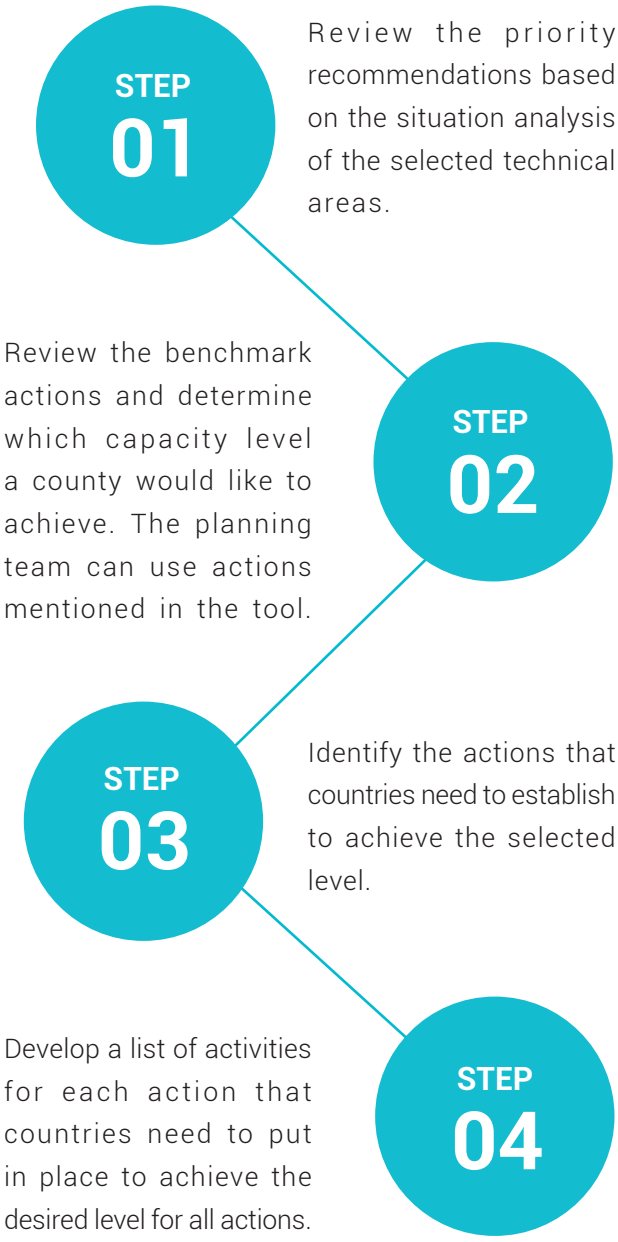
Collective and coordinated actions described in the benchmarks assist countries in strengthening a system for health security. The system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health security. These benchmark actions are necessary to strengthen health systems capacity (preparedness capacity) of countries to prevent, detect and respond to threats and events. These benchmark actions serve the following three purposes of strengthening the system. First, they allow a definition of desirable attributes – what actions are required for health security at each level of the benchmark. Second, they provide a way of defining health security priorities for countries, development partners and the WHO. Third, they provide a useful way of clarifying essential actions that require a more integrated response and recognize the interdependence of each action of the benchmarks.

WHEN TO USE THE BENCHMARK TOOL?

The tool should be used during the planning process when a planning team is identifying and prioritizing activities for the various steps of the NAPHS framework.[4]

HOW TO USE THE BENCHMARK TOOL?

The tool provides a set of actions for each level. When translating priority actions from the evaluation findings, benchmark actions can guide the development of activities in a stepwise process:



[4] *NAPHS for all: a 3 step strategic framework for national action plan for health security. Geneva: World Health Organization; 2018 (http://apps.who.int/iris/bitstream/handle/10665/278961/WHO-WHE-CPI-2018.52-eng.pdf, accessed 30 January 2019).*

PRIORITY RECOMMENDATION

- Establish event-based surveillance.

BENCHMARK ACTIONS FOR EVENT-BASED SURVEILLANCE

- Develop guidelines and standard operating procedures (SOPs).
- Establish a designated unit at all needed levels with an operational plan and procedures.
- Develop and put in place case definitions and the process of detection, assessment and reporting of the event (clusters or outbreaks) for country priority diseases, and disseminate to national and subnational levels.
- Establish a process to capture events from the community (people from the community identified, verification teams at facilities identified, SOPs and flow of information available) and make the data available at all needed levels.
- Establish systems to capture events from various other sources (such as media, social media, private sectors).

IDENTIFY AND DEVELOP ACTIVITIES

- Form a working group to develop guidelines and SOPs for event-based surveillance.
- Identify a focal point for drafting working documents.
- Finalize the guidelines and SOPs.
- Develop a training package to roll out the guidelines and SOPs.
- Conduct five trainings (one at the national level and four at the regional level).

The above figure is an example of applying the benchmark to the recommendations. The priority recommendation is to "establish event-based surveillance." Benchmark actions are then used to identify or develop activities. The benchmark tool provides a set of actions to develop and establish event-based surveillance. To establish event-based surveillance, the country should have guidelines and standard operating procedures (SOPs). They can select the actions and elaborate activities that are required for that action depending on the country context while drafting the plan.

Benchmark actions may additionally be used to help develop priority recommendations during the JEE or to help track incremental progress made from one level to the next.

CAPACITY LEVEL	ACTIONS TAKEN TO GO UP ONE STEP TO BEING BETTER PREPARED These suggested standardized actions define the steps to be taken to move from one capacity level to the next. For example, actions listed in level 2 are suggested actions to achieve limited capacity.
01 NO CAPACITY	The country has to develop and implement all activities listed in level 2 to achieve the limited capacity for each function.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct relevant stakeholder analysis and disseminate to those who need a list of stakeholders, points of contact for each stakeholder, and establish communication channels to support collaboration and coordination. ● Identify the people or units responsible for disseminating policy for implementation. ● Establish and document how implementation will occur and be reported. ● Conduct and disseminate detailed assessment of gaps, needs and plans to support effective implementation.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop and implement procedures, processes and plans at national level. ● Develop training materials and train some staff, at least at the national level. ● Establish systems to manage a minimum number of risks.
04 DEMONSTRATED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Integrate capacities tested by actual events or exercises and found to be functional into routine systems. ● All staff are trained at national and subnational levels. ● Outliers are identified, and steps are taken to address these outliers. ● Systems are functioning at all levels of the health system.
05 SUSTAINABLE CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Systems and capacities are now sustainable, including fully funded ones. ● Monitoring and evaluation occur systematically, and accreditation/certification is done in a transparent manner. ● Evidence-based metrics are met (such as reporting in 24 hours). ● Collaboration/information is shared with other countries as needed and appropriate.

WHAT IS THE TOOL ABOUT?

- A list of benchmarks that is required to sustain IHR capacities.
- A list of actions that can increase IHR capacities.
- Is informed by technical experts.
- A starting point for development of a technically sound plan for health security.

WHAT IS THE TOOL NOT ABOUT?

- A list of mandatory activities.
- Completely applicable to every context.
- An exhaustive list of actions/recommendations.

PROPOSED REVIEW AND UPDATING THE TOOL

Online materials will be developed and shared to help areas step up preparedness, and the tool will be updated following implementation.

BENCHMARKS: TECHNICAL AREAS

01

NATIONAL LEGISLATION, POLICY AND FINANCING

LEGISLATION AND POLICY:

An adequate legal framework for States Parties is essential to support and enable the implementation of all their obligations and rights of the IHR. This can include the creation of new legislation and/or the revision of existing legislation, regulations or other instruments to facilitate implementation and compliance with IHR (2005). A lack of appropriate legislation or policy can be a major barrier to implementation and should be considered a priority to enable other technical areas to be implemented effectively.

FINANCE:

States Parties should have the provision of adequate funding for IHR implementation through the national budget or other mechanisms. The country should have access to financial resources that can be accessed on time and distributed in response to public health emergencies for timely and adequate preparedness and response.

IMPACT:

Legislation and financing is in place in all relevant sectors to support IHR implementation including relevant core capacity development and maintenance.

MONITORING AND EVALUATION:

(1) Current legislation including laws, regulations, administrative requirements, policies or other government instruments, proven to be adequate in all relevant sectors to support IHR implementation. (2) Adequate finances available to enable timely, efficient and effective IHR implementation and response to all public health emergencies.

CAPACITY LEVEL	**Benchmark 1.1: Domestic legislation, laws, regulations, policy and administrative requirements are available in all relevant sectors and effectively enable compliance with the IHR** **Objective: To assess, adjust and align domestic legislation, laws, regulations, policy and administrative requirements in all relevant sectors to enable compliance with the IHR**
01 NO CAPACITY	No assessment of relevant legislation, laws, regulations, policy and administrative requirements, and other government instruments for IHR implementation.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify and convene key stakeholders related to the review, formulation and implementation of legislation and policies. ● Assess current relevant legislation, laws, regulations, policy and administrative requirements for IHR implementation and identify gaps, including for reporting, prevention and control. ● Develop an implementation plan for the formulation/revision/adjustment and approval of prioritized legislation/regulations and policy (including regulatory or parliamentary process based on the country's practices, as necessary). ● Develop advocacy materials and package to raise awareness of the requirements of adjustments to parliamentarians, government, oppositions and other relevant stakeholders. ● Develop an orientation package to implement the legislation, laws, regulations, policy and administrative requirements. ● Identify legislative/policy champion(s) or broker(s) who can advocate for the law or policy to reach a successful end state.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct an orientation with relevant stakeholders regarding adjustment in the legislation, laws, regulations, policy and administrative requirements. ● Develop a mechanism to implement these legislation, laws, regulations, policy and administrative requirements. ● Document the existence and use of appropriate legislation in all relevant sectors involved in IHR implementation. ● Develop or adjust the legislation, laws, regulations, policy and administrative requirements for implementation of IHR capacities for food safety, and if required for chemical safety.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Review the use of relevant legislation, laws, regulations, policy and administrative requirements, and determine whether they cover most aspects of IHR implementation.
- Identify specific areas[5] that require legislation references (these are reference laws or regulations that can support IHR implementation) such as establishing the IHR national focal point (NFP) or to mandate the operation.
- Develop or document legislation references for chemical safety and radiation emergency that contribute to chemical and radio-nuclear events preparedness, detection and response.
- Document these legislation references and relevant interpretations that can assist in IHR implementation.

05 SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Confirm that relevant legislation, laws, regulations, policy and administrative requirements cover all aspects of IHR implementation based on the risk profile of the country.
- Develop or document legislation references for any outstanding issues (including radiation emergencies) that contribute to preparedness, detection and response.
- Document these legislation references and relevant interpretations that can assist in IHR implementation.

[5] *These are areas not specifically addressed by existing laws or regulations.*

CAPACITY LEVEL	Benchmark 1.2: Financing[6] is available for the implementation of IHR capacities Objective: To ensure financing is available for the implementation of IHR capacities
01 NO CAPACITY	No budget line or budgetary allocation[7] available to finance the implementation of IHR capacities, and financing is handled through extrabudgetary means[8].
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify and convene key stakeholders related to the review of financing for implementation of IHR capacities, including budgetary allocation and external contribution for the implementation of IHR capacities. ● Review the national action plan or any relevant plan for the implementation of IHR capacities (if not developed, follow guidelines and develop the national action plan). ● Review the cost estimates and currently available funds for the implementation of IHR capacities; if a costed plan is not available, then identify focal points of key stakeholders and develop the costing. If necessary, hire costing experts to estimate the cost of the plan working closely with key technical focal points of each technical area. ● Conduct a resource mapping on domestic and/or external funds for the implementation of IHR capacities. ● Allocate the budget, either domestic or external funds, to the relevant sectors and their respective ministries to support the implementation of IHR capacities for biological hazards at the national level. ○ Develop the resource mobilization strategy and advocacy tools for the financing and identify key stakeholders. ○ Develop a mechanism to lobby for domestic resources (both government and private sectors).

[6] Financing refers to funds and resources identified, allocated, distributed and executed with regard to activities and interventions. It does not consider costing or identifying how many resources or funds are necessary for the implementation of activities or interventions.

[7] A budget line exists, and a budget is allocated (the budget line is funded).

[8] Accounts held by government bodies, but not included in the government budget.

03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review resource mapping status to allocate budget rationally to every sector at the national level. ● Allocate available budget from domestic and external sources for human health, veterinary public health, agriculture, and all other relevant ministries or sectors, to support the implementation of all IHR capacities at the national level. ● Implement and review the use of available financing and its effectiveness.
04 DEMONSTRATED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review resource mapping status to rationally allocate budget to every sector at national and subnational levels. ● Allocate sufficient[9] budget at national and subnational levels for the implementation of all IHR capacities in all relevant ministries or sectors. ● Monitor budget distribution and expenditure by all the relevant ministries at national and subnational levels.
05 SUSTAINABLE CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct regular meetings to review implementation of the allocated budget by all relevant ministries or sectors. ● Develop a tool to monitor that timely distribution and use of the budget are coordinated for activities and interventions to implement IHR capacities. ● Document and disseminate information on the timely distribution and effective use of funds to increase health security (such as preventing or stopping the spread of disease), at the national and subnational levels in all relevant ministries or sectors.

[9] This refers to access to funds by relevant ministries or government bodies for the implementation of all IHR capacities. Sufficiency is measured, where possible, by comparing budget allocation amounts to resource needs identified in national plans related to IHR and/or health security.

CAPACITY LEVEL	Benchmark 1.3: Financing available for timely response to public health emergencies[10] Objective: To develop a financing mechanism to ensure that funds are available for timely response to public health emergencies
01 NO CAPACITY	● No mechanism of financing exists to respond to public health emergencies. ● Funds are allocated and distributed in an ad hoc manner from different sources during public health emergencies.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify and convene key stakeholders to review the status of the emergency financing mechanism[11] to respond to public health emergencies. ● Review the emergency public financing mechanism, particularly the acceptance and rapid distribution of funds to respond to public health emergencies. ● Conduct stakeholder analysis to identify domestic and external partners who can support mobilizing funds during emergencies, and, if necessary and appropriate, establish a memorandum of understanding with these stakeholders. ● Develop or revise the mechanism and structure to receive and rapidly distribute funds during emergencies. Conduct a simulation exercise or after-action review to assess functionality of the new finance policy or procedures. Document outcomes and make necessary changes to optimize procedure.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review and ensure functionality of the emergency public financing mechanism, particularly the mobilization of funds when needed at the national, state, provincial and regional levels for all relevant sectors. ● Develop and disseminate protocols or mechanisms for the timely execution[12] of funds by all relevant sectors. ● Conduct a field test of the mechanism and update if necessary. ● Demonstrate and document that the funds are mobilized in advance of a public health emergency.

[10] *Defined by the country through a set of triggers that declare a situation as a public health emergency.*

[11] *A special set of processes or channels in place that activates a special emergency public financing mechanism, allows for rapid reception and distribution of funds, and circumvents the various checks and balances of the normal public financing mechanism.*

[12] *Response to public health emergencies includes a series of interventions (such as supply and equipment procurement, human resource contracting and deployment, logistical arrangements), and engages actors not usually involved with public sector services (such as nongovernmental organizations and the private sector), which under normal circumstances can take a fair amount of work and time and may not even be possible. Mechanisms, including fast-track execution procedures and letters of understanding with nonstate actors, need to be in place before an emergency occurs, to allow for expedited spending of funds for aspects that are crucial to emergency response.*

04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Demonstrate that all relevant ministries have capacity to access and utilize the emergency public financing mechanism for early detection and response operations. ● Develop SOP's to support actors not usually involved with public sector services, such as nongovernmental organizations and the private sector to access emergency funds when needed. ● Develop SOP's or MoU's that fast-track procurement and service agreements that can be activated during emergencies to expedite response. ● Develop accounting and reporting procedures for accountability and transparency of all emergency SOP and MOU's that will be used during emergency response. ● Review the effectiveness of emergency financing mechanism following any response to a public health emergencies and adjust procedures to ensure speed, transparency and accountability of all funds.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish an emergency contingency fund at the national level with the support of urgent response, and when required a national authority which can coordinate the receipt and distribution of funds to local and intermediate levels. ● Establish a link and/or memorandum of understanding with other regional or global emergency contingency funds, through which a national authority can coordinate and distribute funds. ● Establish a system for accountability of the distribution and use of these funds and publish information documenting transparency in expenditure and programme impacts towards protecting health.

TOOLS:

- Strengthening health security by implementing the International Health Regulations (2005) – General Information.
- International Health Regulations (2005). Third edition. Geneva: World Health Organization; 2016
- Support to national legislation for IHR implementation.
- IHR (2005): Guidance on implementation in national legislation.
- Delivering global health security through sustainable financing. Geneva: World Health Organization; 2018
- Funding for emergencies

02

IHR COORDINATION, COMMUNICATION AND ADVOCACY AND REPORTING

Each country requires a well-supported, adequately trained team of national focal point(s) (NFPs) for the IHR to ensure effective coordination, communication and partnerships to prevent, detect, assess and respond to any public health events. The country ensures sustainable functioning of the IHR NFPs for IHR communications, coordination and partnership.

IMPACT:

A mechanism for multisectoral/multidisciplinary coordination, communication and partnerships to prevent, detect, assess and respond to any public health event or emergency is in place. An IHR NFP that is always accessible to communicate with the regional WHO IHR Contact Points and with all relevant sectors and other stakeholders in the country.

MONITORING AND EVALUATION:

(1) Establishment of a functional multisectoral and multidisciplinary mechanism for the coordination and integration of relevant sectors in the implementation of IHR and to respond to any public health events and emergencies. (2) Regular testing of the mechanism through actual experience and/or exercises and subsequent improvement of arrangements and procedures.

CAPACITY LEVEL	**Benchmark 2.1: The IHR NFP is fully functional** **Objective: To establish a fully functional IHR NFP**
01 **NO CAPACITY**	There is no sustainable or consistent NFP functioning for the IHR.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Designate or establish an NFP in line with the IHR requirements. ● Establish terms of reference outlining the role and responsibilities of IHR NFPs in fulfilling relevant obligations of the IHR. ● Maintain and regularly update a contact directory including all the members of NFP and capacitate NFPs for 24 hours a day, seven days a week (24/7) accessibility. ● Conduct training for NFPs. ● Establish SOPs for communicating and coordinating with WHO, including trigger and process for notification and reporting. ● Establish SOPs for communication among relevant sectors, including thresholds for reporting and response. ● Develop action plans for multisectoral/multidisciplinary coordination and communication mechanisms in a variety of settings including during times of high risk, deliberate events and mass gathering events. ● Provide annual reports to the World Health Assembly on IHR capacity development.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Implement SOPs for communicating and coordinating between NFPs and WHO and review performance regularly. ● Implement SOPs for communicating between the NFP and relevant sectors including those responsible for surveillance and reporting, points of entry, public health services, clinics and hospitals and other government departments/ministries and review performance regularly. ● Establish SOPs for communication and coordination between the NFP and nongovernmental agencies, including media and civil society. ● Regularly test the mechanism for multisectoral collaboration and communication through actual experience and/or scenarios for high risk, deliberate or mass gathering events. ● Develop communication channels, such as website updates or newsletters, to apprise relevant sectors and partners on developments in the relation to IHR implementation.

04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct formal evaluation of the role of NFPs and the coordination mechanism. ● Conduct regular refresher training for NFPs and orientation/training for new staff. ● Review NFP mastery of information and best practices. ● Routinely conduct after-action reviews or simulations and apply the lessons learnt relating to coordination and NFP role, prioritized for actions within national action plans.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Dedicate sustained resources (financial, human, technical) that are accessible and available for the NFP and related activities. ● Document and share lessons learnt related to NFP best practices. ● Provide support to NFPs in other countries as requested including through bilateral and regional arrangements.

CAPACITY LEVEL	**Benchmark 2.2: Multisectoral IHR coordination mechanism effectively supports the implementation of prevention, detection and response activities** **Objective: To establish a multisectoral IHR coordination mechanism to support the implementation of prevention, detection and response activities**
01 **NO CAPACITY**	No multisectoral coordination mechanism exists.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct a stakeholder analysis and establish a multisectoral coordination mechanism that meets regularly to discuss and promote IHR issues (develop a protocol, terms of reference and identify resources needed for the mechanism). ● Review existing national plans from relevant sectors and increase coordination and harmonization of resources and activities within the health system as well as across relevant sectors. ● Conduct an OIE performance of veterinary services (OIE PVS) evaluation (or other PVS assessments) or, if already done in the past two or three years, review the OIE PVS evaluation findings and their implementation status. ● Document and disseminate evidence that the coordination mechanism is working to address zoonoses and other existing or new health events at the human–animal interface.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Create/update the national action plan for improving health security and IHR capacity based on IHR monitoring and evaluation results. ● Update or review the coordination mechanism to address zoonoses and other existing or new health events at the human–animal interface. ● Document and disseminate evidence that the coordination mechanism for food safety among stakeholders from all relevant sectors is working as per the protocol.

