

TERMS OF REFERENCE

Support Ministry of Health, Labour and Social Protection and National Agency for Public Health in development/configuration of information technology (IT) solution for reporting and monitoring of hospital system resources in COVID-19 pandemic

1. Background

The second meeting of the Emergency Committee convened by the WHO Director-General under the International Health Regulations (IHR) (2005) regarding the outbreak of novel coronavirus 2019 in the People's Republic of China, with exportations to other countries, took place on Thursday, 30 January 2020. After consultation, the Director-General, made the final decision on the determination of a Public Health Emergency of International Concern (PHEIC). A novel coronavirus (CoV) is a new strain of coronavirus that has not been previously identified in humans. The new, or "novel" coronavirus, now called 2019-nCoV, had not previously detected before the outbreak was reported in Wuhan, China in December 2019. One of the recommendations is to implement a comprehensive risk communication strategy to regularly inform the population on the evolution of the outbreak, the prevention and protection measures for the population, and the response measures taken for its containment.

The first case positive of COVID-19 was confirmed in Republic of Moldova on March 8th. As of November 20, 2020, in Moldova there are 93961 confirmed COVID-19 cases, including 2091 deaths. Moldova has a high number of health professionals affected by the virus. Over 9,500 doctors, nurses, medical assistants and other staff from the health care sector have been infected with the virus since the beginning of the outbreak. Also, there has recently been outbreaks in long term care facilities. The share of health care workers in the total number of cases decreased slightly from 25% at the beginning of May to approximately 10% now.

The Global Health Security Index (2019) scores Moldova 42.9 out of 100 while it ranks 35 out of 43 countries in the European Region suggesting that the healthcare system is vulnerable to public health crises and preparedness for epidemics is low.

During the pandemic, there has been an increase from 4 designated COVID-19 hospitals to 52 designated hospitals. Primary health care facilities are also involved in COVID-19 case management, collecting the probes for test and monitoring patients in home treatment. The big number of COVID-19 positive health workers creates difficulties in ensuring functionality of the health care system, especially in ensuring the needs in special teams of doctors involved in providing medical services.

Based on the transmission scenarios elaborated by National Agency for Public Health (NAPH) in collaboration with WHO experts, the Ministry of Health, Labour and Social Protection (MoHLSP) with support of WHO estimated the available resources and needs for COVID-19 response. The requirements are updated periodically, taking into account the stocks available (public procurements, facilities' own procurements, donations, etc.) and the estimates of available resources, that are paper based: PPE, medical devices (ventilators, pulse oximeters, oxygen, concentrators O2), medicines, medical personnel, lab tests and consumables, etc. Keeping records on paper-based delays the process of estimating needs and monitoring distributions.

In the context of the above mentioned and in order to avoid duplication of the activities and ensure efficient use of resources it is very important that individual and centralised procurements, the external assistance provided by international partners and donor community to be coordinated and aligned with the priorities stipulated in WHO Global strategy to respond to COVID-19, Moldova COVID-19 preparedness and response plan and other strategic documents of the health sector.

Emphasizing the need of national health stakeholders and external development partners to ensure transparency and access to data on the capacity and resources available in hospital care, their use, it was decided by MoHLSP to develop an IT solution for reporting and monitoring of hospital system resources in COVID-19 response. The IT solution shall help the MoHLSP to monitor in terms of geographical distribution of hospital system resources and they're use in order to mobilise the available ones and ensure provision of healthcare services according to the needs and available forecasts.

The implementation of an IT solution for online hospital data collection and reporting, storage data in a single database, management of hospital sector resources, and centralized distribution of humanitarian aid received from donors, also real-time data of hospital capacities availability is an urgent need for decision-makers, in order to streamline their management, especially in a public health emergency.

The IT solution it's expected to ensure the collection of hospital data, on-line hospital reporting, management, processing and interpretation of data by issuing lists, reports, graphs, statistical and comparative data, as well as improving communication within the hospital sector and main stakeholders in health (MoHLSP, National Agency for Public Health (NAPH), Agency for Medicines and Medical Devices (AMMD), Center for Centralized Public Procurement in Health, National Health Insurance Company (NHIC)) and other institutions from the health system.

Due to insufficient human resources and lack of capacities, the MoLSP requested the WHO to provide technical support in development of the IT solution for reporting and monitoring of hospital system resources in COVID-19 response, according to the requirements and needs of MoHLSP and NAPH. The description and requirements for the IT solution are attached to the ToR.

