Promoting Meaningful Use of Health Information Technology in Israel: Ministry of Health Vision

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Abstract The Ministry of Health (MOH) of Israel has overall responsibility for the healthcare system. In recent years the MOH has developed strong capabilities in the areas of technology assessment and prioritization of new technologies. Israel completed the transition to computerized medical records a decade ago in most care settings; however, the processes in Israel was spontaneous, without government control and standards settings, therefore large variations among systems and among organizations were created. Currently, the main challenge is to convert the information scattered in different systems, to organized, visible information and to make it available to various levels in health management. The MOH's solution is of implementing a selected information system from a specific vendor, at all the hospitals and all HMO's clinics, in order to achieve interoperability. The system will enable access to the patient's medical record history from any location.

Keywords. Ehealth, ICT, OFEK

Introduction

Ehealth is the use of information and communication technologies (ICT) for health. It is recognized as one of the most rapidly growing areas in health today. (1) There are 27 general hospitals in Israel: 11 Governmental, 7 of Klalit HMO (the largest HMO in Israel), and 9 private hospitals. MOH is the regulator of the health system in Israel but also the owner of hospitals (11 general, 9 psychiatric and 4 geriatric), most mother & child preventive health centers – a unique service called "Tipat Halav Clinics", and supplier of health services. Tipat Halav health clinics and school student's health services are a universal public health service supplied to the entire population in Israel, which deals with prevention, detection and early identification of children with developmental delays and for routine childhood vaccination.

There is a global need for enterprise electronic health record system (3). In 1998, the World Health Organization (4), in its document entitled “Health-for-all policy in the twenty-first century,” confirmed its commitment to advocate the appropriate use of health technologies within the general health for all policy and strategy. In recent years, computerized information systems have become one of the significant mechanisms in supporting and advancing quality health services. (2)

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There are many vendors and applications of EHR's in Israel, but there is no unified standard system used across the board connecting all centers and all providers. In 2012, Israel's hospitals, healthcare delivery organizations and the MOH started a cohesive effort to implement a platform for Health Information Exchange (HIE) that connects hospitals, community and other healthcare settings. (3)

1. Challenges on the way to achieve the goal of a unified system:

Sharing medical information among the parties involved in Israel's health care is inevitable; the challenge is to create relevant, meaningful and effective information flow. All community care records in Israel are computerized in a separate system for each HMO, so there is a need for standardization and interoperability. Communication among different technologies and software applications for the efficient, accurate, use of data is imperative. (5)

The flow of information among hospitals and community care requires integration between hospital systems and existing community medical records. The challenges are multi-faceted, and include technological, budgetary, organizations' culture, and medical records ethics.

2. The goals that the MOH hope to achieve include:

Achieving complete and seamless health information exchange
   • Implementing data standardization
   • Improving quality through information systems
   • Building a national platform for quality assurance based on information systems. (6)

Awareness:
The strengths of the Health Information Technology (IT) in Israel are:
   • Good Electronic Medical Records (EMR) coverage: ambulatory and inpatient.
   • Organizations move forward with local initiatives. Not all of clinical work is computerized – good coverage is expected at the end of 2014. (7)

The weaknesses of the health IT in Israel, until lately –
   • No MOH regulations at all.
   • Heterogeneous EMR systems in HMO.
   • No common standards for medical terminology, (diagnosis, procedures) drugs, lab tests etc. (7)

Primary care standards: currently based mainly on ICD – 9 – CM -the international classification of diseases, ninth revision, clinical modification (ICD-9-CM) is based on the world health organization's ninth Revision, international classification of diseases (ICD-9) (8).

Partly on Current Procedural Terminology (CPT®)—the most widely accepted medical nomenclature used to report medical procedures and services under public and private health insurance programs. (9).
The MOH plans to move to SNOMED Clinical Terms (SNOMED CT) which is the most comprehensive, multilingual clinical healthcare terminology in the world, and ICD-10 – CM (10), as the basis for DRGs.

Furthermore, the MOH plans to create national drugs and lab test catalogues, promote improvement of the use of data – BI - present integrative data analysis that can be interrogated. As for Tipat Halav health clinics: Construction of technologically advanced work environment, consistent and centrally supported information security requirements and compartmentalization.

The MOH plans to address those challenges by:
The Israeli MOH will lead the "computerized health records" and use of information and communication technologies to improve health care quality and efficiency and promoting the health of all residents of the State of Israel.

- ICT in Israel will be comprehensive, high-quality, secured and user friendly.
- Information transfer process among different health systems, including MOH, will be based on international standards for Ehealth information transfer (E.g., SNOMED-CT).

This approach has the potential to affect the quality and effectiveness of health care significantly. Protection of patient privacy and autonomy is an integral part of the project.

The project is not only technical but also a perceptual change in the way the health providers offer medical health services to the public. Following are few examples:

- Improve and optimize the quality of medical care by providing rapid access to medical information across the continuum of the patient medical care such as Clinical Decision Support Systems (11).
- Facilitate better monitoring, measurement and evaluation of health care of public health and clinical research.
- Create systems that allow patients to have a view of clinical data, or access to, and manage their health information and organize their health care on line, enabling them to watch and / or download the computerized medical information on file. (11)
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- Schedule medical appointments online,
- Prescription renewal online,
- Engage in secure messaging for online communication between patients and health professionals about clinical issues.
- Share information of various treatment frameworks that would include the activities of range of health professionals, not only physicians, such as physical therapy, dieticians, social workers and others.
- The system may be extended in the future to include telehealth technologies to deliver patient care by synchronous – video and asynchronous (store and forward) consultation and remote monitoring - telemonitoring, for transferring information on vital signs or clinical indicators to monitor a patient's condition.

