



Israel's Health IT Industry

Excerpts from Milken Institute¹ paper, January 2010, written by Prof. Yitzhak Peterburg, M.D., Dr.P.H., M.Sc. Senior Visiting Fellow, Milken Institute Former CEO, Clalit Health Services Former President and CEO, Cellcom.

A word from the author: " ...As the CEO of Clalit Health Services, the world's second-largest HMO, I have spent decades leading the implementation of health IT across large institutions and bureaucracies. When I think about Israeli health IT innovation and knowhow—among our national resources, really—I **know they are transferable to any other country in the world and can provide models and offer solutions to different IT challenges and health systems.** The Milken Institute has allowed me the opportunity to undertake an examination of Israel's health IT landscape and the potential for its sector firms to collaborate with U.S. firms and participate in work entailed in the American Recovery and Reinvestment Act".

¹The Milken Institute is an independent economic think tank whose mission is to improve the lives and economic conditions of diverse populations in the United States and around the world by helping business and public policy leaders identify and implement innovative ideas for creating broad-based prosperity. We put research to work with the goal of revitalizing regions and finding new ways to generate capital for people with original ideas.



Israel—first in the world to introduce health IT information exchange systems and with virtually 100 percent of its primary-care doctors using electronic health records.

Few people know that Israel is one of the global pioneers in health information technology, a digital revolution that began in the mid-1990s. Israel's HMOs—notably Clalit Health Services and Maccabi, which today serve about 80 percent of the Israeli population—led this revolution, which resulted in the implementation of electronic medical records used by virtually 100 percent of the country's population,¹ the vast use of laboratory and imaging information systems, computerized physician order entries,² and e-prescribing.

Clalit Health Services was the world's first HMO to implement a health information exchange (HIE), enabling the creation of patient files that could include data and information input from various treatment sources, such as clinics and hospitals. This has allowed for unprecedented connectivity and mobility for the 60 percent of the Israeli population currently in its system. Virtual records have eliminated inefficiencies caused by medical records previously scattered among different service providers, and they have helped promote a continuum of care, improve the quality of care, and reduce costs significantly.

Israel was also one of the first countries to use telemedicine, and to introduce electronic clinical decision support systems and online indicators for medical and service quality. The understanding that health IT requires more than just software and hardware, but involves organizational and cultural change, was essential to the successful implementation of these complex systems and generated unique knowledge on how to manage the change.

Key figures:

- Israel's health expenditure in 2007 constituted 7.7 percent of its GDP and \$2,048 per capita.
- Life expectancy at birth and infant mortality rates are indicators of the quality of health care in a country. Rates for both are better in Israel than in the United States. In 2007, Israel's life expectancy at birth for males and females stood at 79 and 82, respectively. Israel measured better for infant mortality, as well, with 3.8 deaths per 1,000 births, compared to the U.S. total of 6.7.
- Today, virtually all of Israel's primary-care physicians use electronic health records, while only 28 percent of those in the United States do.
- The usage of e-prescribing in Israel is 95% compared to 20% in the United States.



Brief Overview of Israel's Health IT:

In Israel, there is a 100 percent usage of ambulatory EMR, with approximately 70 percent coverage of health information exchange. Despite a high degree of computerization, there is still a low penetration of a full HER system in hospitals; it is estimated at about 20 percent. Primary-care physicians' usage of e-prescribing and computerized physician order entry systems are each estimated at 95 percent, and there is extensive usage of service and medical quality indicators.

Israel's health IT is "an evolving, innovative, state-of-the-art implementation of medical data exchange," according to *The Israeli Virtual National Health Record: A Robust National Health Information Infrastructure Based on a Firm Foundation of Trust* (IOS Press, 2005). The exchange is based on "the unique concept of 'virtual temporary sharing,' in which a connection of multiple caregivers and medical organizations creates a patient-centric virtual repository of information. Data are not kept centrally; instead, all information remains in its original format, location, system, and ownership. On-demand, relevant information from anywhere in the system is instantly integrated and delivered to the point-of-care. This system, successfully covering more than half of Israel's population, is currently evolving from a voluntary private-public partnership to a formal national reality."¹ In short, Israel's technical expertise and innovation are valuable assets that may export well.