04
DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct regular multisectoral coordination meetings and ensure that the outcomes of these meetings are disseminated to the external and internal audience, well documented and acted upon.
- Develop performance-based indicators and regularly measure outcomes related to NFPs and IHR compliance.
- Document and disseminate evidence that the coordination mechanism for chemical safety among stakeholders from all relevant sectors is working as per the protocol.

05
SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Provide sustained funding for the multisectoral coordination mechanism.
- Document and disseminate evidence that the coordination mechanism for radiation emergencies among stakeholders from all relevant sectors and national radiation safety authorities is working as per the protocol.
- Test and revise relevant processes related to the coordination mechanism in the absence of any events or emergencies.
- Document and share best practices.

TOOLS:

- National IHR focal point guide
- WHO guidance for the use of Annex 2 of the International Health Regulations (2005)

03

ANTIMICROBIAL RESISTANCE

A functional system in place for the national response to prevent and combat antimicrobial resistance (AMR) with a One Health approach, including:

- Multisectoral work spanning human, animal, crops, food safety and environmental aspects – this comprises developing and implementing a national action plan to combat AMR, consistent with the global action plan on AMR.
- Surveillance capacity for AMR and antimicrobial use at the national level, following and using internationally agreed systems such as the WHO Global Antimicrobial Resistance Surveillance System (GLASS) and the OIE global database on use of antimicrobial agents in animals.
- Prevention of AMR in healthcare facilities, food production and the community, through infection prevention and control measures.
- Ensuring appropriate use of antimicrobials, including assuring quality of available medicines, conservation of existing treatments and access to appropriate antimicrobials when needed, while reducing inappropriate use.

IMPACT:

Decisive and comprehensive action to prevent the emergence and reduce the spread of AMR. Countries will (in line with the global action plan) increase awareness of AMR risks and how to respond to them; strengthen surveillance and laboratory capacity; enhance infection prevention and control activities; ensure uninterrupted access to essential antimicrobials of assured quality; regulate and promote the appropriate use of antimicrobials in human medicine, veterinary medicine, food production and other fields as appropriate; and support initiatives to foster the development and appropriate use of new antimicrobial agents, vaccines and diagnostic tools.

MONITORING AND EVALUATION:

(1) Multisectoral national action plan to combat AMR has been produced and made public. (2) Implementation of the AMR national action plan/ sector plans, with monitoring and yearly reporting on progress (including reporting to the international level) is in place. (The JEE tool reviews the country's self-assessed response to the global monitoring survey on AMR.)

CAPACITY LEVEL	Benchmark 3.1: Effective multisectoral coordination on AMR Objective: To develop and implement a multisectoral national action plan on AMR
01 NO CAPACITY	No national action plan for AMR.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish a national multisectoral AMR coordinating committee. ● Undertake a situation analysis to identify major risks for development and transmission of AMR, and where the impact of resistance would be greatest. ● Identify programmes and activities relating to key AMR objectives that need to be developed or scaled up. ● Identify a health ministry lead for AMR, develop a clear terms of reference and coordinate activities of the relevant ministries on AMR and stewardship.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop a plan of action to address AMR in line with the Global Action Plan (GAP) on AMR. ● Submit a plan for approval through relevant governance mechanisms (such as office of head of state, cabinet, or ministries of health and agriculture). ● Develop terms of reference for a multisectoral governance mechanism, with clear lines of accountability between the AMR coordinating committee and the high level One Health group. ● Organize effective coordination through regular meetings.
04 DEMONSTRATED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify priority actions (based on risk and feasibility) from the national action plan, develop an implementation plan with responsible agencies with established timelines, and begin implementation of these actions. ● Develop and implement an AMR national action plan monitoring framework. ● Review plans and progress through regular meetings of the AMR governance committee. ● Identify and map sustained funding for planned activities in the AMR national action plan.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Dedicate sustain funding for planned activities in the AMR national action plan.
- Ensure key activities are incorporated in plans and budgets of relevant programmes and agencies.
- Ensure regular monitoring of progress with data submitted to regional and global levels.
- Define clearly specified actions within planning and governance mechanisms for all key sectors involved.
- Identify potential barriers and/or challenges to implementing the national action plan and approaches to overcome these barriers.

CAPACITY LEVEL	**Benchmark 3.2: Surveillance system of AMR is in place** **Objective: To develop a national AMR surveillance system that integrates surveillance of AMR in pathogens of concern to human and animal health and agriculture**
01 **NO CAPACITY**	None of the laboratories that conduct antibiotic susceptibility testing are generating data (antibiotic susceptibility and accompanying clinical and epidemiological data) and there is no surveillance system reporting on AMR.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Designate a national coordinating centre to oversee the development and functioning of the national AMR surveillance system. ● Complete an assessment of existing laboratory capacities for identification and antibiotic susceptibility testing of common bacteria including Mycobacterium tuberculosis. ● Define priority specimens, pathogens and drug–bug combinations for national reporting. ● Designate a national reference laboratory to support AMR surveillance and develop SOPs for verification and additional testing and identify an external quality assessment provider for the national reference laboratory. ● Designate laboratories and secure laboratory reagents to conduct detection and reporting of some priority AMR pathogens. ● Establish One Health AMR training and mentorship programmes for national and country laboratories. ● Develop and initiate training programmes for data collection and reporting of AMR at national and regional levels. ● Initiate AMR surveillance at pilot or representative regional and referral hospitals.

03 DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Define laboratory standards and capacity requirements that laboratories must meet to participate in national surveillance.
- Develop steps to strengthen laboratory capacity to sustainably identify and perform identification and antibiotic susceptibility testing of common bacteria including M. tuberculosis.
- Establish an external quality assessment programme for the national reference laboratory and ensure that the national reference laboratory can conduct confirmatory or additional testing.
- Define national AMR surveillance objectives and develop a national AMR surveillance strategy.
- Establish SOPs, protocols and databases for surveillance data, a system for reporting to ministries of health and agriculture, and a mechanism to analyse data and report back to facilities and to WHO.
- Develop a national surveillance protocol including: surveillance targets, laboratory standards, priority specimens, pathogens and drug–bug combinations, defined datasets, metrics, data production, analysis and reporting, quality management, monitoring and evaluation).
- Designate functional AMR surveillance sites.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Evaluate existing AMR and drug-resistant TB surveillance systems, disseminate results and develop an action plan for implementation of a national surveillance system.
- Establish external quality assessment programme for all laboratories (human and animal) generating data for AMR surveillance.
- Develop and maintain sustainable support for AMR and drug-resistant TB surveillance infrastructure including laboratory supply chain.
- Expand AMR testing and surveillance to include other clinical sites and/or other areas of the healthcare system (such as private sector).
- Collect population-based denominators, such as those recommended by WHO GLASS.
- Develop and implement strategies for monitoring national AMR and drug-resistant TB.

05 SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Enhance monitoring of antibiotic-resistance patterns and genotyping, as well antibiotic usage and management practices at multiple points in the production chain for food animals and retail meat.
- Disseminate reports relating to measuring the proportion of AMR pathogens among specimens or isolates, results from participation in international external quality assessment rounds of the national reference laboratory, and incidence of infections caused by AMR pathogens at sentinel sites (community and hospital acquired).
- Demonstrate the use of this information for policy changes, improving facilities and adapting prevention and control strategies.

CAPACITY LEVEL	Benchmark 3.3: Infection prevention and control is in place Objective: To develop a functioning infection prevention and control system for healthcare facilities and farms
01 NO CAPACITY	Systematic efforts, national infection prevention and control (IPC) programmes and "water, sanitation and hygiene" (WASH) standards, or responsible persons for infection prevention and control in human healthcare facilities to promote infection prevention and prevent transmission of resistant bacteria in the animal food production sector either do not exist or are at the development stage.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review WHO recommendations on core components for effective IPC programmes and the national and facility practical manuals supporting their implementation. ● Use IPC assessment tools (IPCAT) to assess the core components of IPC programmes at the national (IPCAT2; tool 2) and facility (IPCAF; facility level) levels and identify precise areas/core components requiring action. ● Develop and implement an action plan, informed by assessment results and following the five-step cycle described in the practical manuals, that addresses the identified priority core components at the national and facility levels (at least at major hospital centres), core component one (IPC programme) and core component eight (WASH), according to the WHO requirements/action checklists. ● Establish a National IPC Committee and develop National IPC Committee terms of reference and local IPC committees at district and/or facility level, if an action plan is not in place. ● Develop a national IPC policy and plan for animal health.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop national IPC guidelines for human and animal health sectors (IPC in animal production). ● Identify and allocate adequate resources to support selected healthcare facilities/farms to implement IPC action plans, including IPC guidelines. ● Use IPC assessment tools at national (IPCAT2) and facility (IPCAF) levels to identify precise areas requiring additional activities to improve or put in place additional IPC core components and to guide the development of a detailed improvement plan of action. ● Implement the action plan, informed by assessment results and following the five-step cycle described in the practical manuals, according to the WHO requirements/action checklists for the priority core components identified. ● Refer to the recommendations and requirements for IPC guidelines, and train adequate healthcare workers on issued guidelines. ● Monitor IPC and WASH implementation in selected healthcare facilities using IPCAF, hand hygiene self-assessment framework, hand hygiene compliance observation tools WASH FIT tool.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Use the national IPC assessment tool (IPCAT2) to identify precise areas still requiring action and update the plan of action.
- Mandate and support IPC improvement at all healthcare facilities, recommending the use of the infection prevention and control assessment framework (IPCAF) and the WASH fit tool and antibiotic stewardship programs.
- Update and implement action plans, informed by assessment results and following the five-step cycle described in the practical manuals, that progressively cover all recommended IPC priority core components at the national and facility levels according to the WHO requirements/action checklists for the priority core components identified.
- Include specific interventions for AMR prevention tailored to the local epidemiological situation in these plans.
- Share the plans with national, subnational and local IPC committees and incorporate guidance from them.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Provide effective support to healthcare facility IPC programmes nationwide.
- Ensure that healthcare facilities undertake annual IPCAF and WASH fit assessments as part of their review cycle to address long-term sustainability.
- Establish a national system for continuous monitoring of progress in fulfilling the IPC core components (i.e. repeat assessments at least annually) and keep track of changes and scores and develop a long-term improvement plan.
- Analyse and regularly report national IPC and WASH data and support discussions on actions to incorporate lessons learned in the long-term improvement plan.
- Document the incidence of patient and healthcare worker infections, including M. tuberculosis, and the effectiveness of measures to reduce their occurrence.

CAPACITY LEVEL	Benchmark 3.4: Optimize use of antimicrobial medicines in human and animal health and agriculture Objective: To ensure appropriate use of all antimicrobials in human and animal health and agriculture
01 NO CAPACITY	No or weak policy and regulations on appropriate use, availability and quality of antimicrobials.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Undertake an assessment of stewardship policies and activities, including regulatory framework and supply chain management of antimicrobials, using a multisectoral approach. ● Review the essential medicines list and clinical guidelines that promote appropriate use. ● Assess existing monitoring of antimicrobial use and consumption. ● Develop a draft national antimicrobial stewardship plan or strategy and national legislation that regulate use, availability and quality of antimicrobials.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop/update and disseminate national stewardship and clinical/treatment guidelines that include the Essential Medicines List AWaRe (Access, Watch, Reserve) categorization for antibiotics promoting appropriate use of antimicrobials. ● Implement stewardship practices at designated healthcare facilities. ● Establish SOPs, protocols and databases for monitoring antimicrobial use in humans and animals. ● Implement antimicrobial stewardship programmes, including monitoring of antimicrobial use, education/communication, and other interventions to improve antibiotic use, at designated facilities. ● Develop or review the national regulatory framework for appropriate use of antimicrobials in humans. ● Approve and enact legislation and regulations on import, marketing authorization, production and use of antimicrobials.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Monitor and evaluate stewardship programmes conducted, including the analysis of antimicrobial use data.
- Develop and disseminate information, education and communication materials on drug resistance and drug use across both human and animal sectors. These include the use of evidence generated from AMR and antimicrobial use surveillance to inform antibiotic-use practices.
- Develop a national regulatory framework for appropriate use of affordable, quality assured antimicrobials in humans and animals.
- Expand antimicrobial stewardship activities to all healthcare facilities.
- Recommend and implement the phasing out of antimicrobials used as animal growth promotion.
- Map existing relevant legislation and begin the review process for coherence.
- Develop and implement legislation on "prescription only" sales of key antibiotics.

05 SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Continue to monitor antimicrobial stewardship activities and update the national stewardship plan on a timely basis and publicly report on the results.
- Track antibiotic dispensing and set national targets for improvement.
- Measure antibiotic use and assess appropriateness.
- Monitor antibiotic quality and address drivers of prescribing behaviours.
- Implement a national regulatory framework for appropriate use of affordable, quality assured antimicrobials in humans and animals.
- Monitor "prescription only" sales of key antibiotics.
- Complete the review of relevant legislation and enact amendments to make legislation coherent.

TOOLS:

- Guideline on core components of infection prevention and control programmes at the national and acute health care facility level.
- WHO core components for IPC – Implementation tools and resources
- National and facility practical manuals supporting their implementation
- IPCAF, hand hygiene self-assessment framework, hand hygiene compliance observation tools, WASH FIT tool
- Sharing FAO tools for veterinary laboratory assessment. Food and Agriculture Organization
- National antimicrobial resistance surveillance systems and participation in the Global Antimicrobial Resistance Surveillance System (GLASS): A guide to planning, implementation and monitoring and evaluation. World Health Organization; 2016.
- OIE data collection template. Paris: World Organisation for Animal Health; 2017
- OIE standards and recommendations [factsheet]. Paris: World Organisation for Animal Health; 2016
- WHO Global action plan on antimicrobial resistance. Geneva: World Health Organization; 2015
- Guidelines on core components of infection prevention and control programmes at the national and acute health care facility. Geneva: World Health Organization; 2016
- National action plan for combating antibiotic-resistant bacteria. Atlanta: Centers for Disease Control and Prevention; 2015
- Executive summary: The selection and use of essential medicines. Geneva: World Health Organization; 2017

04

ZOONOTIC DISEASE

Functional multisectoral, multidisciplinary mechanisms, policies, systems and practices are in place to minimize the transmission and spread of zoonotic diseases between animals and humans.

IMPACT:

Functional animal health, environment and human health systems work individually and collaboratively through documented mechanisms and operational frameworks, using a multisectoral One Health approach and based on international standards, guidance and best practices, to minimize the transmission of zoonotic diseases to human populations.

MONITORING AND EVALUATION:

(1) Agreement by the animal health and public health sectors on a common list of zoonotic diseases/pathogens of greatest national public health concern. (2) Existence of functional capacities in the animal health and public health sectors and of collaboration, coordination and communication between them for preparedness, detection, assessment and response to zoonotic diseases.

CAPACITY LEVEL	**Benchmark 4.1: Coordinated surveillance system is in place for priority zoonotic diseases/pathogens** **Objective: Strengthen coordinated surveillance systems for priority zoonotic diseases/pathogens**
01 **NO CAPACITY**	No jointly agreed upon list of priority diseases to focus coordinated surveillance efforts. No organized coordinated surveillance system in place to connect animal and public health system.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify key stakeholders and focal points from animal health (domestic animals and wildlife), human health, environmental health and other key sectors. ● Review and assess surveillance capacity in each sector and any existing coordination or data sharing mechanism between the relevant sectors. ● Jointly define and prioritize zoonotic diseases of greatest national public health concern for the country through a One Health approach that involves all relevant stakeholders. ● Develop strategy, guidelines and SOPs for coordinated surveillance and reporting of at least two priority zoonotic diseases of greatest national public health concern. ● Develop adequate laboratory capacity and standards within relevant sectors to detect zoonotic diseases. ● Develop operational plans for the management of at least two priority zoonotic diseases of greatest national public health concern. ● Develop and disseminate training packages on the operational plan, associated guidelines and SOPs. ● Designate a focal point or unit within the animal and human health sectors and other relevant sectors and formalize a coordination mechanism for priority zoonotic diseases/pathogens.

03
DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Establish animal–human interfaces and procedures to exchange surveillance information on zoonotic diseases among relevant sectors (and wider when needed), ideally through an electronic system.
- Establish an interoperability platform or information sharing mechanism between the relevant sectors to initiate coordinated surveillance activities.
- Implement the operational plan and allocate resources for the prevention and detection of priority zoonotic diseases of greatest national public health concern.
- Train responsible staff for specific aspects of the surveillance and management of priority zoonotic diseases at national and subnational levels.

04
DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Expand laboratory-enhanced coordinated surveillance to all priority zoonotic diseases/pathogens at all levels (national, intermediate and local levels) in all sectors.
- Enhance the interoperability platform or information sharing mechanism between the relevant sectors, ideally through linking existing or establishing new electronic systems where applicable.
- Train additional staff across all relevant sectors in the surveillance and management of zoonotic diseases at subnational levels.
- Use coordinated surveillance data to inform disease prevention and control efforts across all relevant sectors.

05
SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Allocate available and sustainable resources for coordinated surveillance and management of all priority zoonotic diseases across relevant sectors.
- Test surveillance system capacity regularly with all relevant sectors to detect zoonotic events and the management of zoonotic diseases either by an after-action review or simulation exercise.
- Use coordinated surveillance data to inform and evaluate disease prevention and control efforts across all relevant sectors.
- Based on the results of these exercises or reviews, update the guidelines, SOPs and operational plan where appropriate.

CAPACITY LEVEL	Benchmark 4.2: Functional mechanism to respond to priority zoonotic diseases in place Objective: Strengthen mechanism to respond to zoonotic diseases
01 **NO CAPACITY**	No coordinated response mechanism for priority zoonotic diseases.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review and assess existing multisectoral policy, strategy, plan and/or mechanism for responding to priority zoonotic events. ● Develop guidelines and SOPs for coordinated response to zoonotic events and more widely for the management of priority zoonotic diseases by all relevant sectors. ● Designate a focal point from each sector (animal (domestic animals and wildlife), human and environmental health) for response coordination. ● Develop and disseminate training packages on these guidelines and SOPs. ● Publish these policies/strategies and plan.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop a multisectoral One Health operational plan, with the provision of resources, for a coordinated response to an outbreak of at least two priority zoonotic diseases by all relevant sectors. ● Train staff of human, animal (domestic animals and wildlife), and environmental health sectors on these guidelines, SOPs and operation plan. ● Establish a communication mechanism for rapidly alerting all relevant sectors to priority zoonotic outbreak events to increase sector awareness and decrease the time to conduct a coordinated outbreak response. ● Ensure that access to laboratory capacity to detect pathogens for any priority zoonoses is included in the response plans.

04
DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Disseminate and expand the operational plan to respond to all priority zoonotic diseases to the intermediate and local levels for all the relevant sectors.
- Regularly analyse and produce reports on the timeliness of information exchange and activation of response mechanisms between sectors.
- Develop next steps for improving response timelines.
- Monitor and evaluate the multisectoral coordination mechanism for cresponse regularly.
- Review and update the operational plan/mechanism based on the results of monitoring and evaluation.

05
SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct after-action reviews and/or simulation exercises to test the operationality of the response to zoonotic diseases events across all relevant sectors.
- Review and update the operational plan/mechanism based on the results.
- Document and disseminate the results and lessons learned from efforts to minimize animal-to-human spread of disease.

TOOLS:

- Implementation of the IHR at the human-animal-health interface
- Global early warning system for major animal disease including zoonoses (GLEWS)
- Managing public health risks at the human-animal-environment interface
- Neglected zoonotic disease
- Zoonotic diseases
- Zoonotic diseases: a guide to establishing collaboration between animal and human health sectors at the country level.
- Zoonotic – Surveillance and Control
- One Health
- Animal Health in the World
- Resources – World organisation of animal health (OIE)
- OIE international standards
- Handbook for the assessment of capacities at the human–animal interface. World Health Organization and the World Organisation for Animal Health; 2017

05

FOOD SAFETY

A functional system is in place for surveillance and response capacity of States Parties for foodborne disease and food contamination risks or events with effective communication and collaboration among the sectors responsible for food safety.

IMPACT:

Timely detection and effective response of potential food-related events in collaboration with other sectors responsible for food safety.

