

The role of NHIH in the digitalization of health, smart city condition

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Abstract

The digitization of health is a priority of the European Union, Romania being involved in several projects, some of which are carried out by the National Health Insurance House (NHIH), in collaboration with partner institutions. The objectives of the ongoing projects are: “Modernization and optimization of the contracting and settlement of medical services”, “Computer System for Modern Management of Access to Medical Services, Acts, Recommendations and Technologies – SIGMA SMART”, “Development and expansion of the electronic file of health (EFH)”, “Implementation of the electronic prescription”, “Implementation of the electronic referral ticket”, “Implementation of the electronic medical letter”, “Development of the national telemedicine system”, “Interoperability of health systems”. All these projects regarding the use of digital technology in health are aimed at optimizing the patient's access to quality medical services, easing the work of medical personnel, reducing waiting times, ensuring the accuracy and security of data circulation in the national system and cross-border health system, generating reports and analyzes on the state of the health system, making the best diagnostic and therapeutic decisions for patient care and optimizing the use of funds in the social health insurance system. To carry out this work, I used the data available at the level of the National Health Insurance House (studies, plans), the press releases from the NHIH management and discussions with people involved in these projects. The implementation of digitization projects was based on feasibility studies, scientific data, based on the experience of the teams of specialists involved in the projects, in compliance with the standards and legal regulations in force and the recommendations of the European Commission. The work is a review of the ongoing projects at NHIH, the current problems facing the health system and is a basis for discussions for future debates, ideas, proposals and solutions in order to optimize the functioning of the health system.

Keywords: electronic health record, electronic prescription, medical services, digital technology, interoperability of health systems.

1. Introduction

The digitization of the health system has become a priority in the European Union, Romania being involved in several projects and initiatives regarding the implementation of digital solutions to improve efficiency, access to health services and the quality of patient care. [1]

The National Health Insurance House (NHIH) is one of the institutions that has an important role in the digitalization of health, because it manages the Single National Health Insurance Fund (FNUASS) from which the services provided in the health insurance system are settled and regulates the conditions of providing medical assistance, medicines and medical devices within this system. NHIH has several projects under implementation, being an important partner in the field of health digitization at the European level, projects aimed at the following objectives:

- Modernization and optimization of the contracting and settlement of medical services in all fields of medical assistance, by developing unitary procedures for all county health insurance companies, as well as for the Bucharest Health Insurance House and the Health Insurance House of Defense, Public Order, National Security and Judicial Authority. The goal is to standardize and clarify the

application of legislation throughout the country through new procedures that best respond to the needs of the insured people, given that, at the moment, there are inequities regarding access to medical services between the large university centers and areas with a shortage of specialists.

- The “Computer System for the Modern Management of Access to Medical Services, Acts, Recommendations and Technologies – SIGMA SMART” project, developed through a partnership agreement between NHIH, the Authority for Digitization of Romania and the Special Telecommunications Service which will allow the preparation of reports, analyzes and studies aimed at optimizing and strengthening the decision-making capacity of NHIH, by processing specific data collected in the Health Insurance Information Platform (HIIP or PIAS). Interrelating data from the various catalogs and areas of PIAS is not a simple matter, but requires insight and experience so that the reports generated are meaningful and can be useful to decision makers in order to develop evidence-based health policies. The total value of the project is 101.98 million lei, of which 85.64 million represents the non-refundable financing granted by the POCA Management Authority. Through the system that will be created within this project, the data extracted from PIAS will be integrated and organized in a unique reference format and will contribute to a better understanding of the needs of the insured, to reducing risks and increasing the efficiency of public spending in the system of health.
- The development and expansion of the electronic health file (EHF), an integrated computer system, which contains data and medical documents related to the medical history, diagnosis, treatment and monitoring of the health status of each insured person. The loading of medical data into the EHF was stopped in 2018 due to the obligation to comply with the EU regulation on the protection of personal data (GDPR), and after the harmonization of the normative acts in force with this requirement and the changes made in the Single Integrated Information System, the process was resumed in November 2021, and up to now more than 13 million electronic health records have been created. Every Romanian citizen will have an electronic health file, regardless of age and whether they are insured or not. In the DES there is a section called “summary for emergency situations” which contains vital data for the patient, essential for doctors in emergency situations, where the patient is unconscious or cannot tell the doctors about the diseases, allergies he has been diagnosed with or whether he is under drug treatment. This section includes, among others, the patient's chronic diseases, hematological diseases relevant for medical emergencies, transmissible diseases relevant for medical emergencies, current treatments, recent admissions. [2]