¹ Esther Saiag, "The Israeli Virtual National Health Record: A Robust National Health Information Infrastructure Based on a Firm Foundation of Trust" in *Connecting Medical Informatics and Bio-Informatics*, (IOS Press, 2005), Abstract, <http://iospress.metapress.com/content/7u65mnqv8a901r0> (accessed December 7, 2009).



Australia- Israel e-Health collaboration:

As Australia is preparing to introduce e-Health records under the National Health and Hospitals Network, NEHTA can tap on Israel's experience and vast body of knowledge in health IT. Moreover, there is invaluable know-how about implementation processes and management of both the cultural and organizational change that are so crucial for success.

More than 100 Israeli health-IT companies have been identified in this sector. Some companies are directly involved in electronic medical records and health information exchange platforms, and others focusing on diversified fields like cost containment, telemedicine, research, and medical decision support systems.

Cepco Health Management Systems LTD	www.cepco.net	Acquisition, storage and maintenance of large quantities of data on a USB platform - complete personal health record.
Clinicode	www.clinicode.com	Clinical decision support for e-prescribing: drug-drug interaction, drug-allergy contraindication, wrong dosage; easy integration with EHR and CPOE.
Contec Vision	www.contecvision.com	Web based technologies for EHR and Workflow Management solutions.
Commwell	www.commwell.biz	Wide array of medical sensors combined with an all inclusive Electronic Medical Record (EMR) and advanced telecommunication technologies for remote diagnostic and interventional patient care.
dbMotion	www.dbmotion.com	Information integration software that facilitates interoperability and Health Information Exchange (HIE) for health information networks and integrated healthcare delivery systems; serving millions of patients and integrating billions of individual records of clinical information.
eWave	www.ewave.co.il	Electronic health records, electronic diagnostic and monitoring devices, patients' portal and a complete disease management system; PQRI reporting.
iMDsoft	www.imd-soft.com	ICU HER
IntellMedix		Web-based EHRs and PHRs
Medcpu	www.medcpu.com	fight clinical errors and improve delivery of the clinical care by automating the



		clinical practices available in medicine and assuring they are delivered, in real-time, to any patient, anywhere and anytime; automatically extract information from the patient's clinical data source (EHR or any other source) and the ability to analyze this information and process it, in real-time, against the clinical protocols and guidelines available in the world.
Medics File	www.medicsfile.co.il	Online database which enables creating personal medical files, so patients can receive a proper medical treatment or opinion anywhere, anytime.
Roshtov Software Industries	www.roshtov.com	Electronic Medical Records solutions for managed care and healthcare providers in different work environments and medical facilities.
LifeOnKey Inc.	www.lifeonkey.com	Personal Health Management (PHM) platform that allows users to control their health information in a completely secure, safe and integrated way.
AD Medical Computerization	www.doctorwin.co.il	Complete medical management suite maintaining both administration and medical details in one package.
Aerotel Medical Systems	www.aerotel.com	diagnostic systems and devices for the home care, eHealth and Telemedicine markets; complete disease management package, including transtelephonic devices designed for a variety of remote diagnostic, emergency services and monitoring applications; a hardware and software platform; plus phone and web-based software. Aerotel enables patients to conduct tests comfortably while leading normal, mobile lives.
Bircon	www.practiq.net	Customized, full scale EMR solution for the advance medical sub-specialties.
CDP Medical Developments	www.cdpmedical.com	Archive Management Solutions to clinics and hospitals.
Civnet Communication	www.civnet.co.il	integrating medical equipment; sharing international knowledge base; business intelligence for medical field
CMTC (Collaborative Medical Technology Corporation) Inc.	www.cmtcorp.com	collaborative provider to provider expertise sharing platform