MONITORING AND EVALUATION:

(1) Existence of indicator-based disease surveillance or event-based disease surveillance and supporting laboratory analysis to detect and assign aetiology for foodborne diseases or origin of contamination event, and investigation of hazards in foods linked to cases, outbreaks or events. (2) Existence of a national food safety emergency plan. (3) Existence of a designated International Food Safety Authorities Network (INFOSAN) Emergency Contact Point, and the OIE Focal Point on Animal Production Food Safety with a central coordination mechanism in place.

CAPACITY LEVEL	Benchmark 5.1: Surveillance systems in place for the detection and monitoring of foodborne diseases and food contamination Objective: Strengthen surveillance systems for foodborne diseases and food contamination
01 **NO CAPACITY**	No or very limited surveillance system in place for foodborne disease or for food contamination (chemical and microbiological) monitoring. The country has to develop and implement all activities that are listed in level 2 to achieve limited capacity for the surveillance system.

02 LIMITED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Review foodborne disease surveillance and food contamination monitoring capacity, and assess gaps and needs.
- Identify key stakeholders and focal points for foodborne disease surveillance and food contamination monitoring.
- Identify responsible groups in relevant agencies to coordinate development and implementation of foodborne disease surveillance and food contamination monitoring system(s).
- Develop a strategy to monitor trends and detect foodborne events to incorporate within the national communicable disease surveillance strategy (see surveillance technical area).
- Link surveillance activities with the surveillance technical area benchmarks.

Establish indicator-based disease surveillance (or)

- Develop guidelines and SOPs for priority foodborne diseases.
- Establish a designated unit at all levels with operational plan and procedures.
- Establish and disseminate case definitions, process of detection, assessment and reporting of cases (user manual or guidelines) to national and subnational levels.

Establish event-based disease surveillance

- Develop guidelines and SOPS.
- Establish a designated unit at all needed levels with operational plan and procedures.
- Develop and put in place case definitions, process of detection, assessment and reporting of events (clusters or outbreaks) for country priority diseases, and dissemination to national and subnational levels.
- Establish a process to capture events from community and other sources (such as media, social media, private sector), and make the data available at all needed levels.

- Develop guidelines and SOPs for the detection of foodborne events and implement indicator-/event-based disease surveillance (refer to indicator-/event-based disease surveillance columns for respective benchmarks).[13]
- Develop and disseminate a training package on these guidelines and SOPs.

03

DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement actions (described above) for both indicator- and event-based disease surveillance systems at national and intermediate levels (district, province, region or state).
- Develop a laboratory protocol for the investigation of foodborne diseases and food contamination.
- Train staff on these protocols with the provision of laboratory logistics in designated laboratories.
- Ensure provision of resources for the investigation of foodborne disease or food contamination events at the national level. This should include investigations into hazards in foods linked to cases, outbreaks or events.
- Test for foodborne diseases and/or contamination for the cases or events detected through indicator- or event-based disease surveillance to assign aetiology.
- Develop or adopt the risk assessment protocol of acute foodborne events (chemical and microbiological).[14]
- Develop an information-sharing protocol and mechanism that will apply to all relevant stakeholders involved in foodborne disease surveillance and food contamination monitoring. [15, 22]

[13] *Strengthening surveillance of and response to foodborne diseases.*

[14] *Food safety risk analysis: A guide for national food safety authorities. Rome: Food and Agriculture Organization of the United Nations; 2009.*

[15] *Assuring food safety and quality: guidelines for strengthening national food control systems. Rome: Food and Agriculture Organization of the United Nations.*

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Train staff at national and subnational levels to conduct risk assessment of acute foodborne events.
- Allocate or identify resources for such training and risk assessments.
- Conduct risk assessments of acute foodborne events (chemical and microbiological) and publish a periodic report (such as an epidemiological bulletin).[16,17,18,19]
- Train identified foodborne disease surveillance and food contamination monitoring focal points in the surveillance of such hazards.
- Conduct a Total Diet Study or similar study and implement outcomes to complement the existing national monitoring and surveillance strategy.[20]

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct an after-action review of a foodborne event or a simulation exercise in the absence of a real event to test the capacity of surveillance and monitoring systems.
- Document findings and identify areas for improvement; update the strategy, guidelines and SOPs, if appropriate.
- Share outcome with all relevant stakeholders.

[16] *Principles and methods for the risk assessment of chemicals in food: Environmental Health Criteria 240. Geneva: World Health Organization; 2009.*

[17] *Hazard characterization for pathogens in food and water: Microbiological risk assessment series 3, guidelines. Geneva: World Health Organization; 2003.*

[18] *Exposure assessment of microbiological hazards in food: Microbiological risk assessment series 7, guidelines. Geneva: World Health Organization; 2008.*

[19] *Risk characterization of microbiological hazards in food: Microbiological risk assessment series 17, guidelines. Geneva: World Health Organization; 2009.*

[20] *Towards a harmonised total diet study approach: a guidance document. World Health Organization, Food and Agriculture Organization of the United Nations and European Food Safety Authority; 2011.*

CAPACITY LEVEL	**Benchmark 5.2: A functional mechanism is in place for the response and management of food safety emergencies** **Objective: Strengthen mechanisms for response and management of food safety emergencies**
01 **NO CAPACITY**	No mechanism for the response and management of food safety emergencies has been established or in place, or is very limited.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review the mechanism, if it exists, for the response and management of food safety emergencies to identify and assess gaps and needs, with reference to relevant Food and Agriculture Organization (FAO)/WHO guidelines.[21,22,23,24] ● Identify key government agencies involved in the response and management of food safety emergencies. ● Develop SOPs and guidelines for the response and management of food safety emergencies (These guidelines should be part of the overall surveillance guideline for foodborne diseases and contamination).[25] ● Designate an INFOSAN Emergency Contact Point in the government agency responsible for the response and management of food safety emergencies.[26]
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish communication channels among all relevant sectors including between the INFOSAN Emergency Contact Point and the IHR National Focal Point. ● Designate INFOSAN Focal Points with responsibility for food safety at appropriate levels in other government agencies. ● Develop a coordination mechanism with SOPs linking all relevant sectors together with a defined set of roles and responsibilities. ● Develop and disseminate training packages on SOPs and guidelines for the response and management of food safety emergencies.

[21] *FAO/WHO framework for developing national food safety emergency response plans. Rome: Food and Agriculture Organization of the United Nations and World Health Organization; 2010.*
[22] *FAO/WHO guide for application of risk analysis principles and procedures during food safety emergencies. Rome: Food and Agriculture Organization of the United Nations; 2011.*
[23] *FAO/WHO guide for developing and improving national food recall systems. Rome: Food and Agriculture Organization of the United Nations and World Health Organization; 2012.*
[24] *Foodborne disease outbreaks: guidelines for investigation and control. Geneva: World Health Organization; 2008.*
[25] *Risk management and food safety: consultation report. Rome: Food and Agriculture Organization of the United Nations; 1998.*
[26] *INFOSAN member roles and responsibilities. Geneva: World Health Organization; 2015.*

04
DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Develop strategies and guidance to communicate with partners, stakeholders, general public, international organizations and applicable regional and international networks, and orient them on these strategies and guidance.[27]
- Develop and disseminate risk communication messages to the public, through appropriate media, during food safety emergencies.[28]
- Establish information sharing mechanisms at regional and international levels.
- Establish a mechanism of sharing information regularly by the INFOSAN Emergency Contact Point with the IHR NFP, INFOSAN Focal Points and all relevant sectors during a food safety emergency.

05
SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct after-action reviews of response to food safety events or develop an exercise in the absence of a real event to assess and review the response, collaboration and communication mechanisms.
- Ensure participation of the INFOSAN Emergency Contact Point in INFOSAN simulation exercises or real food safety emergencies, with the INFOSAN Secretariat.
- Document and disseminate the findings in terms of timeliness, information exchange, public health risk messaging, efficiency and effectiveness of response, collaboration and communication.
- Review and update the management and response plan based on these findings.

TOOLS:

- Food safety. [WHO website] (http://www.who.int/foodsafety/en/, accessed 30 January 2019).

[27] *Assuring food safety and quality: guidelines for strengthening national food control systems. Rome: Food and Agriculture Organization of the United Nations; 2003.*
[28] *Risk communication applied to food safety handbook (2016). Rome: Food and Agriculture Organization of the United Nations and World Health Organization; 2017.*

06

IMMUNIZATION

A national vaccine delivery system is in place – with nationwide reach, effective distribution, easy access for marginalized populations, adequate cold chain and ongoing quality control – to respond to existing and new disease threats.

IMPACT:

Effective protection through achievement and maintenance of immunization against measles and other epidemic-prone vaccine-preventable diseases (VPDs). Measles immunization is emphasized because it is widely recognized as a proxy indicator for overall immunization against VPDs and because measles is a continued cause of substantial avoidable morbidity and mortality. Countries will also identify and target immunization to populations at risk of other epidemic-prone VPDs of national importance (such as cholera, Japanese encephalitis, meningococcal disease, typhoid and yellow fever). Diseases that are transferable from animals to humans, such as anthrax and rabies, are also included.

MONITORING AND EVALUATION:

90-95% coverage of the country's 12-month-old population with at least one dose of measles-containing vaccine (MCV), as demonstrated by coverage surveys.

CAPACITY LEVEL	Benchmark 6.1: Optimum vaccine coverage (measles) as part of a national programme Objective: Increase vaccine coverage for priority vaccine preventable diseases in the country
01 **NO CAPACITY**	Less than 50% of the country's 12-month-old population has received at least one dose of MCV, as demonstrated by coverage surveys or administrative data.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Assess and map existing coverage data to identify high-risk areas and populations to target control of selected VPDs. ● Evaluate immunization surveillance data, immunization registries, immunization data and reporting systems to identify areas for strengthening of immunization data management. ● Establish a multistakeholder working group to develop plans to establish a national vaccination registry. ● Integrate the WHO Global Vaccine Action Plan eradication and elimination goals into the national immunization plan. ● Develop and disseminate guidance and tools to increase routine immunization services, with a focus on first-dose measles coverage and conduct activities to ensure 50–69% first-dose measles coverage of the country's 12-month-old population with at least one dose of MCV. ● Develop plans to perform catch-up campaigns or supplemental immunization activities, based on epidemiologic and coverage data. ● Develop a standardized system of monitoring and reporting of adverse events following immunization.

03 DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Use mapping and assessment data to plan targeted activities for routine and supplemental immunization for high-risk areas and populations.
- Introduce the national vaccine registry in target jurisdictions.
- Finalize and approve a national immunization plan to: improve coverage and introduce vaccine into targeted populations, develop steps to operationalize the plan, and disseminate the immunization plan to key stakeholders.
- Disseminate messaging tools to improve knowledge-based capacities (communication and education) of healthcare staff for community socialization.
- Develop guidelines, SOPs, training materials and toolkits on pre- and postservice guidance for immunizations; and train healthcare workers.
- Conduct activities to achieve 70–89% first-dose measles coverage of the country's 12-month-old population with at least one dose of MCV.
- Develop guidelines and tools for safety and waste management and disseminate to all health facilities.
- Operationalize a standardized system of monitoring and reporting of adverse events following immunization (AEFIs) at all health facilities.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Develop and implement strategies to increase immunization coverage in all groups with <90% first-dose MCV coverage.
- Implement a national plan, finalized and approved by national and state/district/province authorities, to achieve 95% national level coverage by 2020.
- Develop quality assurance standards and mechanisms for immunizations at designated health facilities.
- Conduct activities to ensure 90% first-dose measles coverage of the country's 12-month-old population with at least one dose of MCV.
- Implement a routine monitoring and evaluation system for health workers who perform immunization.
- Promote immunizations and sensitize communities through routine messaging via traditional/social media, and engaging civil society organizations and religious leaders.
- Evaluate and validate the AEFI reporting system.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Secure sustainable domestic funding for immunizations.
- Establish full functionality and integrate the national vaccine registry with national health information systems, if appropriate to the national context.
- Conduct activities to ensure 95% first-dose measles coverage of the country's 12-month-old population with at least one dose of MCV.
- Conduct formal surveys of hard-to-reach areas to ensure that coverage rates among vulnerable populations are >90%.
- Conduct an evaluation of surveillance data to ensure that the case-based surveillance system is sufficiently sensitive to detect cases (such as measles immunoglobulin M negative febrile rash incidence rate ≥2 per 100 000 population) at the district/province/state levels.

CAPACITY LEVEL	Benchmark 6.2: Provision of national vaccine access and delivery Objective: Strengthening capacity for vaccine access and delivery to target population
01 NO CAPACITY	No plan is in place for nationwide vaccine delivery, nor have plans been drafted to provide vaccines throughout the country to target populations; or inadequate vaccine procurement and forecasting has led to regular stock-outs at the central or district levels.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Complete a review of plans, policies and procedures for vaccine delivery systems and use results to guide vaccine procurement, access and delivery of targeted vaccines. ● Complete a review of cold-chain quality assurance and safety measures within vaccine storage and delivery systems to optimize supply chain management. ● Review national laws and regulations for the procurement of vaccines from national and international sources during public health emergencies. ● Identify barriers to procuring, receiving, storing and deploying vaccines to targeted populations. ● Develop national guidance documents for vaccine stockpile and deployment, and obtain approval from ministry of health (and ministry of agriculture, where applicable). ● Establish a cold chain for vaccine delivery to at least 40% of districts or 40% of the target population.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct a detailed assessment of existing cold chain equipment, including the functioning of cold chain equipment, and identify bottlenecks to maintaining needed cold chain infrastructure at the district/state/province levels; use assessment data to operationalize a plan to service/procure needed cold chain infrastructure. ● Develop national guidelines for vaccine delivery to targeted populations with steps to operationalize the plan. ● Develop and disseminate protocols, SOPs, technical guidelines and toolkits for storage, transportation and deployment of vaccines to healthcare workers and staff. ● Establish a cold chain for vaccine delivery to at least 40–59% of districts or 40–59% of the target population. ● Establish procedures for procurement, storage and transportation of vaccines during public health emergencies.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Procure and service cold chain equipment in areas identified by a comprehensive assessment.
- Train healthcare workers and other immunization staff on protocols, SOPs, technical guidelines and toolkits for storage, transportation and deployment of vaccines.
- Establish a cold chain for vaccine delivery to at least 60–79% of districts or 60–79% of the target population.
- Conduct quality assurance of cold chain equipment and delivery systems.
- Develop a response document to observe appropriate authorizations, clearances, ethical norms and permissions during vaccine delivery.
- Establish an inventory system that monitors and transmits vaccine supply and requirements at all needed levels.
- Develop training and exercises for hazard-specific response and management plans with sectors, stakeholders and other agencies.

05 SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Secure sustainable funding for vaccine delivery systems, including for procurement and routine repair of cold chain equipment.
- Establish a cold chain for vaccine delivery to more than 80% of districts or more than 80% of the target population.
- Conduct a functional exercise (either a simulation or vaccine campaign) to test vaccine delivery systems in a mass campaign or public health emergency setting.
- Routinely analyse the inventory system to monitor vaccine supply needs and forecast requirements, with anticipated procurement.
- Assess vaccine delivery assessment in hard-to-reach areas, targeted based on existing coverage/registry/surveillance data, and use results to improve vaccine delivery to these areas.
- Develop a national strategic framework to prioritize resources and investments in immunization.
- Establish a functional national body to assess and recommend an evidence-based national vaccine policy.

TOOLS:

- Global Vaccine Action Plan — endorsed by all 194 Member States of the World Health Assembly in May 2012; provides a framework to prevent millions of deaths by 2020 through more equitable access to existing vaccines for people in all communities
- Training for mid-level Managers (MLM) — modular training program on all aspects of immunization delivery, including cold chain, vaccines, safe injection equipment; partnering with the community; immunization safety; supportive supervision; monitoring the immunization system; annual immunization planning and budget; EPI coverage surveys; VPD surveillance
- Planning and Implementing High-Quality Supplementary Immunization Activities for Injectable Vaccines — 2016 guidance document on SIA planning and implementation, using measles and rubella vaccines as an example
- WHO recommendations for routine immunization –summary of optimal immunization schedules for use by programme managers
- Global Routine Immunization Strategies and Practices (GRISP) — companion document to GVAP; provides a cohesive delivery and advocacy platform to promote routine immunizations
- WHO Vaccine Preventable Disease Standards- updated standards for surveillance of VPDs a resource for the immunizations

07

NATIONAL LABORATORY SYSTEM

Surveillance with a national laboratory system,[29] including all relevant sectors, particularly in human and animal (domestic animals and wildlife) health, and effective modern point-of-care and laboratory-based diagnostics is in place.

IMPACT:

Effective use of a nationwide laboratory system, including all relevant sectors, capable of safely and accurately detecting and characterizing pathogens causing epidemic disease, including both known and unknown threats, from all parts of the country. Expanded deployment, utilization and sustainment of modern, safe, secure, affordable and appropriate diagnostics tests or devices established.

MONITORING AND EVALUATION:

(1) A nationwide laboratory system able to reliably conduct tests[30] at least for priority diseases of the country on appropriately identified and collected, and suspected or confirmed outbreak specimens transported safely and securely to accredited laboratories from at least 80% of intermediate levels/districts in the country. (2) Existence of national quality laboratory standards and system for licensing laboratories.

[29] National laboratory system is a collaborative community of clinical laboratories, public health laboratories and many individual partners who initiate tests and/or use test results.

[30] Tests list in each country includes six testing methods selected according to IHR's immediately notifiable list and the WHO top 10 causes of death in low-income countries: polymerase chain reaction testing for influenza virus; virus culture for poliovirus; serology for HIV; microscopy for M. tuberculosis; rapid diagnostic testing for Plasmodium spp.; and bacterial culture for Salmonella enteritidis serotype typhi. These six methods are critical to the detection of epidemic-prone emerging diseases. Competency in these methods is indicated by successful testing for the specific pathogens listed. The remaining four tests should be selected by the country based on major national public health concerns.

CAPACITY LEVEL	Benchmark 7.1: Laboratory testing for detection of priority diseases is in place Objective: Strengthening laboratory testing for detection of priority diseases
01 **NO CAPACITY**	Country has not taken a risk-based approach to determine testing for priority diseases.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish clear SOPs and necessary agreements with international laboratories to perform diagnostic and confirmatory testing of specimens and support outbreak detection and responses when local capacity is not available. ● Define 10 core tests based on the priority diseases list (link this with the surveillance benchmark). ● Select at least five priority diseases for testing using the results of risk analysis, surveillance data and prioritization methodologies. ● Assess laboratory algorithms, standards and testing capacity including equipment inventory for the 10 priority diseases. ● Assess the capacity and essential functioning of target human and animal health laboratories to meet diagnostic and confirmatory requirements for priority diseases. ● Develop plan, based on assessment, to target human and animal health laboratories for capacity building and essential functioning to meet diagnostic and confirmatory requirements for priority diseases, ensuring that proficiency is demonstrable for bacteriology, serology, polymerase chain reaction and others. ● Establish domestic external quality assessment programmes for all priority tests or cover them with international external quality assessment schemes. ● Develop a national laboratory policy that identifies expected capacities at each level of the national laboratory system. ● Develop a hands-on-training curriculum for all laboratory staff that includes task-based training, refresher training and mentoring in their appropriate technical and administrative areas. ● Conduct a hands-on training or refresher training session for public health laboratory staff on techniques to diagnose the country's priority diseases. ● Develop and disseminate testing SOPs and quality control SOPs for all core tests for priority diseases; and establish supply and procurement chains. ● Train relevant laboratory staff on techniques used for core testing and document quality control results.

03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop and disseminate testing SOPs and procurement chains to conduct testing for at least 10 priority diseases. ● Make available external quality assessment for at least three/four core tests for priority diseases at national or central laboratories. ● Begin establishing a comprehensive quality management system in laboratories that conduct core tests for priority diseases. ● Regularly train staff on the testing, and document quality control results.
04 DEMONSTRATED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop and disseminate testing SOPs; procurement chains should conduct testing for at least 15 priority diseases. ● Conduct quality assurance for all core tests. ● Develop a strategic framework to prioritize national investments into laboratory system sustainability. ● Conduct monitoring and evaluation to document diagnostics, data quality and staff performance, and incorporate recommendations into the national laboratory strategic plan. ● Establish a national external quality assessment programme for public health laboratories.
05 SUSTAINABLE CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Expand external quality assessment programmes to include testing in the private sector and animal health laboratories. ● Secure sustainable financing for the laboratory system to support ongoing testing of priority diseases.

