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Strengthening public health laboratories in the Eastern Mediterranean Region

Critical role of public health laboratories

Laboratories, including public health laboratories, are an essential and fundamental part of all health systems and their goal is to improve health. Reliable and timely results from laboratory investigations are crucial elements in decision-making in almost all aspects of health services. Within the Eastern Mediterranean Region (EMR), although progress has been made in strengthening laboratory capacity to support certain disease-specific programmes, substantial challenges remain. These include the lack of national policies and strategies for laboratory services, insufficient funding, inadequately trained laboratory staff, weak laboratory infrastructure, old or inadequately serviced equipment, lack of essential reagents and consumables, and limited quality assurance and control protocols. To address these challenges a comprehensive national laboratory policy is needed for EMR countries.

WHO/EMRO therefore held an intercountry meeting of the directors of public health laboratories in the EMR in Tunis, Tunisia from 24 to 27 February 2015. Representatives from 17 Member States attended the meeting as well as temporary advisers, partner organizations and WHO secretariat.

The objectives of the meeting were to:

review the status of the public health laboratories in the Region;

review the draft regional public health laboratory strategic plan and endorse it for implementation in Member States;

discuss ways to strengthen laboratory quality management system, biorisk, data management, equipment maintenance and diagnosis of infectious diseases of public health concern to meet the needs of International Health Regulations (IHR) (2005); and adopt recomme

ndations for improving the performance of the public health laboratories in the Region.

Key issues discussed

Regional public health laboratory strategic plan

Following an expert consultation held in December 2013 which identified priority areas to be strengthened in regional health laboratories and outlined strategic directions and key activities in each priority area, a draft regional strategic plan was developed and presented for review at the meeting.

The overall goal of the strategy is to guide the strengthening of sustainable national health laboratory systems to improve clinical and public health services in a cross-cutting manner for better preparedness for, surveillance of and response to epidemic-prone diseases, health security concerns and other potential emergencies of public health concern.

The strategy recognizes that the development of laboratory systems is a long-term endeavour that requires the support by country's government and multiple national and international stakeholders, including in-country stakeholders, multilateral agencies, donors, the private and public sectors, communities, and others. The strategy is intended to provide guidance for countries of the Region in setting priorities, formulating, implementing and evaluating national policies and strategic plans for their laboratory services. It proposes planning actions that should help national health authorities to address the gaps and challenges faced by their laboratory system.

The vision of the strategy is that within the EMR, health laboratory services are comprehensive, well-coordinated, integrated and sustainable to obtain and report safe, accurate and reliable test results in timely manner for use in clinical and public health settings. To achieve this vision, the strategy proposes a number of interrelated strategic goals, including strengthening leadership and governance of the national laboratory systems; strengthening the organization and management of the national laboratory systems; establishing sustainable, sufficient and competent human resources for laboratory service delivery; ensuring safe and secure laboratory environment; promoting effective laboratory referral networking (in-country and among countries) and enhancing coordination; and promoting rational and evidence-based use of laboratory services. For each strategic goal, objectives, activities and outcomes are identified.

The strategy will be implemented through a multi-faceted approach combining complementary regional and country-level activities, with engagement and commitment of national authorities and in cooperation with relevant WHO country offices, other development partners and donors.

To monitor and evaluate the implementation of the strategy, a set of indicators will be identified and measured at the regional level. These indicators will be selected from the IHR monitoring framework for monitoring progress in the implementation of IHR core capacities and supplemented, where necessary, by indicators for areas requiring specific consideration.

The meeting endorsed the revised draft of the regional health laboratory strategy 2015–2019 and recommended that it should be finalized for use by Member States to develop their national laboratory policies and strategic plans.

Laboratory quality management system

Countries are working toward laboratory quality management system implementation. However, the absence of a national regulatory framework for licensing and accreditation of health laboratories, shortage of staff, lack of monitoring and evaluation mechanisms significantly hinders the progress in some countries.

The ultimate aim of implementing laboratory quality management system schemes in all laboratories is to improve the quality of laboratory services rather than accreditation per se. The IHR can be used as a strong driver of the implementation of laboratory quality management systems but advocacy for such systems with policy-makers and important stakeholders is crucial. A first step to ensure that laboratories implement a laboratory quality management system is to formulate national quality standards that are endorsed and enforced through licensing, certification or accreditation.