This information is accessible at any time, to any doctor in the public and private medical system, who is authenticated in the DES system and knows the patient's CNP (personal identification code). Pharmacies, medical laboratories, dentists and any other medical service provider in Romania, authenticated in the DES system, who knows the patient's CNP, can have access to this information from his health file. The rest of the medical information in the file can only be consulted in the presence of the patient or with his consent. Work is currently underway on interoperability between providers of medical

services, medicines and medical devices, so that they can access relevant medical data in real time, the investigations done on the patient and their results, the medication the patient is taking, other major health issues, so that providers can make informed medical decisions for the benefit of the patient and without the need for paper medical records.

- Implementation of the electronic prescription, i.e. a medical document issued by the prescriber, which contains information about the drugs and medical devices prescribed to the patient, which is transmitted electronically to the pharmacy and which is validated with the patient's health card.
- Implementation of the electronic referral ticket, which is a medical document issued by the family doctor or the specialist doctor and contains information about the specialized or paraclinical medical services recommended to the patient, which is transmitted electronically to the service provider and is validated with the health card of the patient.
- The implementation of the electronic medical letter, a medical document issued by the attending physician, contains information about the patient's diagnosis, treatment and progress, which is transmitted electronically to the family doctor or another specialist, to ensure the continuity of the patient's care.
- The development of the telemedicine system at the national level, i.e. a computer system that allows the provision of medical services at a distance, through information and communication technology, quick access to a second medical opinion, collaboration between health professionals in order to facilitate access to quality healthcare, especially for patients in isolated or disadvantaged areas. [406]

1.1. The planned interval for the implementation of health digitization activities

To carry out these digitization projects, NHIH benefits from European funding through the National Recovery and Resilience Plan (PNRR), which allocates 400 million euro for the digitization of the health system, until 2026. Calls for projects have been opened for the development of the digital system of NHIH and for the digitization of at least 200 hospitals. At the same time, with the help of the World Bank, the Ministry of Health will equip around 130 Emergency Reception Units in county, municipal and city hospitals with modern telemedicine solutions.

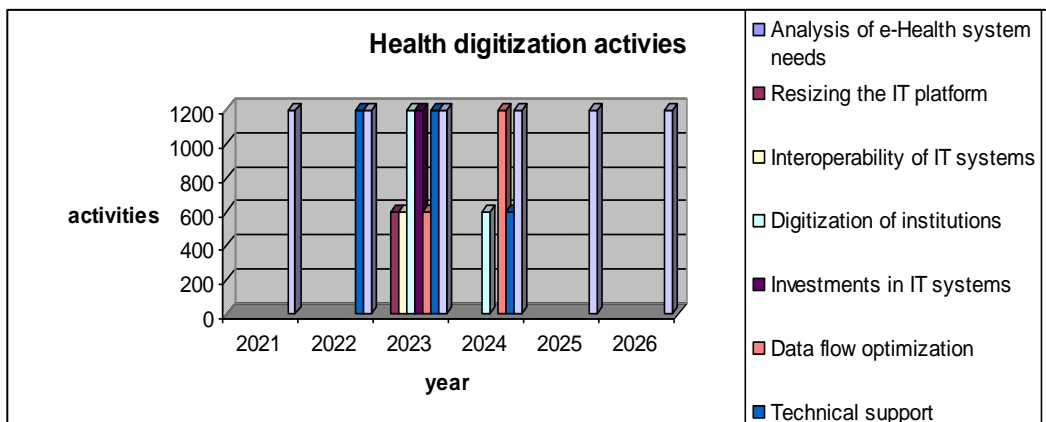


Fig. 1 Health digitization activities

A modern hospital operating in a smart city must be equipped with telemedicine and video collaboration, video surveillance, IT infrastructure and cyber security, connections with partner institutions and other integrated systems of a smart city. Each component has an essential role in creating a modern and efficient work environment and contributes to providing quality services to patients. By digitizing all levels of medical assistance, it is desired to obtain clear reports on services, devices and medical prescriptions settled, with the possibility of tracking the patient in the health care system, so that errors and losses in the system are eliminated.