CAPACITY LEVEL	Benchmark 7.2: Specimen referral and transport system are in place for all relevant sectors Objective: Strengthen specimen referral and transport system
01 **NO CAPACITY**	No system in place for transporting specimens from intermediate levels/districts to national laboratories; or only ad hoc transportation is available.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review existing specimen referral and transportation networks for priority diseases, map existing laboratory capacity for priority diseases[31], and establish referral networks for each pathogen. ● Convene human and animal health sectors and other stakeholders to assess referral mechanisms and linkages among various levels of health facilities, including international networks with guidance and tools for dissemination. ● Develop SOPs (as part of disease outbreak investigation protocols) for specimen collection, management and transportation and share with all levels. ● Train staff of courier company and health facility on appropriate management of specimens from suspected cases of priority diseases. ● Establish a service agreement with a courier company (public or private) for specimen transportation from at least 50% of health facilities in the public sector throughout all major subdivisions of the country. ● Establish a mechanism to ensure transportation of specimens from 50% of all health facilities to national laboratories. ● Provide preposition outbreak investigation kits (sample collection and transportation kits) in at least 50% of health facilities.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Expand a service agreement with a courier company (public or private) for specimen transportation from at least 80% of the health facilities. ● Establish a mechanism to ensure transportation of specimens from 50–80% of all health facilities to national laboratories. ● Implement staff training programmes and standards at the national level for the safe shipment of infectious substances following available WHO guidance. ● Provide preposition outbreak investigation kits (sample collection and transportation kits) at 80% or more health facilities.

[31] *These are the priority diseases defined in the technical areas of surveillance, zoonosis and food safety.*

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Establish a mechanism to ensure transportation of specimens from at least 80% of all health facilities to national laboratories covering all geographic areas of the country.
- Provide preposition outbreak investigation kits (sample collection and transportation kits) at all the health facilities.
- Conduct regular reviews of specimen transportation systems to confirm that specimens are being transported promptly and in a manner that maintains safety and specimen quality.
- Establish a system to collect and test specimens from hard-to-reach areas.
- Develop a mechanism to ensure that staff at the national level have internationally recognized certification to ship potentially infectious specimens.

05 SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct evaluation or simulation exercises to confirm functionality of specimen referral systems in all health facilities.
- Ensure committed sustainable funding for the national standard of specimen collection, handling, preservation, protection, transportation, disposal, packaging and import/export procedures.

	Benchmark 7.3: Effective national diagnostic network is in place **Objective: Establish effective national diagnostic network**
01 **NO CAPACITY**	No evidence of use of rapid and accurate point-of-care and farm-based diagnostics and laboratory-based diagnostics, and no tier-specific diagnostic testing strategies are documented.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify international laboratories with testing capacity for confirmatory laboratory diagnostics when they are not currently available in the country. ● Develop a national laboratory policy that identifies the expected capacities at each level of the national laboratory system. ● Assess national diagnostic capability, and based on the findings, develop a national plan for achieving goals stated in the policy. ● Conduct a review of existing point-of-care/rapid diagnostic tests that are available to the country for detection of priority diseases. ● Conduct a laboratory and field validation of the use of point-of-care/rapid diagnostic tests for some priority diseases. ● Develop and implement point-of-care diagnostic testing strategies for priority diseases.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop and disseminate SOPs for tiered testing, including point-of-care/rapid diagnosis and specimen referral systems to the appropriate laboratory ideally within the framework of a national laboratory policy, for each priority disease. ● Develop in-service training plans for all staff that include task-based training, refresher training and mentoring in their appropriate technical and administrative areas. ● Allocate resources (human and material) to conduct appropriate diagnostic testing at the subnational level in line with the national laboratory policy.

04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Monitor implementation of the tiered testing approach, including validation/quality assurance of point-of-care testing. ● Train laboratory staff on relevant novel diagnostic procedures to detect priority diseases. ● Use point-of-care diagnostic testing for some of the priority diseases and further confirm by tiered testing approach from referral laboratories. ● Obtain sustainable funding for laboratory procurement, capacity building and point-of care diagnostics.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop capacity to conduct advanced molecular and serological testing for confirmation of priority diseases including the ability to conduct molecular subtyping. ● Develop and implement a plan to increase national testing capacity for all priority diseases, including cross-training of national laboratory staff in different testing methodologies. ● Develop quality management system mechanism for point-of-care testing, including quality indicators.

CAPACITY LEVEL	Benchmark 7.4: Laboratory quality system is in place Objective: To ensure laboratory quality
01 NO CAPACITY	There are no national laboratory quality standards.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish an independent unit at the central level with a specific budget line and personnel to oversee laboratory services and develop national laboratory quality standards. ● Establish a quality assessment programme for national or central laboratories for diagnostics of diseases with epidemic potential. ● Develop a roadmap for laboratory inspections, licensing and accreditation, in line with the national laboratory strategy.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish a national quality assessment programme for peripheral laboratories for diagnosis of diseases with epidemic potential. ● Develop minimum standards for certification or licensing, as a part of the system for regulation of laboratories. ● Implement a system of inspecting and licensing laboratories, including using local adaptations of international standards and norms and obtaining required funding and human resources. ● Develop expertise by training selected laboratory staff in the inspection of laboratories based on the standards.
04 DEMONSTRATED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Implement a mandatory licensing programme for national and subnational public health laboratories. ● Establish national quality standards that follow international norms and standards.

05
SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement a national external quality assurance programme across microbiology, virology, serology and parasitology.
- Accredit all national reference laboratories to international standards (such as using ISO 15189).
- Strengthen the national plan for quality management system compliance at the subnational and national levels through continuous quality improvement based on analysis of actual experience in the country.

TOOLS:

- Laboratory Quality Stepwise Implementation Tool — WHO LQSI tool in the form of a website that provides a stepwise plan to guide medical laboratories toward implementing a quality management system in compliance with ISO 15189 or national standard with similar requirements
- Methodology for Prioritizing Severe Emerging Diseases for Research and Development — WHO guidance to identify global disease threats; methods can be applied to identifying priority diseases for laboratory testing in countries
- Strengthening Laboratory Management Toward Accreditation – A structured quality improvement program that teaches laboratory managers how to implement practical quality management systems in resource-limited settings
- Laboratory Quality Management System Training Toolkit — WHO toolkit to train laboratory managers, senior biologists and technologists in quality management systems
- Stepwise implementation of a quality management system for a health laboratory. WHO EMRO publication adapting the ISO 15189 standard to the context and realities of resource-limited countries, where the requirements of the ISO standard may be too stringent to implement. http://apps.who.int/iris/handle/10665/249570

08

BIOSAFETY AND BIOSECURITY

A whole-of-government multisectoral national biosafety[32] and biosecurity[33] system with dangerous pathogens[34] identified, held, secured and monitored in a minimal number of facilities according to best practices;[35] biological risk management training and educational outreach conducted to promote a shared culture of responsibility,[36] reduce dual-use risks, mitigate biological proliferation and ensure safe transfer of biological agents; and country-specific biosafety and biosecurity legislation, laboratory licensing and pathogen control measures in place as appropriate.

IMPACT:

Implementation of a comprehensive, sustainable and legally embedded national oversight programme for biosafety and biosecurity, including the safe and secure use, storage, disposal and containment of pathogens found in laboratories and a minimal number of holdings across the country, and involving research, diagnostic and biotechnology facilities within all sectors.[37] Strengthened, sustainable biological risk management best practices are in place using common educational materials. Safe and compliant transport of infectious substances is also considered according to national and international regulations.

MONITORING AND EVALUATION:

(1) Existence of a national framework for pathogen biosafety and biosecurity, strain collections and containment laboratories that includes identification and storage of national strain collections in a minimal number of facilities from all sectors. (2) Existence of a comprehensive oversight and monitoring system.

[32] Laboratory biosafety describes the containment principles, technologies and practices that are implemented to prevent unintentional exposure to pathogens and toxins, or their accidental release.

[33] Laboratory biosecurity describes the protection, control and accountability for valuable biological materials within laboratories, as well as information related to these materials and dual-use research, to prevent their unauthorized access, loss, theft, misuse, diversion or intentional release.

[34] List of human and animal pathogens and toxins for export control.

[35] Minimal/best practices as referred in the WHO laboratory biosafety manual.

[36] Responsible life sciences research for global health security: a guidance document. WHO/HSE/GAR/BDP/2010.2. Geneva: World Health Organization; 2010.

[37] Both human and animal health sectors.

CAPACITY LEVEL	**Benchmark 8.1: Whole-of-government biosafety and biosecurity system is in place for all sectors (including human, animal (domestic animals and wildlife) and environment facilities)** **Objective: To develop and implement a biosafety and biosecurity system for all sectors (including human, animal (domestic and wildlife) and environment facilities) to minimize the risk of accidental or intentional infection of laboratory staff or release of hazardous pathogens**
01 NO CAPACITY	Elements of a comprehensive national biosafety and biosecurity system, such as policy instruments and proper financing, are not in place.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify and document human and animal health facilities that store/maintain dangerous pathogens and toxins in the relevant sectors and health professionals responsible for them. ● Review and develop or revise the national legislation/regulations for biosafety and biosecurity by the human health sector (or other appropriate authority). ● Establish a mechanism for laboratory licensing in human and animal health sectors; ensure that biosafety and biosecurity requirements are included in general licensing requirements. ● Conduct assessments of current biosafety and biosecurity practices, procedures and engineering controls at the national level. ● Develop pathogen control measures, including standards for containment, operational handling and failure reporting systems.

03

DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Develop a biosafety and biosecurity national framework including guidelines and record-keeping obligations at all laboratories working with hazardous agents.
- Develop and maintain inventories for dangerous pathogens.
- Secure dangerous pathogens and toxins at minimum number of national level laboratories.
- Implement biosafety and biosecurity best practices in all national, intermediate and local laboratories.
- Establish an information security system for all sensitive documentation in facilities where dangerous pathogens and toxins are stored.
- Implement national biosafety and biosecurity regulations and guidelines with all relevant sectors (such as human, animal, environmental health, defence ministry and stakeholders) with standardized classification and accreditation standards that cover pathogen control and personnel reliability programme requirements.
- Develop an action plan to replace dangerous pathogen cultures with safer investigation methods.
- Begin developing incident and emergency response programmes in facilities storing dangerous pathogens.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement the biosafety and biosecurity national framework in all laboratories at the national, intermediate and local levels.
- Develop site-specific biosafety/biosecurity supporting documents that include incident response and emergency plans (such as in case of explosion, fire, flood, worker exposure, accident or illness, major spillage, waste management) for laboratories at national, intermediate and local levels.
- Develop documents for dual-use research and responsible code of conduct for scientists and staff.
- Develop and implement an incident reporting system that includes identifying incidents, reporting according to regulations, and addressing action items that improve safety and security.
- Establish external monitoring and oversight of biosafety and biosecurity practices.
- Develop and implement equipment operation and maintenance plans at laboratories storing pathogens of security concern.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Establish sustainable funding and an oversight mechanism to support biosafety and biosecurity programmes/initiatives.
- Document implementation of the national biosafety and biosecurity legislations, which are aligned with the international best practices at all levels.
- Document and generate international good practices for biosafety and biosecurity arrangements.
- Secure sustainable funding and an oversight and enforcement mechanism to support biosafety and biosecurity programmes/initiatives at the ministry level.

CAPACITY LEVEL	**Benchmark 8.2: Biosafety and biosecurity training and practices in all relevant sectors (including human, animal (domestic animals and wildlife) and environment)** **Objective: To develop a public health workforce that is available and trained to enable early detection, prevention, preparedness and response to potential events of international concern at all levels of health systems to effectively implement IHR**
01 NO CAPACITY	No biosafety and biosecurity training or plans are in place.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Assess biosafety and biosecurity training needs and gaps in all relevant sectors. ● Conduct an engagement meeting to develop biosafety and biosecurity training programmes that align academic curriculum with international best practices.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Adapt in-service and continuing education training curricula, SOPs, toolkits, good microbiological practices and procedures to comply with biosafety and biosecurity rules and regulations and aligned with international best practices. ● Train and oversight facilities that are housing or working with dangerous pathogens and toxins to comply with biosafety and biosecurity rules and regulations. ● Begin developing sustained academic and continuing education, and training programmes for biosafety and biosecurity aligned with international best practices.
04 DEMONSTRATED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Implement training programmes and oversight and assess that they comply with biosafety and biosecurity rules and regulations, and are aligned with international best practices. ● Implement sustainable training programmes, that are aligned with international best practices, in institutions that train those who maintain or work with dangerous pathogens and toxins.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Align and implement sustainable training programmes in biosafety and biosecurity aligned with international best practices.
- Guarantee sustained funding to support training programmes from the national government.
- Include biosafety and biosecurity training courses in university curricula of pretraining education in both human and animal health sectors.
- Review training needs assessments on a regular basis and adjust and update training programmes according to the assessment results.
- Implement periodic training programmes on emergency response procedures.

TOOLS:

- WHO laboratory biosafety manual. Third edition. Geneva: World Health Organization; 2004
- WHO guidance document: Stepwise implementation of regulatory requirements for ensuring biosafety and biosecurity in biomedical facilities (being finalized with expected publication in 2019).
- Guide to participating in the confidence-building measures of the biological weapons convention. Geneva: United Nations Office for Disarmament Affairs; 2013

09

SURVEILLANCE

Strengthened surveillance[38] systems are able to detect events of significance for public health and health security; improve communication and collaboration across sectors and between subnational (local and intermediate), national and international levels of authority regarding surveillance of events of public health significance; and improve national and intermediate level regional capacity to analyse and link data from and between, strengthened early-warning surveillance, including interoperable,[39] interconnected electronic tools. This would incorporate epidemiological, clinical, laboratory, environmental testing, product safety and quality, and bioinformatics data; and advances in fulfilling core capacity requirements for surveillance in accordance with the IHR and OIE guidelines.

IMPACT:

(1) A functioning public health surveillance system[40] capable of identifying potential events of concern for public health and health security.[41] (2) Enhanced national and intermediate level regional capacity to analyse and link data from and between the different levels of the strengthened early-warning surveillance system.[42]

MONITORING AND EVALUATION:

(1) Surveillance for at least three core syndromes[43] indicative of potential public health emergencies conducted according to international standards. (2) Regular analysis and reporting of surveillance data.

[38] Surveillance means the systematic ongoing collection, collation and analysis of data for public health purposes and the timely dissemination of public health information for assessment and public health response as necessary.

[39] Interoperable, describes the extent to which systems and devices can exchange data, and interpret that shared data. For two systems to be interoperable, they must be able to exchange data and subsequently present that data in a manner that can be understood by the user (definition by Healthcare Information and Management Systems Society).

[40] Strong surveillance will support the timely recognition of the emergence of relatively rare or previously undescribed pathogens in specific countries.

[41] Each country has to define a "potential risk to public health", perform risk mapping and identify priority diseases.

[42] Countries will support the use of interoperable, interconnected systems capable of linking and integrating multisectoral surveillance data and using the resulting information to enhance the capacity to quickly detect and respond to developing biological threats. Foundational capacity is necessary for both indicator- and evidence-based surveillance, to support prevention and control activities, and intervention targeting for both established infectious diseases and new and emerging public health threats.

[43] Internationally recognized standards for syndromic surveillance are available for the following five syndromes: (i) severe acute respiratory syndrome, (ii) acute flaccid paralysis, (iii) acute haemorrhagic fever, (iv) acute watery diarrhoea with dehydration, and (v) acute jaundice syndrome. Three core syndromes are chosen depending on national disease control priorities. The surveillance system should include epidemiological data and laboratory findings, which should be analysed by trained epidemiologists.

CAPACITY LEVEL	
	Benchmark 9.1: Functional surveillance system to identify potential events of concern for public health and health security is in place The surveillance system should include the: ● ability to conduct surveillance for at least three core syndromes indicative of a public health emergency and ongoing, regular, systematic and accurate surveillance for diseases and conditions of actual or potential epidemiological importance in the country; ● ability to provide systematic/routine reports and data to high-level public health decision-makers in the country, and feedback to lower levels implementing the control programmes; and ● linkages to laboratory and other information systems to provide representative, timely and accurate surveillance information. **Objective: Strengthen surveillance system**
01 NO CAPACITY	The country has to develop and implement all activities that are listed in level 2 to achieve the limited capacity for the surveillance system.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:**

● **Develop national communicable disease surveillance strategy** based on IHR requirements, which includes a list of priority/epidemic-prone diseases and syndromes most relevant to the country. ● Establish a disease surveillance unit or department and finalize the operational plan[44] and process. ● Designate surveillance focal persons at subnational levels.	● **Establish indicator-based surveillance** ● Develop guidelines and SOPs for indicator-based surveillance. ● Establish a designated unit at all levels, with operational plan and procedures. ● Include country priority diseases in indicator-based surveillance. ● Disseminate case definitions and ensure that process of detection,	● **Establish event-based surveillance** ● Develop guidelines and standard operating procedures for event-based surveillance. ● Establish a designated unit at all needed levels, with operational plan and procedures. ● Develop and put in place case definitions and the process of detection, assessment and reporting of the event (clusters or outbreaks)

[44] *The plan that clearly defines actions it will take to support the strategy.*

- Identify resources for control of priority diseases.
- Develop training materials for disease surveillance for national and subnational levels.
- Disseminate case definitions and process of detection, assessment, and reporting of cases (user manual or guidelines) at national and intermediate levels.
- Develop and implement indicator-based surveillance or event-based surveillance (refer to respective column for their benchmarks).

assessment and reporting of cases (user manual or guidelines) are in place at national and subnational levels.

for country priority diseases and disseminate to national and subnational levels.
- Establish a process to identify potential events from community-based reporting (people identified from the community, verification teams at facilities identified, SOP and flow of information available) and make the data available at all needed levels.
- Establish systems to identify potential events from various other sources (such as media, social media, private sector).

03 DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement actions (described above) for both indicator- and event-based surveillance systems at national and intermediate levels (district, province, region or state).
- Train 70% of health workers (clinicians, laboratorians, surveillance officers) in detection, monitoring and evaluation of events and cases, with clear guidance for follow-up disseminated at national and intermediate levels; document that health workers have received training.
- Establish a process of immediate and weekly reporting from every reporting unit, although reports may not be available for every week.
- Establish a process to ensure that reported cases or events with outbreak potential are investigated and assessed for public health response and linked to the laboratory results, and that data from the investigation are managed in a standardized timeframe and manner.
- Conduct regular training for surveillance staff on SOPs, guidelines, procedures and best practices at national and intermediate levels.

04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Train more than 90% local health workers, volunteers or both on detection and reporting of cases, clusters, outbreaks or events, and document that health workers are trained. ● Implement the immediate and weekly reporting mechanism in all health facilities (public and private) from all levels, and ensure that weekly reports are received. ● Train surveillance staff at all levels on monitoring and evaluating events, and develop and implement a clear follow-up of the process at national, intermediate and local levels. ● Develop a mechanism for cross-border surveillance by means of an agreed cross-border surveillance system at points of entry, or some other mechanism of regularly sharing data and information between neighbouring countries. ● Conduct regular training on SOPs, guidelines, procedures and best practices at all levels, including at the local/health facility level, for surveillance staff.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop and implement an operational plan for ongoing evaluation of the surveillance system at all levels. ● Establish a mechanism to update the surveillance system based on evaluation findings at all levels. ● Secure sustained funding for personnel and materials for the surveillance system. ● Develop a plan and process to support efforts of other countries to develop/enhance surveillance systems, including contributing to regional and/or international surveillance networks. ● Monitor implementation of cross-border surveillance and demonstrate that information-sharing protocol is effective. ● Establish a mechanism to contribute to regional or international surveillance networks.

