

The Development of eHealth in Hong Kong in the past 20 years

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Abstract

Although Hong Kong started quite late in joining the global rapid development of Health Information Technology (HIT) in hospital and clinic settings, we are now having the largest Electronic Record database in the world. At present, more than 90 percent of our local hospital service and 55 percent of our total local healthcare transactions are now stored electronically. HIT started to flourish in Northern Europe and America since the seventies and has become a major national emphasis to have a national electronic health record system for all citizens in all major countries. The use of ICT in healthcare settings was sparse locally before 1991 and only limited to administrative or financial uses in private hospitals. After the establishment of the Hospital Authority in 1991, we witnessed a major change in the implementation of HIT in all HA hospitals. After fifteen years of development, the Clinical Management System CMS of the HA has become one of the best in class of the world. In this paper, we shall examine the various stages of development of eHealth in Hong Kong and compare it with the rest of the world in different aspects in terms of hospital services, clinics, consumer health, eLearning etc. Critical success factors will be examined and analyzed.

I. Introduction

The aim of Information and Communication Technologies (ICT) for Health (also known as eHealth) is to improve the quality, access and efficacy of healthcare. ICT for Health describes the application of information and communication technologies across the whole range of functions that affect the health sector. eHealth encompasses much of medical informatics but tends to prioritize the delivery of clinical information, care and services rather than the functions of technologies. No single consensus, all-encompassing definition of eHealth exists – the term tends to be defined in terms of a series of characteristics specified at varying levels of detail and generality.

As aging of the population and rising medical costs put more pressure on health and social care systems, improving the efficiency in the e-Health sector becomes increasingly important. Hong Kong started quite late in joining the global rapid development of Health Information Technology (HIT) in hospital and clinic settings. Before 1990, very few public hospitals or clinics uses computer at all. However, after the establishment of the Hospital Authority in 1991, we witnessed a tremendous change in the implementation of HIT in all HA hospitals and clinics within the last 15 years. By now, we have having the largest electronic record database in the world containing 8 million patients' records. At present, more than 90 cent of our local hospital service and 55 service of our total local healthcare transactions (public and private together) are now stored electronically.

II. Computerized Patient Records Systems

The HA's Clinical Management System (CMS)

Starting in 1991 HA developed its basic information technology infrastructure and financial, human resources, patient administrative systems. In 1994, the HA began developing the CMS, an integrated clinical workstation giving clinicians access to all available electronic clinical information as well as providing direct entry of orders and care or patient documentation. A centralized, in-house approach with a continuous partnership between clinicians, informaticians and information technologists have led to a highly utilized, cost-effective, inter-operable system throughout HA.

III. The electronic Patient Record on-line (ePR)

The web-based Electronic Patient Record (ePR) was developed from 2000 using a unified information model to provide a standardized repository of all the clinical data collected throughout the HA. The ePR provides a clinician-friendly view into the comprehensive longitudinal lifelong record, a data source for clinical decision support, and a rich resource for audit, research and reporting. The ePR is comprehensive in scope, and includes details of episodes and visits, diagnoses, procedures, discharge summaries, allergies and alerts, all medications, laboratory and radiology results, nursing and allied health information, documents

and letters and specialist clinical data. In recent years radiological images have also been available throughout the HA as part of the ePR, and as detailed later patients can now also elect to share their ePR record with clinicians outside the HA.

The CMS and ePR are integrated across all settings – inpatient, outpatient and emergency, and have also been the platform for development of all subsequent clinical modules, including modules for different clinical specialties, the allied health disciplines and nursing. By the turn of the century, the CMS had already been rolled out to all HA sites, and today the CMS and ePR are an essential clinical and management tool, handling over two million clinical transactions per day. The ePR contains the records for over 8 million patients in a repository of over 6TB (not including radiology images) and receives 400,000 views per day.

It is the key for future Health Care. Important healthcare transactions are stored and systematically analyzed in a computer system and made accessible to doctors for decision support. In the 41 public hospitals and 120 public clinics in Hong Kong nowadays, doctors can immediately accessed his/her patient's past records in any other hospitals and clinics run by the Hospital Authority. It adds tremendous speed and accuracy in the treatment of the patients. Up to 15% of the private sector can also enjoy this benefits now by using the Public-Private Interface: electronic patient records system, where the GP can view the patients HA records via the web upon proper authentications and consents.

IV. Success Factors

The successful implementation of the current CMS and ePR systems is well recognized by world experts and one of the best in class in the world in the aspects of Project Scope and Implementation. Fundamental principles underpinning the development in the last 15 years in the HA IT development include a significant involvement of the end users, particularly the clinicians in the design, development, governance and implementation of various project modules. It is by far the most utilized computerized medical record systems by doctors in the world. The unique identifier system using our unique HK Identity card numbers, a

central approach, home-built system and an incremental approach instead of a “big-bang approach” are all believed to be crucial to the success.

V. eHealth Initiatives

The Hong Kong Society of Medical Informatics was founded in 1986 by a group of medical practitioners with keen interests in computing. It later evolves into a professional association incorporating most IT professionals working in the field of health informatics in Hong Kong. Annual conference in medical informatics were held and numerous conjoint projects were accomplished with the academic sectors and medical professionals. The HKSMI is an active member in the International Association of Medical Informatics and Asia Pacific Association for Medical Informatics.

The ehealth Consortium was established in 2006 with the conjoint founding efforts from the Hong Kong Society of Medical Informatics, the Internet Professionals Association, the Hospital Authority, Department of Health and the Office of the Government Chief Information Officer. Together with more than 50 other academic and professional associations, it forms a consortium to spearhead the future development of ehealth in Hong Kong.

VI. Way Forward

In recent years several government papers and reports have highlighted the need to ensure that patients’ records can flow free with the patient’s consent between different settings of care in the public and private sectors. To take forward these recommendations the Food and Health Bureau has established Steering Committee on eHealth Record Sharing comprising members from both private and public healthcare sectors. The main purpose of the Steering Committee is to provide steer, build consensus and gather expertise for the development of a territory-wide information infrastructure to enable sharing of health records of individuals within the health care system.

Six guiding principles have been proposed for the development of the eHR sharing infrastructure: a) compelling but not compulsory record

sharing, b) community corporation institutional structure, c) self-sustaining business operation model, d) privacy and security of paramount importance, e) open technical standards, f) building block approach.

Three working groups have been established to tackle the key issues. These three groups are: 1) Working Group on Institutional arrangements, 2) Working Group on Legal, Privacy and Security Issues and 3) the Working Group on eHealth Record and Information Standards.

VII. Conclusion

Although Hong Kong started late, the Hospital Authority has successfully developed an ePR covering over 90% citizens and more than 55 of total health transactions. Clinical users have nearly 100% acceptance of the system which is built with limited resource. Moreover, higher quality and safer medical care are provided to Hong Kong citizens with the development of ePR.