1.2. Is digitization of health a viable solution for improving access to healthcare in Romania?

The standards required for the implementation of new technological solutions are increasingly high and complex, but let's not forget the reality around us: Romania faces considerable challenges in terms of ensuring access to healthcare. In total, approximately 11% of the population remains uninsured and has access to only a limited package of services. The percentage of the population with some form of health insurance has declined, with a significant gap between urban and rural areas. A large proportion of self-employed workers in agriculture and the Roma population in rural areas do not benefit from health insurance. In terms of reported unmet medical needs, significant differences persist between the lowest income groups (8%) and the highest income groups (2.3%). The percentage of the rural population insured decreased from 75.8% in 2014 to 63.5% in 2021, and the downward trend is maintained. [2]

In Romania, there are approximately 17 million insured people, of which over 10 million have health insurance, but do not pay, because they fall into the 19 categories of people exempted from paying the contribution to health insurance, according to the legislation in force. Romania is the country with the most categories of persons exempted from paying the contribution from the European Union. A simple calculation shows that each person who works in Romania pays, on average, health insurance both for himself and for two other people who do not pay anything. This imbalance determines the uncertainty of the future of the health system as it is currently organized. In the case of retirees, the level of unmet medical needs is twice as high as that of the general population. Rate of unmet healthcare needs, from due to the long distance to a medical facility, it is the third largest in the EU. Territorial imbalances in the provision of healthcare services are large and growing. There is a need to rethink the health system, digitize it and restrict the categories exempted from paying the health insurance contribution, as well as the introduction of private health insurance companies, the redefinition of service packages that can be settled by the public system and those settled from private health insurance.

1.3. Interoperability of health systems

Interoperability of health systems is another important step in the digitalization of health. To facilitate the exchange of information between digital health systems in different countries, it is essential to have common standards and interoperable interfaces. This ensures that patient data is properly read and interpreted by the various health IT systems. The European Union has adopted initiatives to establish common standards for interoperability in digital health. In this sense, National Health Insurance House has started

the configuration of the “e-Prescription” (electronic prescription) and “Patient Summary” (patient's medical file) services, in a cross-border context. The two components will allow European patients to use their prescription and medical documents in electronic format when they require treatment and medical services in the territory of another member state.

These aspects are essential to ensure continuity of care for the patient if he receives treatment in a different country than the one where he was initially treated or diagnosed. [407]

The main aspects regarding the interoperability of medical systems in the European Union include: interoperable electronic health records, common communication standards for data to be transmitted and interpreted correctly, data security to avoid unauthorized access or misuse of sensitive patient data, consent and patient privacy so that they can give or withdraw their consent to share their medical data between medical systems in different countries and common standards for identifying patients to avoid errors to ensure the accuracy of medical data. The lack of interoperability of medical systems in different countries is an obstacle to building the digital single market. In conclusion, the projects carried out by CNAS for the digitization of the health system are large-scale projects, with multiple components, and the difficulties that arise along the way are difficult to solve. It takes will, patience, ingenious ideas and teams of experienced professionals. [3]

1.4. NHIH proposals for solving problems in the health system.

NHIH analyzed the existing discrepancies in the health system and formulated some general strategies that can be applied to improve the integration of healthcare services:

1. Standardization and interoperability of systems. The implementation of common standards and interoperability protocol within health systems is essential because it will enable the efficient transfer of data between different components of the health system, such as hospitals, clinics, laboratories and pharmacies. [7]
2. Electronic Medical Records System (EMR). The use of electronic medical records can facilitate the sharing of medical information between different entities in the health care system. Providing quick and secure access to relevant patient information can improve care coordination. [3]
3. Telemedicine: The implementation of telemedicine technology can increase access to health care and facilitate communication between health professionals, especially in resource-constrained areas or in emergency situations. [8]
4. Collaboration between health professionals such as doctors, nurses, pharmacists and therapists can lead to better integration of services.
5. Continuing education and training: ensuring that health professionals are well trained in new technologies and are aware of each other's needs and responsibilities so that they can contribute to better integration of services.
6. Involving patients in managing their own medical records, making decisions and planning care can contribute to better coordination of medical services.
7. The implementation of clear policies and regulations that promote the exchange of information in a secure way and facilitate collaboration between the different components of the health system is essential.