CAPACITY LEVEL	**Benchmark 9.2: Surveillance system is supported by electronic tools** **Objective: Application of eletronic tools for surveillance system**
01 **NO CAPACITY**	No system developed; an assessment of the electronic system is planned or is being conducted.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Use ad hoc electronic tools (such as Excel spreadsheets) to report and analyse surveillance data, while a more sophisticated system is under development. ● Pilot available electronic tools. ● Develop a strategy for integrated electronic real-time reporting system for public health surveillance with the involvement of multisectoral stakeholders and partners. ● Develop operational plan, standards for data, and plans for interoperability and data sharing. ● Establish a link of the electronic system under development to the existing health information management system.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Implement an electronic surveillance system at the national level for both indicator- and event-based surveillance. ● Develop an electronic event management system at the national level. ● Link electronic tools with the laboratory information management system at the national level. ● Develop and disseminate SOPs, procedures and guidelines at all levels. ● Train 80% of national- and intermediate-level surveillance staff on application/software for surveillance.
04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Implement the electronic system in 80% levels of the health system. ● Develop an electronic event management system at all levels of the health system. ● Link electronic tools with the laboratory information management system at all levels. ● Conduct routine training on application or software for surveillance staff at all levels, including 100% of national- and intermediate-level surveillance staff.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement the electronic system at all levels of the health system, including from private healthcare providers and private laboratories.
- Secure resources for operation of the system, including human resources, hardware, software and network infrastructure to run the system at all levels.
- Monitor and evaluate the electronic surveillance system for updation as needed.
- Test interoperability of the electronic system with other relevant electronic tools of other sectors.
- Develop and disseminate guidance to all sectors (such as animal health, food safety) on data sharing and interoperability.
- Train staff and develop protocols to share data with regional or international actors (such as sharing influenza data in Global Influenza Surveillance and Response System and/or FluNET (a global web-based tool for influenza virological surveillance))

CAPACITY LEVEL	Benchmark 9.3: Systematic analysis of surveillance data for action is in place Objective: Conduct analysis of data for action
01 **NO CAPACITY**	No capacity to analyse data.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop standards and expectations for analysis of surveillance data, with an operational plan. ● Develop a training package for data management (data collation, analysis, trend analysis and developing reports or summaries). ● Develop and disseminate guidelines and procedures to assess the risk of unusual case reports and surveillance signals at all levels. ● Produce ad hoc reports of analysed surveillance data for outbreaks or other public health events and disseminate from the national level. ● Develop a tool and standards for data quality assessment.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct training on data analysis at national and intermediate levels. ● Produce and disseminate annual and monthly reports based on some analysis (i.e. not only numerical case information) from the national surveillance team. ● Develop a training package and train staff on the assessment of risk of unusual case reports and surveillance signals at national and intermediate levels. ● Develop a process and publish routine reports of epidemiological information for priority diseases at the national level. ● Develop standards, content and format of an epidemiological bulletin for national, intermediate and local levels. ● Develop capacity to conduct periodic assessment of data quality at the national level.

04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct training on data analysis for surveillance staff at all levels. ● Produce weekly epidemiological reports with analysed data on priority diseases and disseminate to all levels. ● Conduct a training assessment of the risk of unusual case reports and surveillance signals at all levels. ● Produce analyses and disseminate epidemiologic interpretation of all major events at all levels. ● Operationalize a mechanism for monitoring data quality and analysis at national and intermediate levels.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish a dedicated team for data analysis, risk assessment and reporting at national and intermediate levels. ● Develop a mechanism and train staff to share data with other tools that are used at regional or international levels (such as sharing influenza data in GISRS). ● Secure sustainable funding and resources for data analysis staff and weekly reporting system. ● Demonstrate continuous improvement of data quality at all levels, using assessment results.

TOOLS:

- Public Health Surveillance – WHO resources
- Integrated Disease Surveillance – Resources
- WHO recommends surveillance standards – Second Edition

10

HUMAN RESOURCES

States Parties with competent and well-motivated health personnel for sustainable and functional public health surveillance and response are available at all levels of the health system for effective implementation of IHR. Human resources include nurses and midwives, physicians, epidemiologists and other public health and environmental specialists, social scientists, communications personnel, occupational health personnel, laboratory scientists/technicians, biostatisticians, information technology (IT) specialists and biomedical technicians. There is a corresponding workforce in the animal sector of veterinarians, animal health professionals, para-veterinarians, epidemiologists and IT specialists.

The recommended density of doctors, nurses and midwives per 1000 population for operational routine services is 4.45 plus 30% surge capacity. The optimal target for surveillance is one trained (field) epidemiologist (or equivalent) per 200 000 population who can systematically cooperate to meet relevant IHR and PVS core competencies. One trained epidemiologist is needed per rapid response team.

IMPACT:

Prevention, detection and response activities (including health promotion, occupational health safety and security, and appropriate care of those affected) conducted effectively and sustainably by a fully competent, coordinated, evaluated and occupationally diverse multisectoral workforce.

MONITORING AND EVALUATION:

(1) A trained health workforce that includes nurses and midwives, physicians, epidemiologists and other public health and environmental specialists, social scientists, laboratory scientists/technicians, biostatisticians, IT specialists and biomedical technicians. (2) Existence of a corresponding workforce in the animal sector of veterinarians, para-veterinarians, animal health professionals, epidemiologists, IT specialists and others.

CAPACITY LEVEL	Benchmark 10.1: An up-to-date, multisectoral workforce strategy is in place Objective: To develop and implement an up-to-date workforce strategy for a functional multisectoral health workforce
01 **NO CAPACITY**	No multisectoral One Health workforce strategy in place.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Assess[45] and develop/document[46] country's current health workforce strategy. ● Build planning capacity to develop or improve human resources for health policy and strategies that quantify health workforce needs, demands and supply under varied future scenarios. ● Develop a mechanism for multisectoral action on health workforce issues to generate required support from all relevant health sectors, ministries of finance, education and labour (or equivalent), collaborating partners and stakeholders. ● Develop a plan to fund and implement the health workforce strategy (animal and human health sector), and donor contributions. ● Document and disseminate the public health workforce/human resource strategy.

[45] *This assessment must describe which categories of health workers are included in the workforce strategy (such as epidemiologists, veterinarians, laboratory assistants and specialists, doctors, nurses and community health workers).*

[46] *Document job specifications for various categories of health workers (including scopes of practice, performance appraisal, competency standards, career ladder options).*

03

DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Develop protocols, SOPs, and technical guidelines to ensure regular review and update of the multisectoral workforce strategy with final approval from other relevant sectors or other relevant government agencies.
- Develop minimum standards for animal (domestic and wildlife), environmental and human health staffing levels.
- Document a separate workforce strategy for human resources for the animal and environmental health sectors, if not already included as part of the public health workforce strategy.
- Create appropriate job classification and job description for health workers at all levels of the relevant ministries, and clear career ladder.
- Establish a national case for investment in human resources for health as a vital component of the Sustainable Development Goals, Universal Health Coverage and universal access to healthcare (Global Strategy on HRH 2030 Obj3.59).
- Conduct advocacy to implement the strategy to relevant stakeholders, including ministries of health, finance, planning and administration/civil service.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Monitor and evaluate the implementation of the multisectoral workforce strategy to track progress and barriers.
- Document how the national public health workforce is financed within the country (Global Strategy on HRH 2030 Obj2.38).
- Develop a strategic framework to nationally prioritize resources and investments in One Health workforce development.
- Map and align investment in human resources for health with the current and future needs of the population and health systems to address shortages and enhance distribution of health workers, to enable maximum improvements in health outcomes, social welfare, employment creation and economic growth (Global Strategy on HRH 2030 Obj2).
- Document and disseminate annual reports of the multisectoral workforce strategic plan which is completed and has been implemented consistently.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Adopt, review and revise strategy regularly, regarding sustainability of workforce, staffing and incentive models, staff recruitment, development/training and retention mechanisms, planning and monitoring of human resources, and implementation of a career ladder.
- Establish national health workforce registries of competent and practicing staff, and collect key performance indicators on health worker stock, distribution, flow, demand, supply capacity and remuneration, in both the public and private sectors, disaggregated by age, sex, ethnic or linguistic group, and place of employment (Global Strategy on HRH 2030 Obj4.75).
- Incorporate within the workforce strategy appropriate incentive packages and strategies to attract, train and retain experts for any workforce specialties (may include physicians, nurses, veterinarians, biostatisticians laboratory assistants and specialists, or animal health professionals) to meet national and subnational needs through domestically trained health workers (Global Strategy on HRH 2030 Obj1.25).
- Establish a national (and subnational where relevant) continuing professional education programme for professionals (Global Strategy on HRH 2030 Obj1.24).

CAPACITY LEVEL	**Benchmark 10.2: Human resources are available to effectively implement IHR** **Objective: To develop a public health workforce that is available and trained to prevent, detect, assess, notify, report and respond to public health risks and acute events of domestic and international concern and health service provision (i.e. epidemic preparedness and control) at all levels of health systems to effectively implement IHR**
01 **NO CAPACITY**	Country does not have appropriate human resources capacity in relevant sectors required for epidemic preparedness and control.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify a responsible unit and advisory committee for the development of human resource capacity to meet IHR capacity needs. ● Conduct engagement meetings with the human, animal and environmental health sector workforce and other stakeholders to expand the multisectoral public health workforce strategy to include IHR capacity needs, such as public health training programmes, human resource infrastructure, existing and required professional staffing levels, administrative support and funding requirements. ● Identify the needs as well as current availability and distribution of human resources for health capacities: (Global Strategy on HRH 2030 Obj1.28, Obj4.75) ○ Surveillance officers (including field epidemiology short-course trained and longer course trained) and biostatisticians ; ○ Clinicians and clinical assistants ; ○ Nurses ; ○ Laboratory specialists and technicians ; ○ Veterinarians, veterinary technicians and para-veterinarians ; ○ Information specialists and assistants ; ○ Social scientists ; ○ Other relevant public health personnel. ● Establish or strengthen national rapid response teams so that it is multidisciplinary and multilevel.

03 DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Develop a human resources for health unit in the human and animal health sectors that can monitor policies and plans to increase the multisector animal and human health workforce, and to promote the recruitment and retention of qualified multidisciplinary staff.
- Develop a database of in-country multidisciplinary subject matter experts relevant to IHR.
- Map relevant public health multidisciplinary workforce and review curriculum, with universities and partners, for all IHR human resource requirements (such as for the field epidemiology training programme curriculum, training materials, mentors, evaluation procedures, accreditation).
- Develop continuing professional education programmes, in priority One Health disciplines, at the national and subnational levels within the strategic framework that also tracks workforce retention and performance.
- Establish terms of reference and job descriptions for intermediate level (provincial, district) rapid response teams and public health officer in-charge of outbreak preparedness and response.
- Train or recruit human resources for the implementation of IHR capacities for all relevant sectors at the national level.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Expand the multisectoral strategic workforce plan nationwide to the subnational level.
- Implement the multisectoral strategic workforce plan consistently at the national, and subnational levels, with regular reviews to track progress and barriers, and at least annual updates.
- Mobilize resources to ensure each local level has some capacity for epidemiology, case management, laboratory services, One Health, and others as needed.
- Develop and implement SOPs on how professionals at the national and subnational levels communicate during an infectious disease outbreak.
- Establish a database of human resources in all relevant sectors and levels of the public health system that can provide multidisciplinary health personnel during public health emergencies with SOPs for updating and maintaining it.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Review national preparedness and response plans as well as legal and regulatory frameworks and establish protocols, SOPs, technical guidelines and toolkits to send and receive multidisciplinary health personnel during public health emergencies.
- Review the implementation plan of sending and receiving multidisciplinary health personnel in at least one event response. If there is no response in the previous year, then develop and conduct a simulation exercise to test the capacity.
- Identify regional and international (such as Global Outbreak Alert and Response Network) partners for multidisciplinary health personnel and establish partnerships or formal agreements with them.

CAPACITY LEVEL	Benchmark 10.3: In-service trainings are available Objective: To develop a functioning and accredited continuing professional education programme through in-service trainings at national and subnational levels
01 **NO CAPACITY**	No continuing professional education programme through in-service training course is in place.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify and address training needs for various professions/cadres. ● Identify and document training programmes specific to professions within each preservice training curricula and joint training programmes. ● Publish a national list of in-service training available in the country including national training institutes, professional bodies, schools of public health, nursing, midwifery, veterinary medical colleges and universities that provide in-service training courses. ● Identify and document all trainings related to contingency planning, management of emergency situations, risk communications, and joint exercises for multidisciplinary teams.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop and implement a continuing professional education programme that includes outbreak preparedness and control, for at least one group of professionals, such as public health officers, surveillance officers, nurses, midwives, general medical practitioners, veterinarians, para-veterinarians. ● Develop and implement at least at the national level short in-service trainings on surveillance, outbreak preparedness and response for specific cadres.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement at national and subnational levels short-/long-term in-service training programmes to help expand the number of qualified public health professionals within the country, i.e.
  - Physicians (public health and/or clinical care) ;
  - Nurses (public health and/or clinical care) ;
  - Veterinarians (public health, agricultural and/or private practice) and para-veterinarians ;
  - Biostatisticians ;
  - Other public health officers/surveillance officers ;
  - Laboratory assistants and specialists ;
  - Livestock professionals.
- Implement at national and subnational levels short in-service trainings on surveillance, outbreak preparedness, response, incident command system and risk communication for specific cadres.
- Recruit specialists as part of IHR implementation at the next recruitment to strengthen human resources.
- Explore and implement measures to organize and finance specialization and continuous professional education in public health, including epidemiology, laboratory, animal and environmental health.

05 SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Document the review of implementation of short-/long-term in-service training programmes.
- Guarantee trained staff and resources for all IHR relevant emergencies/hazards.
- Continue and expand in-service training and retention programmes for specialized health personnel involved in IHR implementation in difficult to access areas.
- Monitor the median number of years that public health personnel have been on staff rolls within the ministry and/or national institutes and post a list of current staff (if available), staff turnover and number of staff attending in-service training.
- Expand current public health and field epidemiology training programmes to include: refresher courses; an induction programme for field epidemiologists; regular in-service programmes and continuous professional development programmes for animal health staff; and a sustainable methodology and process to provide continuous and regular education for field epidemiology staff from both human and animal health sectors.

CAPACITY LEVEL	**Benchmark 10.4: Field epidemiology training programme or other applied epidemiology training programme is in place** **Objective: To establish a sustainable field epidemiology training programme or other applied epidemiology training programme**
01 **NO CAPACITY**	No field epidemiology training programme or applied epidemiology training programme is established.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct engagement meeting with the health ministry, agriculture ministry and other relevant stakeholders to determine readiness for a field or applied epidemiology programme and potential career paths for its graduates. ● Document the need for applied epidemiology competencies by reviewing the educational system, public health training programmes, workforce gaps and stakeholder interests. ● Review and document current field epidemiology capacity in the country. ● Evaluate existing field or applied epidemiology programmes in the regional context and identify the host country where national public health professionals can be sent for training. ● Secure an agreement with another country to host participants and establish funding mechanisms to support the training. ● Conduct recruitment and selection of participants for field or applied epidemiology training in host country. ● Track the training and rostering of field or applied epidemiology participants and graduates in host country. ● Ensure availability of at least one trained epidemiologist per two million population.

03

DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Convene a field or applied epidemiology technical working group and establish goals for programme staffing (both technical and administrative), with roles and responsibilities including leadership roles and mentorship of trainees.
- Develop a strategic plan for development of field or applied epidemiology program that includes an advisory group and governance structure with stakeholders, that allows the development of goals and objectives of national (or participation in regional) applied epidemiologists.
- Establish an advisory committee to maintain broad-based support from stakeholders and partners.
- Secure an acceptable location for field or applied epidemiology management.
- Identify a sustainable funding mechanism for field or applied epidemiology; consider basic level field or applied epidemiology with a plan for expansion into intermediate and advanced levels of field or applied epidemiology, as determined by country needs.
- Develop course curriculum, maintain scientific excellence in training, monitoring and evaluating trainees, and consult on epidemiological methods.
- Designate field supervisors and mentors for field or applied epidemiology and prepare guidelines for mentorship designated to monitor trainee activity, development of projects, barriers to training, among others.
- Develop training and SOPs for mentors and supervisors.
- Disseminate field or applied epidemiology training materials, protocols, SOPs and toolkits.
- Establish accreditation mechanisms for health training institutes.
- Conduct recruitment and selection of candidates for training including consideration for participation of veterinarians in the epidemiology training programme.
- Track field or applied epidemiology capacity in the country including graduates and positions after training.
- Establish a partnership with other countries in the region to share epidemiology training programme graduates during emergency events.
- Ensure availability of at least one trained epidemiologist per one million population.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement two levels of field or applied epidemiology including the basic, intermediate and/or advanced level at designated sites that comprise trainees from human and animal health professionals.
- Integrate a trained epidemiologist into core public health competencies (frontline surveillance, epidemiology, biostatistics, laboratory and biosafety, veterinary, communication).
- Map field or applied epidemiology capacity at intermediate level/district (or other similar administrative division) and track to inform updates to the national public health workforce strategy.
- Ensure availability of at least one trained epidemiologist per 500 000 population.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Monitor and evaluate the performance of the epidemiology workforce within healthcare systems including veterinary services.
- Conduct engagement meetings with the health ministry, agriculture ministry, partners and stakeholders to strengthen options for field placements, and to sustain funding for epidemiology training programme management.
- Implement epidemiology training tracks for relevant career tracks.
- Expand epidemiology training programmes into three levels of training programmes with career tracks established for graduates in additional jurisdictions.
- Secure sustainable funding for epidemiology training programmes and career tracks and pursue accreditation.
- Ensure availability of at least one trained epidemiologist per 200 000 population.
- Establish alumni association for epidemiology graduates (all levels).

TOOLS:

- WHO global strategy on human resources for health: workforce 2030
- TEPHINET Accreditation of FETPs and resources for FETPs
- US CDC Field Epidemiology Training Program

11

EMERGENCY PREPAREDNESS

State Parties are in "emergency preparedness" [47] (defined as, the knowledge, capacities and organizational systems developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent, emerging or current emergencies), which is a combination of planning, allocation of resources, training, exercising and organizing to build, sustain and improve operational capabilities at national, intermediate and local or primary response levels based on strategic risk assessments. Strategic risk assessment identifies, analyses and evaluates the range of risks in a country and enables the risks to be assigned a level of priority. It includes analyses of potential hazards exposures and vulnerabilities, identification and mapping of available resources, and analyses of capacities (routine and surge) at the national, intermediate and local or primary levels to manage the risks of outbreaks and other emergencies. Emergency preparedness applies to any hazard that may cause an emergency and includes biological, chemical, radiological and nuclear, natural, other technological and societal hazards.

IMPACT:

Multisectoral actors at national and subnational (local and intermediate) levels have a common understanding of the priority risks and are ready for timely, effective and efficient emergency response operations for outbreaks and other emergencies.

MONITORING AND EVALUATION:

(1) Existence of national strategic multihazard emergency risk assessments (risk profiles) and resource mapping. (2) Existence of multihazard emergency response plans. (3) Evidence from exercises as well as after-action and other reviews of effective and efficient multisectoral emergency response operations for outbreaks and other public health emergencies.

[47] *"Emergency preparedness" (defined as, the knowledge, capacities and organizational systems developed by governments, response and recovery organizations, and communities and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent, emerging or current emergencies) is a combination of planning, allocation of resources, training, exercising, and organizing to build, sustain and improve operational capabilities at national, intermediate and local or primary response levels based on strategic risk assessments. Multisectoral actors at national and subnational (local and intermediate) levels have a common understanding of the priority risks and are ready for timely, effective and efficient emergency response operations for outbreaks and other emergencies. Risk based plans for emergency preparedness and response, robust emergency management structures and mobilization of resources during an emergency are critical for a timely response to public health emergencies.*

CAPACITY LEVEL	**Benchmark 11.1: Strategic emergency risk assessments conducted, and emergency resources identified, mapped and utilized** **Objective: To assess and assign priorities to risks based on analyses of hazards exposures and vulnerabilities and capacities, and develop inventories and maps of available resources for emergency preparedness and response.**
01 **NO CAPACITY**	Country does not have capacity for emergency risk assessments and resource mapping.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review existing strategic health emergency risk assessments, including for epidemics (i.e. communicable diseases, zoonoses and emerging infectious diseases), natural and technological hazards and other events that have the potential to cause health emergencies. ● Identify potential gaps or areas in strategic risk assessments that require updating. ● Develop a mechanism to ensure participation of the health sector and other stakeholders in the above processes, including in workshops to review and agree on outputs. ● Conduct a comprehensive multihazard health emergency risk assessment at the national level; include analysis of geographic areas and vulnerable subpopulations that may be at higher risk. ● Conduct a prioritization exercise to assign priorities to those risk scenarios described in the strategic health emergency risk assessments, including those that pose the greatest threats to public health. ● Map current national level resources to support the emergency response of the health sector at the national level, including human resources, finances, infrastructure, logistics and supplies (such as health facilities, emergency operation centres, transport, vehicles, cold chain capacity, telecommunications, warehousing, supply routes).

03 DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Complete strategic health emergency risk assessments including hazards, exposures, vulnerabilities and capacities, and risk prioritization exercises in all relevant sectors at the national level.
- Map current resources to support emergency response in all relevant sectors at the national level.
- Review logistic and warehouse capacity based on the national multihazard response plan and the assessed need for stockpiling and prepositioning of supplies, and identify gaps in capacity that require support.
- Develop or revise the plan for management and distribution of national stockpiles.
- Implement measures for the management and distribution of stockpiles at the national level.
- Develop a training plan for rapid logistics needs asessments, and planning, management and distribution of stockpiles for public health events.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Complete strategic health emergency risk assessments including hazards, exposures, vulnerabilities and capacities, and risk prioritization exercises in all sectors at the subnational level.
- Map current resources to support emergency response in all relevant sectors at the subnational level and identify gaps in capacities that require support.
- Implement measures for the management and distribution of stockpiles at the subnational level.
- Implement rapid needs assessments, planning, management and distribution of stockpiles for public health events.
- Complete trainings to support the management and distribution of stockpiles for public health events.
- Review national level resources (critical stock levels for priority risks) on an annual basis or when needed.