The already existing assessments of public health reference laboratories for polio and measles provide information on the current situation in many laboratories and can be expanded to include more information on the overall laboratory quality management system in the assessed laboratories. Some additional suggested approaches to quality improvement were: twinning between laboratories, regional training of quality officers and training of trainers in the WHO

Laboratory Quality Stepwise Implementation tool, expansion of the External Quality Assurance Services network, and a clear roadmap with guidance and a time frame.

Biorisk management: safe working environment

The participants discussed challenges for ensuring safe and secure laboratory working environment. The meeting concluded that implementation of best practices in laboratory biorisk management in the Region is variable. Some countries have programmes or systems in place, often partial, while others do not. Mechanisms for shipping infectious substances are in place in all countries. Biorisk management implementation bottlenecks include: infrastructure (lack of properly maintained facilities); lack of biosafety equipment and/or maintenance thereof; shortage of biomedical engineers; lack of functioning incinerators; shortage of funds for personal protective equipment; poor waste management practices in some countries; an absence of job-related vaccination programmes for laboratory personnel; and inadequate numbers of certified shippers in different sectors.

To improve biorisk management in Member States, training for laboratory staff in conducting risk assessment is needed with actual risk assessments being conducted. Additionally management needs to find creative ways of motivating staff to implement and practise the principal safety and security measures in the laboratory. Military health services should be engaged in public health activities on biorisk management. Member States should designate biosafety officers to scale up the biorisk management implementation process.

Laboratory preparedness and response to emerging diseases

The laboratory is one of the national core capacity requirements under IHR. The results of 2013 IHR monitoring tool indicate that most countries of the Region are in compliance with IHR laboratory core capacity requirements, although this may be an overestimation to some extent.

Building laboratory capacities for IHR requires national political commitment, adequate sustainable financing, partnerships, commitment of laboratory personnel, mapping of laboratory capacity and resources, opportunities to build on existing capacity, collaboration on cross-sectoral issues as well as collaboration among the laboratory unit, IHR national focal point and other entities.

The Ebola virus disease preparedness and readiness assessment missions that have been conducted in the Region demonstrated overall limited capacities to handle specimens either for shipment or testing. Networking with WHO collaborating centres testing for Ebola virus disease

was poor or non-existent. In particular, turnaround time for test results was quite long, especially in remote districts. Two major gaps were identified: lack of biorisk management and lack of an effective laboratory information management system.

Public health laboratories surge capacity in countries will be enhanced through the implementation of the WHO 90-day Ebola preparedness plan, which provides for strengthening of specimen shipment mechanisms and biorisk management, capacity building in viral and clinical diagnostic methods, and provision of supplies and equipment, including Class III biosafety cabinets and personal protective equipment.

Food safety system & antimicrobial resistance surveillance

Among the major challenges for food safety systems in the Region are a lack of comprehensive food safety laws, regulations and standards and a lack of a professional food safety laboratory training body in the Region.

Very few countries in the Region have a national antimicrobial resistance focal point, a national antimicrobial resistance policy or an equivalent regulatory mechanism, or a national antimicrobial resistance action plan. Some countries have an antimicrobial resistance laboratory-based surveillance system but its scale is often limited; many important elements of the surveillance system, such as hospitals, are not involved. Sometimes there are institutional problems preventing integration of hospital information systems with antimicrobial resistance surveillance software.

Coordination within ministries of health and between sectors (health, agriculture, environment, food industry, professional societies, others) is weak or non-existent. The problem of substandard, falsified and other low quality medicines is very serious in many countries. Member States should use available WHO resources, such as the list of pre-qualified medicinal products or the WHO Rapid Alert System for reporting medicinal products of questionable quality. In many countries, antibiotics can still be obtained over the counter without a physician’s prescription.

Coordination of stakeholders needed for effective multisectoral action on antimicrobial resistance presents a formidable challenge. The 68th World Health Assembly reviewed and adopted the Global Action Plan on Antimicrobial Resistance that provides a framework for regional and national action for antimicrobial resistance containment. In its resolution WHA68.7, it urged Member States and international, regional and national partners to implement actions

proposed in the plan. By 2017, the countries should have in place national action plans on antimicrobial resistance that are aligned with the global action plan and with standards and guidelines established by relevant intergovernmental bodies.

Conclusions and the way forward

The role of public health laboratory networks remains critical for detection, surveillance and response to epidemic-prone diseases and implementation of the IHR (2005). In view of the challenges identified, the meeting concluded with recommendations for Member States and WHO to move forward on strengthening public health laboratories in the Region (Box 1).

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