

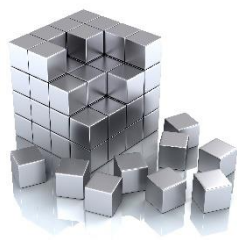


Project Factsheet

Introducing Remote Monitoring Services in Emergency Medicine in Croatia

Request for Service ID: REFORM/SC2021/116

The project contract was signed on 22 March 2022. The length of the project is 12 months. The contracting authority is the Directorate-General for Structural Reform Support (DG REFORM), and the project beneficiary is the Croatian Institute for Emergency Medicine (HZHM). The company Teched Consulting Services Ltd. from Croatia was responsible for the technical implementation of the project, in front of the consortium led by the company IBF International Consulting from Belgium.



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Background and context

The project included the development of the “**National Framework for Remote Monitoring in Emergency Medicine Services**”, i.e. a national telemedicine framework that is a prerequisite for the establishment of the Remote Monitoring System in out-of-hospital emergency medicine services (EMS) in Croatia, and the corresponding “**Roadmap and Action Plan for Introducing Remote Monitoring in EMS at a National Level**”.

The National Framework was developed based on a comprehensive current state analysis and proposes the organisation of teleconsultation centres from which remote monitoring of patient conditions in out-of-hospital EMS vehicles will be performed. Remote monitoring will include the provision of **teleconsultation services** for out-of-hospital EMS teams through teleconferences adapted to the needs of

remote monitoring. Medical doctors from emergency hospital departments who continue to treat patients of out-of-hospital EMS will, at the invitation, be able to participate in these “*virtual conference rooms*” as well. Medical personnel involved in an out-of-hospital EMS intervention will be able to gain insight into all patient data generated during the intervention, including **vital parameters from the medical devices in the out-of-hospital EMS vehicle transmitted** in (almost) real-time.

The created National Framework is the first step in the extension of telemedicine services towards a mobile telemedicine environment and is included in **Croatia’s National Recovery and Resilience Plan (NRRP)**, as part of the **reform C5.1.R5** entitled ‘*Improvement and Extension of Telemedical Services*’. In accordance with the NRRP, the reform will contribute to the **availability of quality medical care** in all parts of the Republic of Croatia and give momentum to the **modernisation of Croatian healthcare**.

The Action Plan includes a proposal for financing the development, implementation and maintenance of the Remote Monitoring System, within which a specialised IT system with working title “**Integrated IT Platform of Out-of-hospital EMS**” (abbreviated: **iHMS platform**) will be developed, for information support to processes of the Remote Monitoring System.

Main outcomes of the project

1. In the project, three options were proposed for the model of organisation of teleconsultation centres, and the project beneficiary selected the organisation of four teleconsultation centres in the OHBPs of regional KBCs (Zagreb, Rijeka, Split, Osijek) for the piloting of the Remote Monitoring System.
2. A proposal of architecture of the Integrated IT Platform of Out-of-hospital EMS (iHMS platform), which will provide information support to the Remote Monitoring System, was created.
3. Key proposed determinants of the iHMS platform include the exchange of data in (almost) real-time between medical dispatch centres, out-of-hospital EMS vehicles and teleconsultation centres
4. General recommendations were given for medical and other devices that will enable the transfer of data generated in out-of-hospital EMS vehicles in (almost) real-time
5. iHMS platform will enable communication of teleconsultants and out-of-hospital EMS teams, and insight into all patient data generated during interventions
6. iHMS platform will have the possibility to exchange data with relevant national information systems, preferably with CEZIH for the purpose of data exchange with eKarton
7. The project opened cooperation between out-of-hospital EMS and the Ministry of Interior (MUP) regarding the possibility of full integration of out-of-hospital EMS into the PPDR system
8. Additionally, within the iHMS platform, the development of the Reporting System of Out-of-hospital EMS was proposed, which will enable employees to independently create the necessary reports
9. It was recommended that the entire Remote Monitoring System should be owned by HZHM in order to be able to independently plan and implement future development and upgrades of the system and to minimise the total cost of its use



As part of the project, a **roadmap** and an **action plan for the introduction of remote monitoring in EMS at national level** have been created, which recommend and provide basic information for the implementation of the five project components of the pilot project for introducing remote monitoring in EMS (which will be financed by the World Bank loan), 17 project components that constitute the project of national implementation of the Remote Monitoring System and one related project.

iHMS system

The (basic) architecture of the iHMS system was proposed, which is open to **interoperability with relevant national information systems** and is suitable for **future cross-border data exchange**. The system architecture developed includes a definition of key **roles** in the system, a description of the **required components** (i.e. modules) with their main features, and a description of the relevant **data** flows between these modules, but also the data flows between the Remote Monitoring System and the external health information systems.

Functionalities of the iHMS system

Systematic access to the generation and collection of medical and other intervention data, as well as their automatic storage and providing access to such data to authorised persons (participating in the treatment of the patient and, where appropriate, others) will enable:

1. **Remote monitoring of the health status of the patient in the out-of-hospital EMS vehicle**, i.e. involving the remote medical doctor(s) in the out-of-hospital EMS intervention in order to provide teleconsultations to the medical staff in the vehicle;
2. **Automated transfer of a subset of medical and other relevant data** to medical staff who continue to treat the patient after the

intervention (e.g. emergency hospital department staff, other hospital staff, family medicine doctors);

3. **Proving the course of the procedures applied during the intervention**, i.e. a full reconstruction of the course of the intervention;
4. **Preparation of necessary reports** — for the purpose of mandatory reporting within out-of-hospital EMS and other institutions, and for the purpose of analysis to improve the processes of out-of-hospital EMS

For the purpose of the above, the iHMS platform will automatically produce:

- **Complete electronic medical record (EMR)** of out-of-hospital EMS related to an individual intervention;
- **Medical report of out-of-hospital EMS intervention**, which will be generated automatically after the intervention, and which will include a subset of data from the patient's electronic medical record.

Beneficiary:

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