

70. Results of the national assessments conducted in CAREC countries revealed critical gaps in different components of laboratory quality management systems (LQMS), such as quality control and assurance measures of national laboratory networks, insufficient specimen transport and referral, and lack of integration of and interoperability between the health and laboratory information systems, among others. All the components of the LQMS, including biosafety and biosecurity, equipment maintenance, quality control, quality assurance, external quality assurance, supply chain management with a specimen transport system, information management, personnel management, and professional development, must be functioning well to ensure that the country's laboratory system is capable in effectively responding to public health threats and emergencies. In addition, the pre-analytical part of laboratory testing, such as sample collection and the training of personnel involved in sample collection, even when not performed by the laboratory, needs to be considered.

71. **Proposed actions.** Pillar 2 will focus on improving technical preparedness in the region. Areas of intervention may include the following:

- (i) Improving sharing of epidemic information according to IHR and in line with laws and regulations in respective CAREC member countries.
- (ii) Strengthening national and regional laboratory networks and laboratory systems for testing.<sup>70</sup> This includes improving the multifunctional equipment and methods for detecting potential pathogens; boosting PCR capacity and next-generation sequencing capacity; and establishing a Central Asian Regional Centre for Epidemiology, Virology and Bacteriology.<sup>71</sup>
- (iii) Exchanging strategies of sampling to enable cross-country comparisons, improve capacity for referral transport of specimens, and

reduce turnaround time from sampling to result report, as well as capacity boosting for sensitivity and reliability through quality assurance and upgraded biosafety standards.

- (iv) Improving laboratory infrastructure and ensuring proper laboratory workflow and management according to international quality and biosafety requirements, including through existing regional initiatives and hubs.
- (v) Implementing support quality management systems (QMS) in laboratories through mentoring with trained national mentors.

### 3. Pillar 3: Access to Supplies and Surge Capacity

72. **Key challenges.** An efficient end-to-end supply chain is critical to delivering quality and affordable lifesaving medicines when and where they are needed. Supply chain management encompasses all activities required in acquiring and moving health products from manufacturer to user—from forecasting and procurement to storage and transport—considering the financial and information flows required to move the products through the supply chain. Reducing inefficiencies across the supply chain increases the quality and timing of service delivery while freeing up much-needed resources. In the CAREC region, such inefficiencies include limited competition in the market, leading to constrained supplies and higher prices. Many of these inefficiencies were amplified during the COVID-19 pandemic, bringing the long-standing vulnerability of medical supplies into sharp focus. Additionally, global shortages of medicines and supplies were experienced, and when they were available, the prices were very high and quality was not always assured.

73. Inadequate regulatory mechanisms and enforcement result in delayed registration and importation of products while leaving the markets open to the entrance of poor-quality and falsified medicines. Poor data quality and lack of

<sup>70</sup> A network is the physical number of laboratories and their served catchment areas, served facilities, or served populations. Laboratory systems include functionalities of reporting, quality assurance, and quality control mechanisms.

<sup>71</sup> *Turkmenistan Golden Age News*. 2021. Central Asian Regional Center for Epidemiology, Virology and Bacteriology.

appropriate human resource capacity contribute to poor forecasting and supply-and-demand planning, resulting in imbalances in supply to meet the needs. Several gaps were revealed through the national assessments, including too centralized, very complex, and time-consuming procurement; limited supplier base; severe lack of medical oxygen at health facilities; insufficient electronic information systems to report stock-outs at health facilities in a timely manner; and lack of knowledge and capacity to respond to the pandemic in terms of prioritizing purchase of supplies and equipment.

74. As COVID-19 spread across the globe, the demand outstripped medical supplies such as PPE, diagnostic tests, and ventilators. The supply became even more constrained with nationalist behaviors locking in manufacturing capacity and restricting the exportation of key raw materials.<sup>72</sup> Supply chains are failing at all levels. Centralized storage for emergency products is absent in the CAREC region, and many countries lack sufficient and appropriate cold chain equipment (ultra-cold chain freezers and temperature monitors) to store and transport temperature-sensitive vaccines. Coordination, best practice sharing, and research could be better adopted across the CAREC region, providing visibility across the end-to-end supply chain to enable more informed supply and demand planning, ensuring product availability when and where it is needed.

75. **Proposed actions.** Pillar 3 will focus on enhancing access to supplies and increasing capacity to meet surge demands in the region.<sup>73</sup> Areas of intervention may include the following:

- (i) Improving regulatory mechanisms, standards, and procedures for medicines, laboratory equipment, and supplies (e.g., through harmonizing policies and regulations for authorization, registration, and importation of products; and investing in regional cooperation mechanisms to strengthen regulatory capacity).
- (ii) Improving procurement activities (e.g., procurement policies and procedures, standardization of supplier base, contracting, and supplier performance management).
- (iii) Creating more competitive and efficient market mechanisms to increase supply and reduce prices for medicines and supplies.
- (iv) Improving visibility and management of end-to-end procurement and supply chain from manufacturer through consumption (i.e., regional coordination of procurement and supply chain management activities, alignment and harmonization of data standards, and sharing of information and insights).
- (v) Streamlining movement of medical goods in the region, especially during emergencies, through further research on movement of goods; exploring harmonization of importation and exportation of medicines and supplies; and standardization and sharing of product master data, supply base, and contracting processes.
- (vi) Developing procurement and supply management capacity among health policymakers and personnel in the health sector and aligning approach, training, and tools across the region.
- (vii) Developing a supply chain risk management plan.
- (viii) Improving supply and stocks for emergency situations, including use of virtual control rooms (e.g., situation rooms) and joint opt-in procurement mechanisms.
- (ix) Further developing options for regional manufacturing and stockpiles.

<sup>72</sup> F.A. Miller et al. 2021. Vulnerability of the Medical Product Supply Chain: The Wake-up Call of COVID-19. *BMJ Quality and Safety*. 30 (4). pp. 331–335.

<sup>73</sup> While surge capacity may also refer to human resource needs and facility capacity, the pillar focuses on medicines, supplies, and equipment.