05 SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Review and update national and subnational strategic health emergency risk assessments and resource maps regularly.
- Secure funding to conduct rapid needs assessments in emergency situations.
- Test stockpile management regularly and update plans and strengthen capacities accordingly.
- Document and disseminate findings on risk assessment and experience, addressing suspected or confirmed health threats.

CAPACITY LEVEL	**Benchmark 11.2: Multisectoral planning for health emergency preparedness and response is in place** **Objective: Development and implementation of multisectoral and multihazard emergency preparedness measures including emergency response plans**
01 **NO CAPACITY**	The country has to develop and implement all activities listed in level 2 to achieve the limited capacity for each function.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Map key stakeholders and ministries involved in multihazard emergency preparedness and response including human, animal (domestic and wildlife) and environmental health sectors, meteorology, border control, food and drug agency, military, private agricultural sector, emergency services, defence, transport, media and finance. ● Conduct capacity assessments of each stakeholder to support emergency preparedness for priority risks at the national level, as appropriate. ● Identify key measures for all sectors to strengthen emergency preparedness for priority risks at the national level. ● Review current health sector multihazard emergency response plans and other response plans for specific hazards. ● Develop or update the national health sector multihazard emergency response plan.

03 DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement emergency preparedness measures at the national level by human health, animal health and other relevant sections, including for points of entry and mass gathering events.
- Develop or update national multisectoral multihazard emergency response plans.
- Review and update current multisectoral multihazard emergency response plans and other response plans for specific hazards at the national level.
- Conduct a national level simulation exercise to test the multi hazard response plan and adjust the plan based on the outcomes of the simulation or complete an after-action review of an actual event.
- Assess the need for additional emergency preparedness measures, including policies, procedures, SOPs and financial mechanisms, required to strengthen emergency preparedness.
- Implement the multi hazard response plan at the national level.
- Develop and implement a training plan for strengthening emergency preparedness measures and the multi hazard response plan at the national level.
- Secure capacity required for emergency preparedness measures for specific hazards or risk scenarios, including contingency planning, additional training and equipment.
- Develop mechanisms and SOPs for implementing domestic and international surge capacity as part of the multihazard response plan.
- Establish a performance-monitoring framework including indicators, criteria and timelines for emergency response.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Implement emergency preparedness measures at national, subnational and local levels by human health, animal health and other relevant sectors, including at points of entry and mass gathering events.
- Develop or update multisectoral multihazard subnational and local multihazard response plans.
- Conduct simulations or after-action reviews at national and subnational levels to test the multihazard response plan with a focus on coordination and communication between the national and subnational levels of government and sectors; and adjust plans based on outcomes.
- Implement training for emergency preparedness and response at subnational levels.
- Review and develop emergency response plans for cross-border and multicountry events with regional counterparts and international partners.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct regular simulation exercises or after-action reviews to test multihazard emergency response plans at national and subnational levels and implement measures to build capacities based on outcomes and recommendations.
- Conduct international simulation exercises to test multihazard emergency response plans for multiple country events. Adjust emergency response plans and strengthen emergency preparedness based on outcomes and recommendations.
- Assign dedicated human resources and allocate regular budget funding to support coordination and implementation of emergency preparedness measures by human health, animal health and other relevant sectors.
- Develop a mechanism to ensure that dedicated resources are in place for testing and implementation of multisectoral, multihazard emergency response plans, contingency plans and SOPs at national and subnational levels including an emergency financing mechanism for emergency response.

TOOLS:

- A strategic framework for emergency preparedness
- Emergency and disaster risk management for health
- Emergencies preparedness and response – Resources
- Pandemic preparedness - Resources

12

EMERGENCY RESPONSE OPERATIONS

Countries will: have a coordination mechanism, incident management systems, exercise management programmes and public health emergency operation centres (EOCs) functioning according to minimum common standards; and maintain trained, functioning, multisectoral rapid response teams and trained EOC staff capable of activating a coordinated emergency response within 120 minutes of the identification of an emergency.

IMPACT:

Effective coordination and improved management of the response to outbreaks and emergencies as evidenced by shorter times from early warning and detection to activation and implementation of a coordinated multisectoral response across all levels resulting in fewer cases, deaths and other health and societal impacts.

MONITORING AND EVALUATION:

(1) Establishment of an emergency response coordination mechanism or incident management system. (2) Development of national health EOC plans and procedures. (3) Emergency response systems and decision-making have been tested and are operating efficiently and effectively.

CAPACITY LEVEL	Benchmark 12.1: Functional emergency response coordination is in place Objective: To develop coordination mechanisms for emergency response
01 **NO CAPACITY**	An emergency response coordination mechanism is not available.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish a national health emergency coordination department or unit that maintains regular contact with experts from human, animal (domestic and wildlife), and environmental health as well as other sectors. ● Provide key potential informants and response partners for health emergency operations that can have 24/7 coverage in all major health systems. ● Develop a capacity to ensure that the IHR NFP and other responsible parties are available 24/7 to receive information about potential health threats and to report a public health emergency of international concern as outlined in IHR (2005). ● Develop and implement SOPs for an ad-hoc emergency coordination mechanism during the events.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish an incident management system for managing emergency response at the national level, including participation of relevant sectors. ● Develop a plan and SOPs, including thresholds and levels for activating the emergency response coordination mechanism. ● Establish and maintain a roster of emergency operations staff with defined roles and functions. ● Develop a training plan for emergency response staff, including on the incident management system, and implement it at least at the national level. ● Finalize SOPs for coordination of key health sector actors (such as surveillance, health facilities, emergency medical teams, mental health departments). ● Identify, train and roster a pool of surge staff for emergency response coordination.

04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish a health sector emergency response coordination mechanism with participation from health and other sectors for managing emergency response at the subnational and local levels. ● Train subnational and local level health sector staff on the emergency response coordination mechanism. ● Conduct, at least every two years, an emergency response exercise or after-action review with a focus on coordination between national and subnational levels.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish and sustain routine and emergency communications between national, subnational and international coordination mechanisms through the focal points and allocate sustainable funding for these activities. ● Test coordination mechanisms at all levels annually and document and implement actionable improvements. ● Evaluate, document and disseminate information on activations, and if done, include exercises to promote continuous improvement in communication and coordination.

CAPACITY LEVEL	Benchmark 12.2: Emergency operations centre (EOC) capacities, procedures and plans are in place Objective: Develop emergency operation capacities
01 **NO CAPACITY**	An EOC has not been identified and no EOC plans/procedures are in place.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct a baseline assessment of emergency operations capacity including infrastructure, systems, workforce and legislation. ● Develop a health EOC activation plan that includes scaled level of response with health, communication and other resource requirements at the national level. ● Establish a functioning health EOC with the capacity to coordinate emergency operations in the event of an emergency.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Form a steering committee or other management structure to develop objectives, essential functions and core components; oversee the EOC and monitor and evaluate its use. ● Develop an EOC implementation plan that includes both the planning and development of the EOC (as outlined in public health emergency operations centre network framework) and the costing, funding and sustainability of the EOC. ● Develop an EOC activation plan that includes scaled level of response with resource requirements at each level. ● Develop a mechanism to ensure that the national emergency response plan lays out the concept of operations for the entire emergency response system. ● Establish a functional national EOC that includes dedicated plan and procedures, a secure physical space, an information and communication technology infrastructure for information management and support of emergency operations, and trained staff. ● Develop and implement a training programme for national EOC staff including management, communications, finance and logistics. ● Develop standardized forms and templates for data/information management, reporting, briefing and record-keeping. ● Develop a database of subject matter experts for consultation on priority hazards. ● Identify critical pieces of information to inform emergency response, such as epidemic intelligence, and develop systems to capture and manage this information. ● Develop plans to link laboratory and surveillance information to the emergency response communications structure.

04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct a simulated exercise or demonstrate in response to a real event that the national EOC can be activated within 120 minutes of receiving an early warning or information of an emergency requiring EOC activation. ● Develop EOCs at the subnational level (based on the risks and geographical need) with plans and SOPs. ● Train EOC staff of subnational levels on SOPs and allocate dedicated resources. ● Develop and implement a tracking of decision-making procedure for the activatation of an EOC.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Maintain a network of fully functional, funded EOCs and trained staff on a 24/7 basis. ● Test or update EOC functions regularly at all levels including for large scale and concurrent emergencies. ● Activate the national EOC network within 120 minutes, which includes activation of national, subnational or multisectoral EOCs annually, using real or simulated events. ● Identify and secure resources for implementing the EOC and related activities.

CAPACITY LEVEL	Benchmark 12.3: Emergency exercise management programme is in place Objective: Develop the emergency exercise management programme
01 **NO CAPACITY**	No exercises have been completed in the past five years.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify an emergency exercise management coordinator and team in the health sector. ● Conduct either a structured after-action review from an actual activation or design and conduct a national-level multisectoral health emergency table-top exercise that includes multiple sectors/stakeholders that tests the emergency response plan and critical core capacities based on priority risks/hazards at least every five years. ● Document recommended actionable improvements based on the after-action review or exercise.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Design and conduct a national level multisectoral health emergency functional exercise that includes multiple sectors/stakeholders and tests critical core capacities based on the priority risks/hazards at least every two years. ● Document recommended actionable improvements based on the exercise OR conduct after-action review of events and share the results of after-action reviews with stakeholders at the national level. ● Develop and implement a corrective action plan based on the exercises and after-action review findings.
04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Design and conduct various exercises to test emergency preparedness and response capacities at national and subnational levels based on priority risks/hazards at least every year. ● Conduct a coordinated exercise at least annually with relevant sectors based on priority risks/hazards. ● Document recommended actionable improvements based on the exercise and maintain a record of recommendations and the status of their implementation. ● Conduct after-action reviews of events and share results of after-action reviews with stakeholders at subnational and national levels. ● Develop and implement the corrective action plan based on the exercises and after-action review findings at national and subnational levels.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct varied exercises (or in combination) to test emergency preparedness and response capacities at national and subnational levels every year.
- Track improvements identified in exercises and incorporate into national emergency response plans and plans for strengthening emergency preparedness and core capacities.
- Conduct after-action reviews of any events, and regularly and routinely share results of these reviews with stakeholders at all levels.
- Develop and implement corrective action plans based on the exercises and after-action review findings at all levels.

TOOLS:

- Framework for a public health emergency operations centre: this document from WHO outlines the key concepts and essential requirements for developing and managing a PHEOC. It provides an outline for developing and managing a PHEOC to achieve a goal.
- Sustainable model for public health emergency operations centres for global settings: article from US CDC on PHEOCs with case studies from Vietnam and Cameroon
- WHO Incident Management System: a training course from WHO that is designed to help users gain a foundational understanding of the Incident management system structure and its procedures at WHO.
- National Incident Management System: from the US Federal Emergency Management Agency is a series of free interactive online courses on incident management.
- Public Health Incident Leadership Training: from the University of Minnesota is a training for public health practitioners with leadership responsibilities during responses to disasters and events with public health implications.

13

LINKING PUBLIC HEALTH AND SECURITY AUTHORITIES

Country conducts a rapid, multisectoral response for any event of suspected or confirmed deliberate origin, including the capacity to link public health and law enforcement, and to provide timely international assistance.

IMPACT:

Development and implementation of a memorandum of understanding or other similar framework outlining roles, responsibilities and best practices for sharing relevant information among appropriate human and animal health, law enforcement and defense personnel, and validation of the memorandum of understanding through periodic exercises and simulations. Countries have systems to conduct and support joint epidemiological and criminal investigations to identify and respond to suspected biological, chemical or radiological incidents of suspected deliberate origin in collaboration with individual Biological and Toxin Weapons Convention (BTWC) of States Parties, FAO, International Atomic Energy Agency (IAEA), International Criminal Police Organization (INTERPOL), OIE, Organisation for the Prohibition of Chemical Weapons (OPCW), the United Nations Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons, WHO and other relevant regional and international organizations as appropriate.

MONITORING AND EVALUATION:

Evidence of at least one response in the previous year that effectively links public health and law enforcement, or a formal exercise or simulation involving leadership from the country's public health and law enforcement communities.

CAPACITY LEVEL	**Benchmark 13.1: Public health and security authorities (law enforcement, border control, customs) linked during a suspect or confirmed biological, chemical or radiological event** **Objective: Strengthening the linkage between public health and security authorities during potential events of national concern**
01 **NO CAPACITY**	No legislation, relationships, protocols, memoranda of understanding or other agreements exist between public health, animal health, radiological safety, chemical safety and security authorities to address all hazards.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify sectors responsible for response to potential IHR related hazards (biological, chemical and radiation). ● Identify points-of-contact to assist with the implementation of prevention, detection and response activities at government agencies across multiple sectors (such as public health, animal health, security authorities, agriculture, chemical, radiation). ● Determine roles and responsibilities for responding to various threats and other incidents of concern through a review of national response plans, policies and procedures, or other means, through an engagement meeting or other means. ● Assess risk of significant biological (and chemical or radiological) incidents of concern to the country. ● Develop triggers for sharing information on biological threats or other incidents of concern (such as chemical, radiological) with relevant multisectoral agencies. ● Establish an informal or formal communications process to share information, based on identified triggers, related to biological threats or other incidents of concern (such as chemical, radiological) among relevant multisectoral agencies (such as public health, animal health and security authorities). ● Train staff on joint risk assessment and application of triggers, and sharing of information among all sectors relevant to hazards.

03

DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Establish communication among public health, animal health and security/law enforcement points of contact who would need to collaborate in case of a suspected intentional event.
- Identify appropriate activities (such as notifications, assessments, investigation, laboratory testing) for response to biological threats or other incidents of concern (such as chemical, radiological), which will be covered by a written protocol or memorandum of understanding between sectors.
- Develop logistical plans to include multisectoral agencies, including if appropriate, law enforcement, in the public health EOC.
- Determine sample collection, transport, storage, security and testing requirements among relevant sectors (i.e. public health, security authorities, agriculture) for biological threats and other incidents of concern (such as chemical, radiological).
- Finalize a written protocol or memorandum of understanding that formalizes and institutionalizes interactions between relevant multisectoral agencies (public health, animal health and security authorities).
- Develop SOPs defining the process and communication mechanisms for assessing and responding to suspected international events.
- Develop training curriculum using country-specific content (such as regulations/authorities, agency roles/responsibilities and case studies).

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct regular training in relevant sectors.
- Conduct at least one public health emergency response or exercise per year that includes appropriate information sharing between public health and security authorities using the formal protocol or memorandum of understanding.
- Document findings of the response or exercise, highlight the gaps and best practices, and adjust protocols as appropriate.
- Conduct joint training of public health, animal health and security authorities to orient, exercise and institutionalize knowledge of memorandum of understanding and other agreements related to all hazards.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Document conduction of regular joint training/exercise programmes at national, intermediate and local levels for public health, animal health and security authorities to orient, exercise and institutionalize the knowledge of memorandum of understanding and other agreements related to all hazards.
- Expand the joint risk assessment, exchange of information and reporting to all levels (national, intermediate and local levels).
- Conduct an evaluation to determine whether information about events of joint concern is shared in a timely and effective manner at national, intermediate and local levels as outlined in formal memoranda of understanding or other agreements/ protocols, and that the response is appropriate and effective, and corrective action is taken based on this evaluation.

TOOLS:

- WHO–OIE operational framework for good governance at the human¬–animal interface: Bridging WHO and OIE tools for the assessment of national capacities. WHO and OIE; 2014.
- Terrestrial animal health code. Chapter 3.4 Veterinary legislation. World Organisation for Animal Health; 2016
- Convention on the prohibition of the development, production, stockpiling and use of chemical weapons and on their destruction. The Hague: Organisation for the Prohibition of Chemical Weapons
- Treaty on the non-proliferation of nuclear weapons. International Atomic Energy Agency [information circular] INFCIRC/140, 22 April 1970
- Joint Criminal and Epidemiological Investigations Handbook 2016. International Edition

14

MEDICAL COUNTERMEASURES AND PERSONNEL DEPLOYMENT

National framework for transferring (sending and receiving) medical countermeasures, public health and medical personnel from unaffected regions (rapid response teams/national emergency medical teams), and international partners during public health emergencies; and procedures for case management of events due to IHR relevant hazards.

IMPACT:

Countries will have the necessary legal and regulatory processes and logistical plans to allow for rapid national or cross-border deployment and receipt of public health and medical personnel during emergencies. Regional (international) collaboration will assist countries in overcoming the logistical and regulatory challenges to deployment of public health and medical personnel from one country to another.

Country has developed case management procedures and implemented it during health emergencies due to IHR relevant hazards.

MONITORING AND EVALUATION:

(1) Evidence of at least one response to a public health emergency within the previous year that demonstrates that the country sent or received medical countermeasures and personnel according to written national or international protocols, or a formal exercise or simulation that demonstrates these measures. (2) Evidence of demonstrating application of case management procedures for events due to IHR-relevant hazards. (3) Evidence of a strong national response team/emergency medical team (EMT) structures, exercises, trainings, among others.

CAPACITY LEVEL	**Benchmark 14.1: System is in place for activating and coordinating medical countermeasures during a public health emergency** **Objective: To develop a functional system for activating and coordinating health personnel during a public health emergency**
01 **NO CAPACITY**	No national countermeasures plan has been drafted.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review national preparedness and response plans, legal and regulatory frameworks, and baseline capacity for stockpiling and deploying medical countermeasures, including sector roles and responsibilities, involving all key stakeholders. ● Review national laws and regulations for the registration, procurement and use of medical devices, vaccines, drugs, biologicals and medical supplies from national and/or international sources during public health emergencies. ● Complete feasibility assessment for establishing a medical countermeasures stockpile, including secure and functional facilities to stockpile medical countermeasures at all levels. ● Draft a national plan to send, receive, stockpile and deploy medical countermeasures.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Adopt the national plan to send, receive, stockpile and deploy medical countermeasures, including mapping resources within the country and with partners. ● Develop standardized protocols, plans for storage, deployment and logistical and administrative support at all levels. ● Establish regulatory pathways for use of medical countermeasures including appropriate authorizations, clearances, ethical norms, and permissions during investigations and responses. ● Create deployment protocols, SOPs, technical guidelines and toolkits including communication materials, trainings and educational information to inform staff, the community and stakeholders. ● Train early responders in the appropriate use and management of countermeasures. ● Develop and conduct a table-top exercise, if countermeasures (which includes sending and receiving medical countermeasures) have not been deployed in the previous year.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Review the implementation plan of sending, receiving, stockpiling and deploying medical countermeasures in at least one response.
- Include procurement of animal countermeasures in the country plans, procedures or legal provisions.
- If there is no response in the previous year, then develop and conduct a simulation exercise that tests the implementation plan.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Establish partnerships with countries, and regional and international partners, that include procurement, sharing and distribution of medical countermeasures.
- Develop and routinely apply criteria to document progress of sending and receiving medical countermeasures during a response.
- Routinely test and evaluate the capacity of emergency deployment of medical countermeasures and update the plan.
- Develop a rational and evidence-based strategy to prioritize resources and investments in medical countermeasures at the national level.

CAPACITY LEVEL	**Benchmark 14.2: System is in place for activating and coordinating health personnel during a public health emergency** **Objective: To develop a functional system for activating and coordinating health personnel during a public health emergency**
01 **NO CAPACITY**	No national personnel deployment plan has been drafted.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review national preparedness and response plans, and legal and regulatory frameworks for sending and receiving health personnel with key stakeholders. ● Review national laws and regulations for the registration of EMTs.[48] ● Conduct a stakeholder meeting to determine baseline capacity/capabilities of relevant ministries and partnering agencies for deployment of EMTs. ● Identify points of contact at relevant multisectoral organizations. ● Develop protocols, SOPs, technical guidelines and toolkits for sending and receiving health personnel, and for sharing information as appropriate. ● Identify and document barriers to registering, as well as receiving and deploying national/international health personnel and teams, including safety and liability guidance for personnel deployment. ● Develop SOPs and training for the organization, transportation and distribution of personal protective equipment, medications and supplies to health personnel. ● Develop standardized plans for treatment centres for triage, IPC and treatment during emergency incidents. ● Establish a communication network for health personnel during emergencies. ● Develop tools for emergency health disaster education of the public for community acceptance of deployed health personnel. ● Draft a national plan to send and receive health personnel. ● Apply to WHO EMT secretariat for assistance in developing national EMTs.