8. Investments in technological infrastructure. Ensuring that the technical infrastructure required for effective service integration is available and up-to-date. Every health system is unique, and effective solutions may vary according to the local and regional context. A holistic approach involving both health professionals and stakeholders is required to achieve effective integration of healthcare service delivery.
9. Consultation of patient associations and organizations in order to optimize the normative acts that regulate the provision of medical services, medicines and medical devices. An example is the establishment at NHHH level, in October 2023, of a Task Force to fight cancer in Romania, made up of representatives of the institution, doctors involved in the fight against cancer, representatives of oncological patients, who, in the first stage, started mapping all to the existing medical services in the field of oncology, from preventive to curative ones. The second step will consist in designing, based on scientific data, the need for oncology services for the next 5 years, so that the reform of the medical services provided to the sick is in accordance with the real needs and financially sustainable.

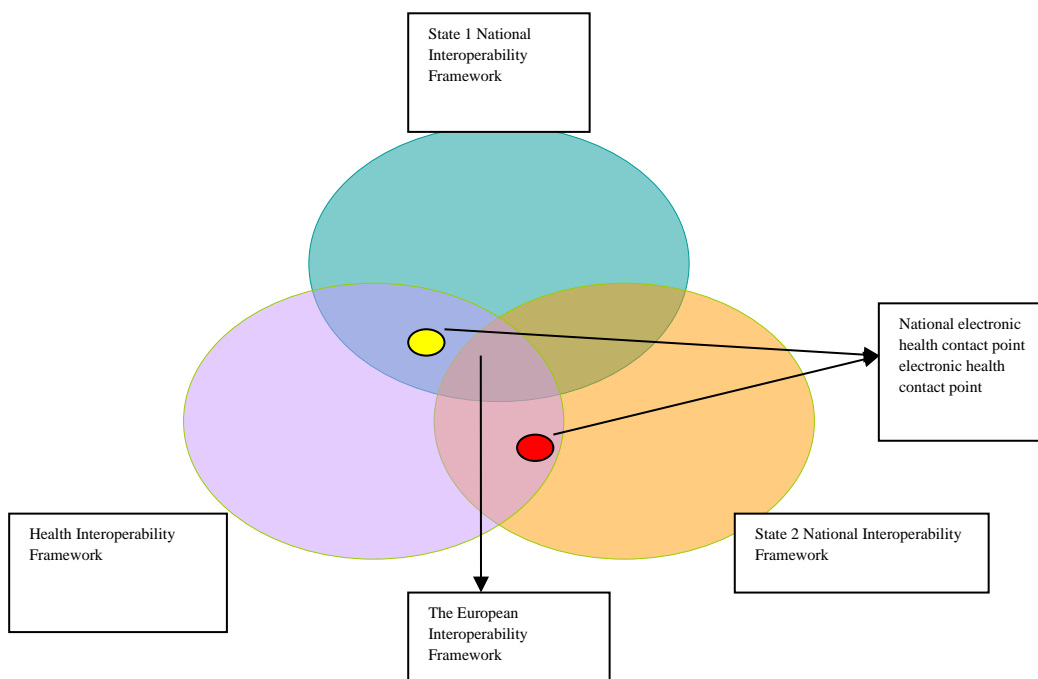


Fig. 2 The European Framework for Interoperability in the field of Health

Source: [4], p. 7

10. Preparing the health system in Romania to be interoperable with the health systems in the European Union, an important challenge that requires commensurate efforts. To promote interoperability in the field of digital health at the level of European countries, the European Union has developed initiatives such as the eHealth Network Project. Member States, including Romania, are involved in these efforts to create

an environment where health data can be shared securely and in compliance with data protection regulations. In order to achieve these objectives, the EU member states decided to develop in each member state a national electronic health contact point (Open NCP), which will exist at the level of each member state, according to the provisions of the draft European regulation regarding the electronic health data space (European Health Data Space – EHDS). [407]

All these efforts regarding the use of digital technology in health are aimed at focusing on the patient and his needs, increasing the availability of resources and their accessibility where they are most needed, making the best diagnostic and therapeutic decisions in patient care, optimizing the work of medical personnel, reducing work and waiting times, ensuring accuracy and security in centralizing and storing patient medical data, as well as using it to develop smart public policies, to intelligently allocate resources and to predict future trends in an informed and documented way.

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