Thus, WHO Country Office of Moldova is looking to recruit a company to develop the IT solution or configure and adjust the available solution to MoHLSP and NAPH requirements.

2. Deliverables

Overall objective: To provide technical support in developing/configuring an IT solution for MoHLSP that will provide situational analysis and help with monitor in terms of geographical distribution of hospital system resources and they're use in order to mobilise the available ones and ensure provision of healthcare services according to the needs and available forecasts.

Specific Objectives:

- IT solution shall provide for MoHLSP and NAPH on-line real time information of hospital capacities and resources and they're use, including stocks and funding source of devices and personal protective equipment;

- Appropriate training and knowledge transfer, both for the IT solution registration, operation and for the of administrative procedures.

Expected results:

- Central Health authorities in the Republic of Moldova in charge of hospital care policy are provided with technical support in daily activity and in case of public health emergencies trough development of a functional solution for the evidence and management of hospital sector resources according to the attached technical requirement (annex).

Deliverables:

- Beta version of the IT solution to be presented to the MoHLSP and NAPH;
- Elaboration of the necessary subsequent customizations according to the attached technical requirement (annex) and presentation to the MoHLSP and NAPH;
- Finalize the IT solution according to the testing conclusions, training on use with user guide and deployment instruction;
- Two dashboards of indicators developed according to the MoHLSP and NAPH requirements, one for internal use and one placed on MoHLSP website.

Technical report (if applicable): Yes

Financial statement:

Financial statement is required and shall be submitted upon completion of the work.

3. Technical requirements

The IT solution for reporting and monitoring of hospital system resources in COVID-19 response has as a premise the need for key actors in the field of health, as well as external development partners in ensuring transparency and access to information on capacities and resources available in hospital care, their use, including mobilization in case of public health emergencies.

The IT solution shall provide for MoHLSP and NAPH real time information of hospital capacities and resources and they're use, specifically:

- Map the hospital capacities (medical resources, beds, devices, personal protective equipment, human resources) to monitor in terms of geographical distribution of hospital system resources and they're use in order to mobilise the available ones and ensure provision of healthcare services according to the needs and available forecasts;
- Map the type of cases (mild cases, moderate cases, severe patients that require oxygen, critical cases that require ventilation) to monitor in terms of geographical distribution and categories (children's, pregnant women and adults) of type of COVID-19 patients admitted to hospital in order to mobilise the available resources depending on hospital resources availability;

- Map the stocks and funding source of devices and personal protective equipment (individual and centralised procurements, centralised external assistance provided by international partners and donor community, donations, redistribution from other hospitals);
- Distribute the centralised external aid provided by international partners and donor community;
- Provide on-line reporting data by hospitals and real-time data visualization on dashboard after MoHLSP validation;
- Create different reporting periods with the possibility of editing for each data set;
- Ensure dynamism and flexibility in creating and managing users, as well as assigning rights to the role;
- 2 dashboards: (1) publicly available online dashboard and (2) internal dashboard available only for national stakeholders (MoHLSP and NAPH).

IT solution for reporting and monitoring of hospital system resources in COVID-19 will allow online hospital data collection and reporting, storage data in a single database, management of hospital sector resources, and centralized distribution of humanitarian aid received from donors, also real-time data of hospital capacities availability and usage, in order to streamline their management, especially in a public health emergency.

The IT solution it's expected to ensure the collection of hospital data, on-line hospital reporting, management, processing and interpretation of data by issuing lists, reports, graphs, statistical and comparative data, as well as improving communication within the hospital sector and main stakeholders in health (MoHLSP, National Agency for Public Health (NAPH), Agency for Medicines and Medical Devices (AMMD), Center for Centralized Public Procurement in Health, National Health Insurance Company (NHIC)) and other institutions from the health system.

At the same time, the IT solution for monitoring of hospital system resources in COVID-19 will ensure an increased accessibility of data and will significantly reduce the time required for reporting and data analyzes of hospital sector resources usage and availability for COVID-19 patients.

Users will be informed of the need to complete the reports through the internal notification service that will allow the visualization of messages within the system, which will allow the transmission of informational messages on the service e-mail of the users responsible for completing reports.

The data storage infrastructure will provide a high-performance database management IT solution to ensure the complex management and processing of data and to represent the software component of the database system.