![Figure 1. Continuum of Care](image)

A complete enterprise EHR will cover the continuum of care — emergency, ICUs, operating theater, behavioral health, labor and delivery units, home care and long-term care facilities. (3)

3. Solution in progress

3.1. Unified view for patient's data

During 2005 Klalit HMO launched an innovative Health in-formation exchange project for hospital-community on-line medical records called OFEK (a dB Motion software product). The system identifies data used for patient care only, entering the system through the local EMR. Sensitive data elements are not transferred to the system. Data transfer include: demographic, health services, drugs, allergies, laboratories and radiology test results and discharge summary file. The system is used by Klalit HMO Hospitals and Klalit HMO community clinics care.
In the year 2011 MOH decided to adopt and use OFEK as a national HIE platform in Israel. Since then many MOH hospitals joined OFEK, and by February 2014 all general and private hospitals and HMOs in Israel are expected to be connected to OFEK, and to be able to communicate and share information of the patients.

A new project was started last year by the MOH for Tipat Halav health clinics and School student's health services to unify dispersed EHRs into one system. A single technological environment for Tipat Halav clinics/ School student's health services s that serves 3000 users was established. It was created to improve and streamlining the work of all those vaccines services provided from birth to adolescent, and to improve the communication between the currently scattered electronics vaccine records and MOH headquarters. (12)

The strategy is to enable access from Tipat Halav health clinics and School student's health services. There will be inter-faces between the system and other public health systems, including student health, enabling the analysis of trends, metrics, and drawing conclusions. Protection of patient privacy and autonomy is an integral part of the project. (13)

A new system was developed, which aggregates information on vaccines for the entire Israeli population. The system will serve as the base for a more comprehensive study of diseases. The system will allow the MOH to create a personalized "vaccine record" for each Israeli citizen, regardless of where they have received their vaccine. (12)

The next steps will include: supporting appointments scheduling, implement application interface's births reporting system and child health system,. The implementation will be according to guaranteed roadmap: risk hedging and the ability to tailor the strategy and the following actions based on organization, technology or market changes.

**Figure 2.** The OFEK data viewer in hospitals

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4. Israel’s health system and OECD

In 2010, Israel joined the OECD, the Organization for Economic Cooperation and Development. As a member of the organization, Israel is required to report various measures in the health care system.

Israel’s MOH actively joined the evaluation (ICT’s) project of the OECD. Furthermore, the MOH volunteered to be a pilot state for an OECD survey that will examine the implementation of ICT’s in the health system in Israel.

The department of information and computer management at MOH is preparing the internal survey in line with the OECD questionnaire. The survey includes hospitals and community care. The MOH intends to expand the OECD proposed questionnaire to include questions measuring the degree of implementation of relevant MOH procedures that attempt to bring all distributed clinical data to the physician at the point of care.

OECD defines EHR as follows: an electronic health record refers to the longitudinal electronic record of an individual patient that contains or virtually links records together from multiple Electronic Medical Records (EMRs) which can then be shared across health care settings (interoperable). It aims to contain a history of contact with the health care system for individual patients from multiple organizations that deliver care. (14)

5. Expectations of outcomes

"Health computerized teaching" (E-health) has significantly evolved throughout the world, with an emphasis on the use of information and communication technologies (ICT) for promoting health care quality and efficiency.

The State of Israel is blessed with medical organizations who understand their place in the center of medical information systems and invested in developing them - and are widely used in medical information systems.

The infrastructure is important in clinical care health organizations, so the next essential step is a computerized management information transfers between the entities and with the Ministry of Health.

The solution layout:

- Using enterprise data warehouse in each of any health organizations, based on the semantics foundation (translating medical coding) and indicators developed within the technological infrastructure to convey information.
- Comparing the local information to the national CPI (final figure for each level and parameter index, without access to the national information gross).
- Using national data warehouse unidentified includes all information sent to the Ministry of Health from health organizations as a unified infrastructure based on semantics (translating medical coding) and indicators developed within the technological infrastructure to convey information.
6. Investigate information that includes additional characteristics

Ministry of Health interested in additional cross sections interrogation information, to obtain insight into engaged issues such as inequality and gaps between the peripheries to the center.

National interrogation infrastructure, will enable the integration of information, from external sources (environmental geographic region) comprising an indication of the location of socio-economic status of a given address, allowing crop the data according to socio-demographic.

7. Conclusion

Ehealth aims to help ensure the sustainable development of the health systems. Adoption of the Ehealth strategy is envisioned as a means of improving health services access and quality, access to information based on scientific evidence, and ongoing training. Israel's MOH is prioritizing the implementation of a comprehensive unified Ehealth system that takes into consideration the OECD's definition for EHR. The Ehealth system will enable interoperability of the patient medical record among all health care providers in Israel.

The suggested strategy has a high potential to improve the quality and efficiency of healthcare services in Israel. That history of commitment to using electronic information management is now being applied to include clinical information in primary care, long-term care and community-based care. In addition, this clinical information must be integrated in the program-level and overall decision making processes of healthcare administrators and policy makers.

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