[48] *EMTs consist of health professionals providing direct clinical care to populations affected by outbreaks, disasters and emergencies as a surge capacity to support the local health system. They could be civilian or military or nongovernmental teams and include both national and international personnel.*

03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Adopt the national plan on personnel deployment and develop procedures or legal provisions. ● Conduct a table-top exercise, if no response has occurred in the past year, which includes sending and receiving health personnel and teams, and comprising the creation of an EMT coordination cell and/or case management pillar in the national health EOC. ● Develop and conduct a table-top exercise which includes sending and receiving health personnel in an emergency and review the personnel deployment plan. ● Apply to the WHO EMT secretariat for mentorship and verification as an internationally classified EMT.
04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review the implementation plan of sending and receiving health personnel in at least one event response. ● Conduct a simulation exercise, if no response has occurred in past year, to test the sending and receiving of health personnel. ● Establish and train a roster of qualified personnel to be activated in a public health emergency. ● Achieve certification as a national or international EMT from WHO to support the national response.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify and partner with regional and international (such as Global Outbreak Alert and Response Network) partners for mobilizing health personnel. ● Develop and maintain a roster of trained and certified health personnel. ● Routinely test and evaluate capacity of emergency deployment of health personnel (sending and receiving) including the set up and running of an EMT coordination cell and/or case management pillar within the national health EOC.

CAPACITY LEVEL	Benchmark 14.3: Case management procedures implemented for relevant IHR hazards Objective: Develop and implement case management procedures for all relevant IHR hazards
01 NO CAPACITY	No case management guidelines are available for priority epidemic-prone diseases.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop standardized case management guidelines for priority diseases and IHR-relevant hazards. ● Develop triggers for sharing information on diseases, conditions and events of public health emergency of international concern with relevant multisectoral agencies. ● Develop the dissemination plan (including training package) for case management guidelines for all levels.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Disseminate case management guidelines to subnational level and points of entry. ● Develop and disseminate SOPs for the management and transport of potentially infectious patients, including patient referral and transportation mechanisms. ● Identify the transportation mechanism and referral centres based on priority risks.
04 DEMONSTRATED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Review case management, patient referral and transportation, and management and transportation of potentially infectious patients in accordance with guidelines and SOPs based on actual experience or a specific exercise to evaluate these procedures. ● Document the review of the implementation of these guidelines and SOPs.
05 SUSTAINABLE CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish a mechanism to ensure continuous presence of trained staff and resources for case management, patient referral and transportation for all IHR relevant emergencies/hazards. ● Review case management, patient referral and transportation of IHR relevant emergencies, if it occurred in the past two years. ● Document and disseminate lessons learned from the management of IHR-relevant emergencies.

TOOLS:

- What are medical countermeasures? Medical countermeasures are products (drugs, biologics, drugs, devices) that may be used in the event of a potential public health emergency due to IHR hazards (like infectious, food safety related events, chemical events and radiation events). These can be used to prevent, detect and respond to events associated with above mentioned threats and diseases.
- International Coordinating Group on Vaccine Provision from International Federation of Red Cross and Red Crescent Societies, Médecins Sans Frontières, United Nations International Children's Emergency Fund and WHO, has information on mechanisms to manage and coordinate the provision of emergency vaccine supplies and antibiotics to countries during major outbreaks. This includes vaccines for cholera, meningitis and yellow fever.
- Guiding Principles for International Outbreak Alert and Response – from the Global Outbreak Alert and Response Network (GOARN), provides information on how to prepare for field activity, to activate international support, to coordinate response in the field, to evaluate and follow up outbreaks of international importance. Classification and minimum standards for foreign medical teams in sudden onset disasters- from the EMT secretariat WHO, and undergoing re-write to include outbreak response by clinical teams and coordination aspects and available in the "Blue Book"
- Emergency Medical Teams Initiative: Surge capacity in health care during emergencies. 28–29 November 2017 Bangkok, Thailand. The regulation and management of international emergency medical teams: from WHO and IFRC 2017, provides an overview of the issues in regulating and managing international emergency medical teams in a selection of large and small-scale sudden onset disasters.

15

RISK COMMUNICATION

Risk communication capacity at the national and subnational levels should ensure timely and effective two-way communication between concerned authorities and the population at risk. This includes both proactive dissemination of information and active listening. The exchange of information, advice and opinion should be done through channels and platforms that are accessed and most trusted by the at-risk population (such as the media, social media, mass awareness campaigns, health promotion, social mobilization, stakeholder or via trusted community leaders).

IMPACT:

Effective risk communication allows people at risk to understand and adopt protective behaviours. It allows authorities and experts to listen to and address people's concerns and needs so that the advice they provide is relevant and trusted. Feedback from at-risk community members is used to tweak broader response measures, making them more likely to be accepted.

MONITORING AND EVALUATION:

(1) Formal government risk communications plans, arrangements and systems in place. (2) Existence of risk communication coordination mechanisms for internal and partner communication. (3) Evidence that the public communication unit or team operates efficiently and effectively. (4) Evidence that risk communication units systematically engage populations at the community level during emergencies. (5) Existence of a system to gather information on perceptions, risky behaviours and misinformation to analyse public concerns and fears.

CAPACITY LEVEL	**Benchmark 15.1: Risk communication systems for unusual events and emergencies is in place** **Objective: To develop a system for risk communication for unusual events and emergencies**
01 **NO CAPACITY**	Country has not yet developed a system for risk communication for unusual events and emergencies.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify people or units responsible for risk communication within each relevant ministry and relevant sectors, with defined terms of reference to work together during a public health emergency. ● Identify and assign spokespersons (holding a certain job position) for public health emergency. ● Establish a list of key stakeholders in government ministries and among implementing partners. Identify points of contact for communication including different means for internal information sharing (such as by email, SMS or phone or closed group social media platforms). ● Establish a dedicated risk communication unit or team to work on two-way communication with the public (including affected at-risk communities) using SOPs, priority tasks and dedicated responsibilities for communication and decision-making authority during a public health event at the national level. ● Develop a national multihazard, multisectoral emergency risk communication plan. ● Assess existing capacities and needs within government ministries and key partner agencies, and develop training plans for priority skills identified for carrying out effective risk communication.

03

DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Test the existing system and plan through actual experience and/or table-top or simulation exercises.
- Develop risk communication capacities through cascade training and/or mentorship at the subnational level on information sharing among key stakeholders, including through the media, social media and direct interaction with affected communities.
- Communicate in local languages and use appropriate technology for information exchange (dissemination and receiving feedback from the public).
- Develop a mechanism for systematically collecting feedback from the community (such as through telephone hotline, social media forums, direct engagement).
- Develop a mechanism to conduct baseline surveys on knowledge, attitudes and practices on priority health threats and on health seeking practices.
- Establish a mechanism to ensure regular collaboration among staff responsible for surveillance, risk assessment and risk communication.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Establish a dedicated, adequately resourced core risk communication team and a surge mechanism to ensure that human resources capacity for risk communication is available before, during and after an event/emergency.
- Allocate required resources to support the core risk communication team before, during and after an emergency.
- Conduct an after-action review of risk communication following a real event or a simulation exercise.
- Implement risk communication training across sectors and at subnational levels.
- Develop a mechanism for systematic exchange of information among different functions of an emergency response (such as surveillance, laboratory, patient care, infection prevention and control, logistics, risk communication, human resources, planning, budget and finance).
- Establish monitoring and evaluation tools to evaluate the implementation of risk communication activities during public health emergencies.
- Train frontline healthcare staff on effective risk communication.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Revise the risk communication plan based on findings or results from evaluation of the real event.
- Establish a mechanism with dedicated resources for the functioning of an effective risk communication system, including human and financial resources for a dedicated team with budget for implementing activities at the national and subnational levels.
- Document, incorporate findings, and disseminate lessons learned from risk communication activities of an event or exercise.

CAPACITY LEVEL	Benchmark 15.2: Coordination of risk communication is effective Objective: Strengthen coordination for risk communication
01 **NO CAPACITY**	Country does not have effective coordination for risk communication.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify ministries, organizations and key stakeholders involved in risk communication and community engagement. ● Consult with and conduct initial meeting with identified organizations and ministries to define coordination mechanisms and platforms at national and subnational levels. ● Establish objectives, communication flow charts, SOPs and ways of working between units, agencies/organizations, for risk communication and community engagement.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop a platform or mechanism for regular information sharing with relevant sectors including ministries, partners and other stakeholders. ● Establish a regular risk communication coordination mechanism between relevant key stakeholders at national and subnational levels. ● Develop appropriate action plans that identify priority interventions, languages and communication of preference to key populations at risk.
04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Expand information sharing mechanism with other sectors including media, civil society and the private sector. ● Conduct regular risk communication coordination meetings at national and subnational levels. Document and share outcomes of the meetings. ● Implement regular risk communication coordination among relevant key stakeholders at national and subnational levels. ● Evaluate the effectiveness of the coordination mechanism among all partners either through a real event or simulation exercise.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Maintain a regular coordination mechanism.
- Assess performance of the coordination mechanism regularly through simulation exercises or after-action reviews and share results with partners.
- Update action plans with relevant stakeholders with clearly defined roles and provision of resources.

CAPACITY LEVEL	Benchmark 15.3: Effective communication with communites Objective: Strengthen communication engagement with communities
01 **NO CAPACITY**	Country does not have effective communication with communities.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish a list of key stakeholders – civil society groups, key nongovernmental organizations, key religious and traditional leaders – at the national level. ● Conduct a needs analysis for effectively engaging with civil society groups and key nongovernmental organizations (including female-oriented organizations), and religious and traditional leaders at the national level. ● Identify key internal resources within all relevant ministries to help engage with key stakeholders at the national level. ● Develop a plan to engage key stakeholders at the national level. ● Identify focal points for community engagement at the national and subnational levels. ● Develop and disseminate training on community engagement at the national and subnational levels.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify trusted community leaders and champions at the subnational level to support community engagement (such as religious leaders, traditional healers, community networks). ● Identify focal points from the ministry and partners for community engagement at the subnational level. ● Develop and disseminate training on community engagement at the subnational level. ● Develop tools, procedures and methods for community engagement to obtain community feedback through surveys, hotlines, community dialogue or other means. ● Identify and train community outreach groups, including volunteers.

04 **DEMONSTRATED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish mechanisms for systematically receiving community feedback through multiple channels including social media and direct dialogue. ● Conduct regular refresher training, briefing, supervision and engagement of social mobilizers and community engagers. ● Develop mechanisms to systematically integrate feedback on community concerns and issues of interest into community engagement activities.
05 **SUSTAINABLE CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Establish dedicated human and financial resources for community engagement including core staff and implementation budget at national and subnational levels. ● Regularly assess performance of community engagement and share results obtained through after-action reviews or simulation exercises.

TOOLS:

- WHO guidance on Risk Communication
- Communicating Risk in Public Health Emergencies
- Risk communication training courses
- Risk communication resources – WHO website

16

POINTS OF ENTRY

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 public health measures required to prevent, detect and manage a variety of public health risks in a multisectoral approach (IHR Annex 1b).

IMPACT:

Timely detection of and effective response to any potential hazards that occur at or may be spread via points of entry.

MONITORING AND EVALUATION:

(1) Public health emergency contingency plan for each designated points of entry in an all-hazard and multisectoral approach. (2) Evidence confirms core capacities prescribed in the IHR Annex 1B are established for responding to events that may constitute a public health emergency of international concern, and functioning in an all-hazard and multisectoral approach.

CAPACITY LEVEL	Benchmark 16.1: Routine capacities at points of entry are in place Objective: Establishment of routine capacities at designated points of entry
01 NO CAPACITY	Country does not have capacity for appropriate surveillance or medical services at designated points of entry.
02 LIMITED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Conduct capacity assessment at key points of entry to inform selection for IHR designation. ● Designate points of entry according to the requirements of IHR. ● Identify key relevant stakeholders that are related to establish capacities at each designated point of entry. ● Identify competent authorities at each designated point of entry. ● Conduct review of appropriate medical services including diagnostic facilities for the prompt assessment and care of sick travellers as per Annex 1B, 1(a), and identify gaps and corrective actions. ● Develop SOPs for medical services (identification of diagnostic facilities to collaborate with care of sick travellers and referral). ● Train staff on medical services SOPs and ensure the provision of adequate resources including space, equipment and premises as per Annex 1B, 1(a), 1(b). ● Establish capacities at designated points of entry of appropriate medical services as per IHR Annex 1B, 1(a). ● Develop a strategy to establish all the routine capacities prescribed in the IHR Annex 1B, 1. ● Develop a strategy to integrate designated points of entry into national surveillance systems.
03 DEVELOPED CAPACITY	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop SOPs as per Annex 1B, 1 and train staff of designated points of entry. ● Allocate adequate resources to designated points of entry to establish routine capacities for biological hazards at all designated points of entry. ● Implement the strategy to have all the routine capacities prescribed in IHR Annex 1B, in place and functioning, for biological hazards. ● Implement the strategy with adequate resources to integrate designated points of entry into national surveillance systems.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Regularly train staff on guidelines and SOPs as per Annex 1B, 1 at all designated points of entry.
- Allocate adequate resources to designated points of entry to establish routine capacities for all-hazard prevention, detection and response.
- Implement the strategy to have all routine capacities prescribed in IHR Annex 1B in place and functioning, for all-hazards such as access to appropriate medical services and transportation of sick travellers to an appropriate medical facility for biological, chemical and radiation suspected or confirmed events.
- Integrate designated points of entry into national surveillance systems for all-hazards with the involvement of all relevant sectors.
- Develop a strategy for continuous improvement and regularly monitor and evaluate routine capacities at points of entry.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Allocate sustainable funds and mobilize staff for all key functions.
- Demonstrate best practices of functioning of all routine capacities for all-hazards and disseminate to key stakeholders.
- Document continuous improvements either through self-evaluation or external evaluation.

CAPACITY LEVEL	Benchmark 16.2: Effective public health response at points of entry Objective: Strengthen capacity for effective public health response at points of entry
01 **NO CAPACITY**	Public health emergency contingency plan for each designated point of entry for responding to public health emergencies is not in place.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify key stakeholders for each designated point of entry for all-hazards. ● Review the status of the emergency response plan at each designated point of entry. ● Develop a public health emergency contingency plan, including SOPs and guidance in some of the designated points of entry, prioritized by volume and frequency of international traffic, public health risks existing in areas in which the international traffic originates, or through which it passes, according to Annex 1B.2. ● Train staff of all designated points of entry on guidance and SOPs for responding to at least events due to biological hazards. ● Allocate resources including funds to all designated points of entry for implementation of the plan during the events. ● Integrate all designated points of entry into the national emergency preparedness and response plan with the involvement of relevant sectors and services.
03 **DEVELOPED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Develop a public health emergency contingency plan for biological hazards in all the designated points of entry. ● Train staff of all designated points of entry on guidance and SOPs for responding to events due to biological hazards. ● Allocate resources including funds to all designated points of entry for implementation of the plan during the events. ● Demonstrate capacity to apply ad hoc measures related to travellers at points of entry (such as medical referral, transport) for early detection, assessment and safe transfer of sick travellers to appropriate medical facilities at all designated points of entry. ● Integrate all designated points of entry into the national emergency preparedness and response plan.

04 DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Develop a public health emergency contingency plan for all-hazards in all the designated points of entry.
- Train staff of all designated points of entry on guidance and SOPs for responding to events due to any type of hazard, including care of affected animals and referral mechanism in collaboration with the animal sector.
- Allocate resources including funds to all designated points of entry for implementation of the plan during the event, including care of affected animals and referral mechanism to veterinary services.
- Demonstrate capacity to apply recommended measures to disinfect, de-rat, disinsect, decontaminate or otherwise treat baggage, cargo, containers, conveyances, goods and postal parcels.
- Regularly monitor or evaluate the capacity for preparedness and response measures at points of entry either during real events or through simulation exercises and update the contingency plan and response mechanism.

05 SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct after-action review or a simulation exercise to test and review response capacities of all designated points of entry.
- Document the results of the after-action review/simulation exercise, and demonstrate action to address recommendations for improvement.
- Update the mechanisms, guidance, SOPs and plan, based on the findings of these evaluations and tests.
- Share best practices for continuous improvement with all relevant stakeholders.

TOOLS:

- Assessment tool for core capacity requirements at designated airports, ports and ground crossings. Geneva: World Health Organization; 2009. This document was developed to support States Parties in assessing existing capacities and capacity needs at points of entry when deciding which airports, ports and ground crossings to designate under Article 20.1 and Annex 1B. It includes an Excel spreadsheet file model for IHR core capacities assessment at ports, airports and ground crossings.
- Coordinated public health surveillance between points of entry and national health surveillance systems: advising principles. Ist edition. Geneva: World Health Organization; 2014. This document provides steps for implementing/strengthening communication mechanisms and defines criteria for deciding what and how events should be reported between points of entry and the national health surveillance system.

- Handbook for the management of public health events in air transport. Geneva: World Health Organization; 2015. This document is complementary to other WHO publications addressing risk assessment at a national level, contingency planning at points of entry, establishment of capacities and application of emergency plans at the airport level.
- Handbook for management of public health events on board ships. Geneva: World Health Organization; 2016. This document aims to provide technical advice to competent authorities at the port level for management of public health events on board ships. It complements other WHO publications addressing risk assessment at the national level, contingency planning at ports, airports and ground crossings, and establishment of capacities and application of emergency plans at the port level.
- Handbook for inspection of ships and issuance of ship sanitation certificates. Geneva: World Health Organization; 2011. This handbook is based on the IHR (2005) provisions regarding ship inspections and issue of Ship Sanitation Certificates. It provides guidance for preparing and performing inspection, completing the certificates and applying public health measures within the framework of the IHR (2005).
- Vector surveillance and control at ports, airports, and ground crossings. Geneva: World Health Organization; 2016. This handbook provides technical advice for developing a comprehensive programme for systematic monitoring of disease vectors and integrated vector control at points of entry, based on IHR requirements.
- Ebola publications: Travel and points of entry. [WHO website] Technical guidance set on Ebola virus disease preparedness and response aims to: (i) provide early detection of potentially infected persons; (ii) assist in implementing WHO recommendations related to Ebola management; and (iii) prevent the international spread of the disease while allowing authorities to avoid unnecessary restrictions and delays at points of entry.
- Guide to ship sanitation: Global reference on health requirements for ship construction and operation. Third edition. Geneva: World Health Organization; 2011. The primary aim of the revised guide to ship sanitation is to present the public health significance of ships in terms of disease and to highlight the importance of applying appropriate control measures.
- Guide to hygiene and sanitation in aviation. Geneva: World Health Organization; 2009. This document addresses water, and cleaning and disinfection of facilities with guidelines that provide procedures and quality specifications that are to be achieved.
- Guide for public health emergency contingency planning at designated points of entry. Geneva: World Health Organization; 2012. This guide was designed to assist WHO Member States, both large and small, to bridge the gap between the legal requirements of IHR (2005), and the pragmatic readiness and response capacity for public health emergencies at designated points of entry.

17

CHEMICAL EVENTS

States Parties have in place surveillance and response capacity for chemical risks or events. This requires effective communication and collaboration among the sectors responsible for chemical safety, including health, industry, transportation, waste disposal, animal health and the environment.

IMPACT:
Timely detection of and effective response to potential chemical risks and/or events in collaboration with other sectors responsible for chemical safety, industries, transportation and safe waste disposal.

MONITORING AND EVALUATION:
Mechanisms and an enabling environment established and functioning for detecting and responding to chemical events or emergencies.

CAPACITY LEVEL	**Benchmark 17.1: Mechanisms are in place for surveillance, alert and response to chemical events or emergencies** **Objective: Establish policies, legislation, plans and capacities for surveillance, alert and response to chemical events or emergencies**
01 **NO CAPACITY**	No mechanism to detect and respond to chemical events, poisonings or emergencies.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Assess existing policies, legislation and plans for chemical event surveillance, alert and response. ● Develop a strategy to fill gaps. ● Identify key stakeholders in all sectors and establish focal points for coordination and collaboration for chemical event surveillance, alert and response. ● Identify and describe priority chemical events[49] to inform planning, a process which can include conducting an inventory of potentially hazardous chemical sites and manufacturing facilities and a review of past chemical events. ● Assess capacities for chemical event surveillance, alert and response at all levels (national, subnational). ● Develop a strategy and action plan to increase capacities. ● Develop guidelines and SOPs for surveillance, alert and response to chemical events and emergencies including for laboratories, and develop training packages on these guidelines and SOPs. ● Develop capacities for diagnosis and treatment of chemical poisonings and establish a poison information service that operates at least during office hours. ● Assess existing laboratory capacities for the analysis of human and environmental samples to inform the assessment and management investigation of chemical events and poisonings.