The IT solution for reporting and monitoring of hospital system resources in COVID-19 pandemic will have 4 levels of data access, depending on the roles and rights of users:

- Data operator access level - access level that will allow authorized persons from hospitals to complete the reports assigned to the role;
- Data reception access level - access level that will allow confirmation of data reception and validation by MoHLSP and NAPH designated persons;

- Data analysis access level - access level that will allow monitoring and analysis of collected data by MoHLSP and NAPH;

- Administration access level - access level intended for the system administrator (programmer / system administrator) for adjusting the classifiers within the IT solution.

Username and password will be used to log in the IT solution.

Minimum requirements for the IT solution for reporting and monitoring of hospital system resources in COVID-19 pandemic:

- available online, continuously and permanently and accessed through popular web browsers: Internet Explorer 11, Edge, Chrome, FireFox, Safari, regardless of the operating system used and access from IOS and Android platforms;

- compatible with at least 2 latest versions of the following web browsers: Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Safari and Opera;

- accessed on communication channels of at least 128kbps;

- installed on both dedicated servers and Cloud solutions;

- uses state-of-the-art technologies that allow the use of the IT solution in all institutions involved in the system, without the need to install additional programs;

- ensures the exercise of both the basic functions and the specific functions, determined by the destination of the IT solution, grouped in specialized functional blocks;

- supports the working regime of several users, competitor, from at least 300 users simultaneously;

- ensures dynamism and flexibility in creating and managing users and roles in the IT solution;

- allows the definition of an unlimited number of roles, which are then assigned to users. Several roles can be assigned to a user, the access rights being estimated by combining them;

- records any operation applied to the data, such as insertion, editing and deletion, the date and time of its execution, the author, as well as the values applied to the data;

- ensure adequate security to protect information and components against unauthorized use or disclosure of information, through the use of authentication and authorization tools, including system audits;

- offers the possibility of reusing it for other processes or in the perspective of ensuring the possibility of developing new functionalities;

- performance must ensure an adequate response to the beneficiaries;

- guarantees the complete and complete preservation of all records accessed or retrieved from the data stock;

- ensuring the confidentiality of data transmitted-received on communication channels, data exchange is done only on secure channels.

Requirements for configuration and adaptation services:

- analysis, adjustment, implementation and testing of all IT solution components;

- delivery and installation of the IT solution, as well as the performance of all works related to its commissioning;

- acceptance, commissioning, warranty and operational support for the IT solution components;

- project implementation management, including preparation and delivery of project documentation, in accordance with technical specifications;

- appropriate training and knowledge transfer, both for the operation of the IT solution and for the registration of administrative procedures;
- the maintenance of the IT solution for the period in which the Provider assumes the obligation towards the Beneficiary to assist him in maintaining the capacity of the IT solution to provide services, as well as to modify the product, maintaining its integrity.

Provider will liaise with collaborators such as data managers, statisticians and data analysis experts within the MoHLSP, NAPH or other national agencies and hospitals to optimize processes for development/configuration of IT solution.

During the test Provider will perform the following activities:

- will collect all observations and proposals, completing them in the minutes of the meetings with the representatives of the beneficiaries;
- will execute all the works for the elimination of the deficiencies, fixed in the minutes of the meetings with the representatives of the beneficiaries.

Documentation and deliverable requirements. The final product consists of the software and documentation artifacts of the IT solution for reporting and monitoring of hospital system resources in COVID-19 pandemic as well as the transfer of knowledge to the owner and administrator of the system:

1. complete IT solution source code;
2. final product packaged for easy installation in the proposed technological environment;
3. document on system configuration and deployment (deployment instruction);
5. user guide.

The provider will offer a minimum warranty period of 12 months with the remedy of deficiencies detected in use attributable to the provider.

4. Qualifications, experience, skills and languages

Skills and Qualifications

The Service Provider should have knowledge and experience in the following areas:

- At least 5 years' experience in development of IT solutions;
- At least one online reporting tool and data analysis software implemented in Republic of Moldova;
- Experience in development and implementation of health IT solutions;
- Experience in configuring IT solutions in MCloud;
- Ability to prepare accurate database design and architecture reports for management and executive teams;
- Working knowledge of common information technologies and systems development (recommendations from customers);
- Ability to design and implement user-friendly platforms solutions;
- Proven understanding of the health care system and public health.