Cnoga Medical	www.cnoga.com	Biophysical remote sensing and neural frequency flow perception; contact free monitoring of vital signs and physiological parameters for home and clinical settings.
Cliniworks	www.cliniworks.com	More efficient clinical trials and research platform; also manages post marketing follow-up events.
Exact Cost	www.exactcost.com	accurate cost and performance data through analysis of raw data from existing information systems
First Life Research	www.workliferesearch.org	Real world effects of medications and medical procedures, in real time, by transforming patient-generated textual content into medical insight.
Haldor Advanced Technologies	www.haldor-tech.com	RFID-based solutions for the healthcare industry; mobile asset management, surgical equipment and consumables tracking, infant security and patient flow.
HomeFree Systems	www.homefreesys.com	telehomecare monitoring solutions; small body-borne device worn by the patient, enables continuous, wireless, transfer of individual data to local monitoring stations and/or remote monitoring centers.
Magic Software	www.magicsoftware.com	effective application platform and business integration solutions for clients throughout the healthcare industry including HMOs, PPOs, hospitals, medical centers, clinics, skilled nursing facilities, health information providers, senior health care providers, dental centers.
MDG Medical	www.mdgmedical.com	Reduces human error in medication distribution and improves both the efficiency of medical staff and the management of hospital pharmaceutical supplies.
Medic4all	www.medic4all.com	Complete integrated telemedicine services solutions, which include constant monitoring of patients at home, emergency response systems, call centers operated by healthcare professionals, medical data processing and storage accessible from anywhere in the world.
Mediviz	www.mediviz.net	Decision support solution for the



		perioperative environment (OR, ICU, ED) environments.
MediTouch	www.meditouch.co.il	Mobile health application for consumers, athletes, the elderly and professionals.
OncoPro	www.dsit.co.il	integrates patient data with medical knowledge bases, and enables the simplified management of daily ward functions, as well as the creation of complex protocols; simplified, comprehensive management of Protocol Planning, Implementation, Analysis, and Assessment - in Guidelines-based Pediatric & Adult Cancer Care.
PeriGen Inc.	www.ecmed.com/	real-time, knowledge-based best practice software systems featuring an intelligent patient record and associated consulting services that, together, reduce risk and improve the quality of care along the obstetrics continuum: prenatal, labor and delivery, and postpartum.
Paradigma Systems	www.paradigmacare.com	management of Long Term Care facilities (nursing homes); 85% Israeli market share; tools for improving the quality of health care provided to residents.
RxDrugOn	www.xdrugon.com	medication safety card - empowering pharmacy consumers to take an active role in their healthcare by offering them greater safety, control and choice when using prescription and non-prescription medication and food supplements; reducing DDI (Drug-Drug Interaction), ADE (Adverse Drug Events) and feeding back medication usage statistics to pharmaceutical developers to aid in the development of new drugs.
Second Opinion	www.second-opinion.com	telemedicine applications and services; provides subscribers with access to long distance consultation for expert medical diagnosis
SHL	www.shl-telemedicine.com	Personal telemedicine systems as well as medical call center services to subscribers; reduce emergency care response time for sufferers of potentially fatal cardiac episodes.
Shina Systems	www.shina-sys.com	A platform that allows clinicians, healthcare providers and patients to view meaningful medical images to the point of



		care at any location and for any purpose-from diagnostic image interpretation to viewing images on a personal health record.
Vaica	www.vaicamedical.com	Improve the management of self administered medications at home and in the assisted living environment, significantly reducing non compliance as well as reducing medication errors.

Assuta Medical Centers Ltd. is Israel's largest private provider of medical services. Facilities around the country serve approximately 800,000 patients each year. In recent years, a computerization revolution has taken place at Assuta in all aspects of applications and infrastructures. Now, having implemented this big project, Assuta is a center of broad, deep and unique expertise in all the fields of information systems in the healthcare environment. Based on the accumulated expertise, the Assuta IT team is now involved in consultation and in execution of projects for various healthcare organizations in Israel and overseas. The specialty fields of the Assuta IT team include, among others:

- Setting up the computer systems at the new/renovated hospital; converting the old systems to new systems.
- Clinical and administrative applications at the medical center – EPR, ERP, PACS-RIS, CRM and many others.
- Unification and joint operation of various hospitals operating under a single organizational (and physical) network.
- Solutions for sharing clinical information at a national level, among hospitals and HMOs (which are not organizationally connected) in such a way as to enable the attending staff to obtain any relevant information about the patient that is required for the treatment, even if it originates at another hospital, at the community clinic, etc.
- Reciprocal relations for the flow of information between the hospital and the HMOs using its services, in a way that enables the physician referring the patient for treatment at the hospital to obtain information about the results of the treatment – summary of illness, surgical report, imaging test report, etc.
- Reciprocal relations for the flow of information between the hospital and its customers.
- National projects for the promotion of selected health issues – telemedicine for management of chronic diseases, early detection of breast cancer, establishment of social networks for chronic patients, and more.
- Collaborations with providers of solutions in these fields.