[49] *This process can include carrying out an inventory of hazardous chemical sites and a review of past chemical events.*

03

DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Develop all the necessary policies and legislation for chemical event surveillance, alert and response.
- Develop event response plans at all levels (national, subnational, local) with the involvement of relevant stakeholders and ensure the following:
  - Map and review all hazardous sites and facilities ;
  - Define roles and responsibilities of relevant agencies for response during events ;
  - Prepare protocols for the investigation and verification of chemical events and poisoning, including through laboratory testing ;
  - Assess training needs and develop a training plan ;
  - Conduct training of personnel at relevant agencies and facilities ;
  - Implement SOPs for coordination and collaboration during chemical events.
- Establish a surveillance system based on the above strategy and guidelines for surveillance and alert.
- Provide adequate resources to the national poison information service[50] to operate on a 24/7 basis, and integrate the poisons information service into the public health surveillance system.
- Put in place agreements with designated quality assured laboratories (national or laboratories in other countries) for timely analysis of biological and environmental samples with suspected chemical exposure.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Establish links with key international chemical/toxicology networks[51] for support in the management of chemical events and poisonings.
- Ensure all relevant personnel receive regular training on surveillance, alert and response to chemical events and poisonings.
- Share on a routine basis, information on chemical events, chemical event risk assessments and response action with relevant agencies.
- Monitor on a routine basis, the timeliness of the information sharing mechanism about events and potential risk.

[50] The poisons centre should be sufficiently staffed and resourced to provide a robust and reliable 24/7 service. The poisons centre should be well used by the population it serves (check number of calls per day). Refer to Guidelines for poisons control. Geneva: World Health Organization; 1997.

[51] Examples include the WHO global and regional toxicology networks and other regional networks, such as in the European Union, professional toxicology associations.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct after-action reviews following detection and response to chemical events, or in the absence of real events, conduct exercises.
- Document and use the findings to assess, review and strengthen surveillance, alert and response including coordination and communication.
- Allocate adequate resources including funds to poison centre(s).
- Develop a mechanism to integrate the systems of public health surveillance and environmental monitoring that captures and assesses chemical exposures from different sources.
- Sustain a mechanism to ensure response capacity[52] at national, subnational and local levels.

TOOLS:

- The public health management of chemical incidents. Geneva: World Health Organization; 2009
- Chemical releases caused by natural hazard events and disasters: information for public health authorities. Geneva: World Health Organization; 2018 accessed 8 October 2018).
- Guidelines for poisons control. Geneva: World Health Organization; 1997.

[52] This includes setting minimum requirements for: local emergency planning and response activities (i.e. arrangements for scaling up capabilities of local emergency response, national support mechanisms, and infrastructure and alerting mechanisms); inspection of hazardous sites and assessment of emergency plans; and operators to comply and liaison with local governments (see also: WHO manual: The public health management of chemical incidents. Geneva: World Health Organization; 2009 (accessed 30 January 2019)).

18

RADIATION EMERGENCIES

States Parties should have surveillance and response capacity for radiological emergencies and nuclear incidents. This requires effective coordination among all sectors involved in radiation emergency preparedness and response.

IMPACT:

Timely detection and effective response to potential radiological emergencies and nuclear incidents with cross-sectoral coordination.

MONITORING AND EVALUATION:

(1) Mechanisms established and functioning for detecting and responding to radiological emergencies.

CAPACITY LEVEL	**Benchmark 18.1: Mechanism is in place for detecting and responding to radiological and nuclear emergencies emergencies** **Objective: Establish a mechanism to detect and respond to radiological and nuclear emergencies**
01 **NO CAPACITY**	No mechanism (such as policies, plans and coordination process) is in place for the detection, assessment and response to radiation emergencies.
02 **LIMITED CAPACITY**	**ACTIONS TO ACHIEVE THIS LEVEL:** ● Identify key stakeholders and designate focal points responsible for radiation-related hazards and emergencies, especially from radiation authorities and public health units. ● Develop SOPs or protocols for coordination and communication with national authorities, clearly indicating roles and responsibilities, including for the health ministry and IHR focal points. ● Convene a meeting with key stakeholders to review, assess, map and develop policies, strategies and plans for detection, assessment and response to radiation emergencies. ● Disseminate these policies, plans and legislation for radiological event surveillance, alert and response to relevant stakeholders. ● Conduct a risk assessment for radiation hazards. ● Develop a radiation monitoring mechanism with required SOPs and guidelines, and establish a mechanism to share information among the relevant stakeholders. ● Train relevant staff on these SOPs, guidelines and information sharing. ● Procure logistics for robust radiation monitoring systems. ● Designate or secure access to laboratory capacity to monitor, identify and assess exposure.

03

DEVELOPED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Identify key technical experts from relevant sectors to develop technical guidelines or SOPs for the management of radiation emergencies (including risk assessment, reporting, event confirmation, notification and investigation).
- Develop training package(s) on these guidelines/SOPs for the management of radiation emergencies and train relevant staff at least at the national level.
- Develop policies, protocols and strategies for national and international transport of radioactive materials, samples and waste management, and ensure logistic requirements for transportation.
- Procure or ensure access to stockpile to support radiation emergency preparedness and response, and develop a distribution plan for the event of an emergency.
- Develop guidelines for management of radiological waste including that from the hospitals and medical services.
- Establish a waste management site with the required capacity for monitoring it.
- Develop case management guidelines to manage cases of radiation emergencies (either as a stand-alone guideline or as part of the case management guidelines for all hazards (refer to Benchmark 14.3)).
- Identify health facilities that can manage patients in the event of a radiation emergency.
- Train relevant healthcare workers on these protocols and guidelines.
- Develop a mechanism for systematic information exchange between competent radiological authorities and human health surveillance units about radiological events and potential risks.

04

DEMONSTRATED CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Conduct after-action reviews or simulation exercises in the absence of real events to:
  - evaluate/test the guidelines/SOPs (conduct jointly with the competent radiation authorities and the public health unit);
  - test coordination and communication mechanisms between relevant national competent authority for nuclear regulatory control/safety and relevant sectors;
  - test case management capacity; and
  - update guidelines/SOPs and coordination and communication mechanisms based on the findings.
- Respond to any radiological threats with joint risk assessment, investigation and implementation of the response plan.
- Ensure that if SOPs call for prepositioning of logistics to address a radiation emergency, distribute these logistics in all designated places at all times.
- Share information with relevant stakeholders regularly on the risk and threats that are potential for emergencies.

05

SUSTAINABLE CAPACITY

ACTIONS TO ACHIEVE THIS LEVEL:

- Document and disseminate best practices of test results and reviews.
- Conduct regular training of staff of health facilities to manage patients in the event of a radiation emergency.
- Develop and conduct emergency response drills and other exercises on radiation emergency and update the response plan, mechanisms and guidelines accordingly.
- Sustain a mechanism to ensure response capacity at national, subnational and local levels.

TOOLS:

- Health Emergency and Disaster Risk Management - Radiation Emergencies
- Development of WHO Guidelines on Public Health Response to Radiological and Nuclear Emergencies (2012-2016)
- Medical Radiation exposure
- Radiation Emergencies - WHO Webpage
- Incident and Emergency Center – International Atomic Energy Agency
- Resources from International Atomic Energy Agency

ANNEX 1: GLOSSARY

Note: *These terms and definitions have been provided for use within the context of this tool and may differ from those used in other documents. The purpose is to clarify key terms that are NAPHS relevant.*

Biosafety. Laboratory biosafety describes the containment principles, technologies and practices that are implemented to prevent unintentional exposure to pathogens and toxins, or their accidental release.

Biosecurity. Laboratory biosecurity describes the protection, control and accountability for valuable biological materials within laboratories as well as information related to these materials and dual-use research, to prevent their unauthorized access, loss, theft, misuse, diversion or intentional release.

Case. A person who has the particular disease, health disorder or condition that meets the case definitions for surveillance and outbreak investigation purposes. The definition of a case for surveillance and outbreak investigation purpose is not necessarily the same as the ordinary clinical definition (adapted from Last JM, Spasoff RA, Harris, editors. A dictionary of epidemiology, fourth edition. International Epidemiological Association, Inc. New York: Oxford University Press; 2001).

Case definition. A set of diagnostic criteria that must be fulfilled for an individual to be regarded as a case of a particular disease for surveillance and outbreak investigation purposes. Case definitions can be based on clinical criteria, laboratory criteria or a combination of the two with the elements of time, place and person. (In the IHR, case definitions are published on the WHO website[53] for the four diseases for which all cases must be notified by States Parties to WHO, regardless of circumstances, under the IHR as provided in Annex 2.)

Chemical event. A manifestation of a disease or an occurrence, which creates a potential for a disease as a result of exposure to or contamination by a chemical agent.

Cluster. An aggregation of relatively uncommon events or diseases in space and/or time in amounts that are believed or perceived to be greater than that expected by chance (adapted from Last JM, Spasoff RA, Harris, editors. A dictionary of epidemiology, fourth edition. International Epidemiological Association, Inc. New York: Oxford University Press; 2001).

Communicable disease (infectious disease). An illness due to a specific infectious agent or its toxic products that arises through transmission of that agent or its products from an infected person, animal or reservoir to a susceptible host, either directly or indirectly through an intermediate plant or animal host, vector or the inanimate environment (adapted from Last JM, Spasoff RA, Harris, editors. A dictionary of epidemiology, fourth edition. International Epidemiological Association, Inc. New York: Oxford University Press; 2001).

Competent authority. An authority responsible for the implementation and application of health measures under the IHR.

[53] *http://www.who.int/ihr/survellance_response/case_definitions/en/*

Contamination. The presence of an infectious or toxic agent or matter on the body surface of a human or animal, in or on a product prepared for consumption or on other inanimate objects, including conveyances that may constitute a public health risk.

Dangerous pathogens and toxins. These are biological agents and toxins that have the potential to pose a severe threat to both human and animal health. While some select agents are normally found in the environment and don't cause human disease, many of them – if manipulated or released in large quantities – can cause serious health threats. The informal Australia Group provides a List of human and animal pathogens and toxins for export control (http://www.australiagroup.net/en/human_animal_pathogens.html, accessed 28 August 2016).

Designated laboratories. These are laboratories designated to perform specific laboratory services by national, WHO or other authorities because of their proven capacities and capabilities, such as for AMR testing.

Designated points of entry. These refer to a port, airport and potentially a ground crossing that is designated by a State Party to strengthen, develop and maintain the capacities as per main IHR articles 19, 20 and 21, and as described in Annex 1 of the IHR:

- the capacities at all times concerning access to medical services for prompt assessment and care of ill travellers, a safe environment for travellers (e.g. water, food, waste), personnel for inspection and vector control functions; and
- the capacities to respond specifically to events that may constitute a public health emergency of international concern.

Disease. An illness or medical condition, irrespective of origin or source, that presents or could present significant harm to humans.

Early warning system. A specific procedure in disease surveillance to detect any abnormal occurrence, or departure from the usual or normally observed frequency of phenomena (such as one case of Ebola fever), as early as possible. An early warning system is only useful if it is linked to mechanisms for early response (adapted from Last JM, Spasoff RA, Harris, editors. A dictionary of epidemiology, fourth edition. International Epidemiological Association, Inc. New York: Oxford University Press; 2001).

Epidemic. The occurrence in a community or region of cases of an illness, specific health-related behaviours, or other health-related events clearly in excess of normal expectancy. The community or region and the period in which the cases occur are specified precisely. The number of cases indicating the presence of an epidemic varies according to the agent, size and type of population exposed, previous experience or lack of exposure to the disease, and time and place of occurrence (adapted from Last JM, Spasoff RA, Harris, editors. A dictionary of epidemiology, fourth edition. International Epidemiological Association, Inc. New York: Oxford University Press; 2001).

Event. A manifestation of disease or an occurrence that creates a potential for disease.

Event-based surveillance. The organized and rapid capture of information about events that are a potential risk to public health. This information can be rumours and other ad hoc reports transmitted through formal channels (i.e. established routine reporting systems) and informal channels (i.e. the media, health workers and reports from nongovernmental organizations), including events related to the occurrence of disease in humans and events related to potential human exposure.

Feedback. The regular process of sending analyses and reports about surveillance data back through all levels of the surveillance system so that all participants can be informed of trends and performance.

Field Epidemiology Training Program

- FETP Basic Level Training is for local health staff and consists of limited classroom hours interspersed throughout as a three-to-five month on-the-job field assignment to build capacity in conducting timely outbreak detection, public health response and public health surveillance.
- FETP Intermediate Level Training is for district/region/state-level epidemiologists, and consists of limited classroom hours interspersed throughout as a six-to-nine month on-the-job mentored field assignment to build capacity in conducting outbreak investigations, planned epidemiologic studies, and public health surveillance analyses and evaluations.
- FETP Advanced Level Training is for advanced epidemiologists and consists of limited classroom hours interspersed throughout the 24 months of mentored field assignments to build capacity in outbreak investigations, planned epidemiologic studies, public health surveillance analyses and evaluations, scientific communication, and evidence-based decision making for development of effective public health programming with a national focus. Animal health professionals can be engaged in these FETP trainings.

Functional exercise. A fully simulated interactive exercise that tests the capability of an organization to respond to a simulated event. The exercise tests multiple functions of the organization's operational plan. It is a coordinated response to a situation in a time pressured realistic situation as described in WHO Simulation Exercise Manual 5. A functional exercise focuses on the coordination, integration and interaction of an organization's policies, procedures, roles and responsibilities before, during or after the simulated event (WHO Simulation Exercise Manual. HO-WHE-CPI-2017.10 (http://apps.who.int/iris/bitstream/10665/254741/1/WHO-WHE-CPI-2017.10-eng.pdf?ua=1, accessed 13 August 2017).

Ground crossing. A point of land entry into a State Party, including those utilized by road vehicles and trains.

Hazard. The inherent capability of an agent or situation to have an adverse effect; a factor or exposure that may adversely affect health (similar concept to risk factor).

Health care worker. Any employee in a health care facility who has close contact with patients, patient-care areas or patient-care items; also referred to as "health care personnel".

Health event. Any event relating to the health of an individual, such as the occurrence of a case of a specific disease or syndrome, the administration of a vaccine or an admission to hospital.

Health measure. A procedure applied to prevent the spread of disease or contamination; it does not include law enforcement or security measures.

Incidence. The number of instances of illness commencing, or of persons falling ill, during a given period in a specified population (Prevalence and incidence. WHO Bulletin 1966;35:783-784).

Indicator-based surveillance. The routine reporting of cases of disease, including from notifiable diseases surveillance, sentinel surveillance, laboratory based surveillance. This routine reporting is commonly health care facility based with reporting done on a weekly or monthly basis.

Infection. The entry and development or multiplication of an infectious agent in the body of humans and animals that may constitute a public health risk.

Infectious disease. *see* **Communicable disease.**

International Health Regulations (2005) (IHR or the Regulations). This is a legally-binding instrument of international law which has its origin in the International Sanitary Conventions of 1851, concluded in response to increasing concern about the links between international trade and spread of diseases (cross-border health risks).

Legislation. The range of legal, administrative or other governmental instruments that may be available for States Parties to implement the IHR. This includes legally binding instruments, such as state constitutions, laws, acts, decrees, orders, regulations and ordinances; legally non-binding instruments, such as guidelines, standards, operating rules, administrative procedures or rules; and other types of instruments, such as protocols, resolutions and inter-sectoral or inter-ministerial agreements. This encompasses legislation in all sectors, such as health, agriculture, transportation, environment, ports and airports, and at all applicable governmental levels (national, intermediate, local and other).

Logistics. Pharmaceuticals, medical and surgical supplies, medical devices and equipment, and other products needed to support healthcare providers.

Multisectoral. A holistic approach involving the efforts of multiple organizations, institutes and agencies. It encourages interdisciplinary participation, collaboration and coordination of people of concern and resources from these key organizations for promoting health security, to achieve a specific goal.

National legislation. *see* **Legislation.**

National IHR Focal Point. The national centre designated by each State Party, which shall be accessible at all times for communications with WHO IHR contact points under the IHR.

Notifiable disease. A disease that, by statutory/legal requirements, must be reported to a public health or other competent authority in the pertinent jurisdiction when the diagnosis is made (adapted from Last JM, Spasoff RA, Harris, editors. A dictionary of epidemiology, fourth edition. International Epidemiological Association, Inc. New York: Oxford University Press; 2001).

Notification. The processes by which cases or outbreaks are brought to the knowledge of the health authorities. In the context of the IHR, notification is the official communication of a disease/health event to the WHO by the health administration of the Member State affected by the disease/health event.

One Health. Defined by WHO as an approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes (http://www.who.int/features/qa/one-health/en/, accessed 28 November 2017)

In the context of the WHO IHR monitoring and evaluation framework, taking a One Health approach means including, from all relevant sectors, national information, expertise, perspectives and experience necessary to conduct assessments, evaluations and reporting for the implementation of the IHR.

Other governmental instruments. Agreements, protocols and resolutions of any government authority or body.

Outbreak. An epidemic limited to localized increase in the incidence of a disease, such as in a village, town or closed institution (adapted from Last JM, Spasoff RA, Harris, editors. A dictionary of epidemiology, fourth edition. International Epidemiological Association, Inc. New York: Oxford University Press; 2001).

Point of entry. A passage for international entry or exit of travellers, baggage, cargo, containers, conveyances,

goods and postal parcels, and the agencies and areas providing services to them upon entry or exit.

Port. A seaport or a port on an inland body of water where ships on an international voyage arrive or depart.

Public health emergency of international concern (PHEIC). An extraordinary event (as provided in the IHR) that: (i) constitutes a public health risk to other states through the international spread of disease; and (ii) potentially requires a coordinated international response.

Public health risk. The likelihood of an event that may adversely affect the health of human populations, with an emphasis on whether it may spread internationally or present a serious and direct danger.

Rapid response team. A group of trained individuals that is ready to respond quickly to an event. The composition and terms of reference are determined by the concerned country.

Readiness. It is **the ability** to quickly and appropriately respond when required to any emergencies.

Regulations or administrative requirements. All regulations, procedures, rules and standards.

Relevant sectors. Private and public sectors: such as all levels of the health care system (national, subnational and community/primary public health); NGOs; ministries of agriculture (zoonosis, veterinary laboratory), transport (transport policy, civil aviation, ports and maritime transport), trade and/or industry (food safety and quality control), foreign trade (consumer protection, control of compulsory standard enforcement), communication, defence, treasury or finance (customs), environment, interior, health, tourism; the home office; media; and regulatory bodies.

Risk communication. For public health emergencies includes the range of communication capacities required through the preparedness, response and recovery phases of a serious public health event to encourage informed decision making, positive behaviour change and the maintenance of trust.

Surveillance. The systematic ongoing collection, collation and analysis of data for public health purposes and the timely dissemination of public health information for assessment and public health response, as necessary.

Syndrome. A symptom complex in which the symptoms and/or signs coexist more frequently than would be expected by chance independently (adapted from Last JM, Spasoff RA, Harris, editors. A dictionary of epidemiology, fourth edition. International Epidemiological Association, Inc. New York: Oxford University Press; 2001).

Table top exercise. A facilitated discussion of an emergency situation, generally in an informal, low-stress environment. It is designed to elicit constructive discussion between participants; to identify and resolve problems; and to refine existing operational plans. This is the only type of simulation exercise that does not require an existing response plan in place. (WHO Simulation Exercise Manual. HO-WHE-CPI-2017.10 (http://apps.who.int/iris/bitstream/10665/254741/1/WHO-WHE-CPI-2017.10-eng.pdf?ua=1, accessed 30 November 2017).

Trained staff. Individuals that have educational credentials and/or received specific instruction that is applicable to a task or situation.

Vector. An insect or other animal that normally transports an infectious agent that constitutes a public health risk.

Verification. The provision of information by a State Party to WHO confirming the status of an event within the territory or territories of that State Party.

WHO IHR contact point. The unit within WHO that is accessible at all times for communications with the National IHR Focal Point.

Zoonotic diseases (or zoonoses). Any infection or infectious disease that is naturally transmissible from vertebrate animals to humans (http://www.who.int/topics/zoonoses/en, accessed 28 November 2017).

Zoonotic event. A manifestation of a disease in animals that creates a potential for a disease in humans as a result of human exposure to the animal source.

9 789241 515429