

Is the Electronic Exchange of Patient Information among Iranian Healthcare Organizations a Distant Dream?

Negisa Seyyedi* 

Nursing Care Research Center, Iran University of Medical Sciences, Tehran, Iran

*Corresponding Author: Negisa Seyyedi
Email: ngs.seyyedi@gmail.com

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In healthcare settings, patients often receive care from different providers in different healthcare organizations. They may visit the hospital's emergency department multiple times, be admitted, or visit specialists, clinics, and laboratories on an outpatient basis. Clinical information transmission and integration across information systems provide physicians with information coming from a variety of sources, which is obviously valuable. Still, paper information exchange, which is most often done in Iran, is always riddled with errors that can be mitigated by creating proper computer-based interfaces. Electronic information exchange through information systems can greatly help facilitate therapeutic decision-making, prevent unnecessary or repeated tests, medications, and measures, and offer physicians and other providers timely access to patient information. In this way, these systems can reduce medical errors and promote the quality of patient care.

In developing communities, health information systems are usually designed on a stand-alone basis in hospitals, treatment centers, pharmacies, doctors' offices, and laboratories, which makes it difficult to establish interoperability and electronic relationship between them. Although Iranian healthcare centers and organizations have electronic information systems, they still communicate on a paper and print basis. For example, only a few large laboratories in Tehran have designed websites to facilitate the delivery of test results, but these facilities are limited, and patients have to take the request for tests from physicians to laboratories and the results back to physicians, which wastes their time [1].

Technical problems pose a barrier to electronic exchange among existing information systems. The lack of interoperability among exclusive information systems is a serious technical issue, mainly due to the absence of a well-known national standard for organizing, structuring, and creating common terms (terminology and data elements) for data storage, retrieval, sharing, and use. Due to the absence of standards such as the Continuity of Care Record (CCR) [2] and common languages such as the Logical Observation Identifiers Names and Codes (LOINC) [3] between different systems, the information flow is often done via different methods and in different forms, and the information is not structurally or conceptually homogeneous. These differences make it extremely difficult to integrate and manage information [4]. Patient identifiers, clinical guidelines and principles, healthcare business processes, information and communication infrastructure, messaging standards and platforms are other technical issues that need to be addressed while achieving complete interoperability. Another major problem with the computerization of healthcare centers is that workflows are not specifically defined and documented in Iran [5]. Healthcare and its processes are inherently complex; therefore, complex workflows and non-standard and undefined workflow activities and structures can challenge computerization. There is a wide range of workflows in healthcare centers.

Besides a large number of patient input sources to each center, there are also external links to other hospitals, insurance companies, and referrals to laboratories or other

specialists. Due to the complexity of transactions, we require correct understanding and analysis, as well as sustainable business models, for the computerization of processes.

Moreover, physicians and other providers are not trained in IT or aware of the potential of electronic health information exchange. Physicians' disinclination for using technology is an obstacle to electronic health information exchange. Another important point is the lack of support and maintenance for health information electronic exchange systems, which causes trouble for physicians in performing their tasks using these systems. Thus, this project is doomed to failure in the absence of a flow that meets resistance due to fear; the fear that information technology systems may increase staff and administrative workload, physicians' inadequate knowledge and time to learn new technologies, and the expenses of this technology [6-7]. There are also financial barriers [8]. Executive costs pose serious obstacles to the acceptance of information technology such as health information exchanges. Costs of operation include direct hardware, software, and technical aid, as well as indirect costs in the preliminary stages. In particular, there is greater resistance to acceptance in smaller centers, especially in rural areas, since there is no guarantee of a return on investment. All of this puts Iran one step away from creating electronic exchanges between healthcare organizations. However, in this way, the decisions of all national contributors and policymakers in the field of health to eliminate obstacles and shortcomings in achieving the desired goal play a key role [5].

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