

Editorial

History of computerisation of emergency department in Hong Kong (Part II)

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The development of Accident and Emergency Information System (AEIS) version 2.0

In 1995, AEIS version 2.0 was developed in window platform using the Graphic User Interface (GUI) and thus the system was more user-friendly. Medical Record scanning with Optical Mark Reader (OMR) technology were also incorporated. After patients are discharged from A&E, clinical notes are scanned and saved in the computer. The average scanning time per A3 size record is about 5 seconds. Moreover, clinical staff can mark the circle in A&E clinical notes and OMR technology could transform this data into a database for statistical purpose. The contact and discharge time of each patient would also be captured into the system by means of the bar-code scanner. Therefore, the real time information like number of patients waiting for consultation, average waiting time, admission rate and so on can be retrieved from the computer terminal. Web technology is also applied in AEIS version 2.0. The real time information of 14 A&E departments can be retrieved simultaneously. A good example is the current average waiting time of 14 A&E departments in a single screen and the development of the Disaster Module in A&E Intranet.

Clinical Management System-Accident and Emergency (CMS-AE) development

The demand and expectations from the public has increased tremendously in the past few years. Hospitals set up information systems not only for administration and management function, but also for individual patient care. In alignment with the corporate goals of Hospital Authority on the policy of seamless health care and community partnership, Clinical Management System-Accident and Emergency (CMS-AE) was developed. CMS-AE was planned to share the same platform with Clinical Management System of the other specialties. Client-server system was adopted and Health Level 7 was used as the electronic data interchange protocol. Therefore, CMS-AE not only read the captured A&E core clinical information, but also the discharge summary, diagnosis and the medication of other specialties. The Radiology Result Reporting (RRR), the Laboratory Result Reporting (LRR), and Electro-cardiogram Management System were also integrated in the CMS-AE. Upon discharge of the patient, the A&E doctors would capture A&E diagnosis in ICD9cm format (International Classification of Disease version 9 with clinical modification), patient alert, discharge medications and discharge information.

The discharge medications were also captured upon discharge of patient. The CMS-AE was linked to the standard A&E Drug Database of the hospital and therefore only available drugs could be prescribed. Telephone call from pharmacy about the unavailability of certain drugs and peculiar prescriptions would be minimised. As this order would be transmitted to the pharmacy electronically, all medications would be prepared before the arrival of the patients and thus decrease the queuing time.

Discharge summary is given to each A&E patient upon discharge from A&E. This discharge summary would include the patient's demographic data, diagnosis, discharge medications and the discharge information. Moreover, discharge advice will be incorporated into the discharge summary according to the diagnosis entered. This piece of information not only address the patient's right to know about his/her own disease, but also provide information for the continuity of care to the patient if they were subsequently followed up by their family doctors.

On 1st of December 1997, the first CMS-AE was successfully implemented in the A&E department of Alice Ho Miu Ling Nethersole Hospital (AHNH). AHNH is a 600 bed acute general hospital with a daily A&E attendance of about 400. The impact of CMS-AE to the department were analysed. The workload of A&E department of AHNH is comparable to a middle size public hospital in Hong Kong. Performance indicators like waiting time (time between patient registration in the A&E and the time of consultation by doctor), data capture rate and medication errors were included. Before the implementation of CMS-AE, the average waiting time of the department was about 14 minutes in November 1997. In the first month after implementation the average waiting time increased to 20 minutes. In the subsequent months the average waiting time return to normal bearing in mind that the monthly attendance had increased from 4486 in January 1998 to 5769 in March 1998.

Conclusion

In 1980s, the focus for hospital computerisation was on management issue. In 1990s, there was a general trend towards the development of clinical applications - Computerised Patient Record (cPR) was started. Patients' medical information were scanned into computer. However, this method was not effective and efficient in the retrieval and updating of patients' information. Later, Electronic Medical Record (eMR) was advocated. A good example was the development of Clinical Management System (CMS-AE) in Hospital Authority. It captures the essential core clinical data like diagnosis coding, discharge medications, discharge summary upon discharge of patients from hospital. Moreover, information like laboratory results, diagnostic radiology results, electrocardiograms are also available in CMS-AE. Moving into the new Millennium, the expectation from the public and our professional will be even higher. The main emphasis will focus on the development of Electronic Patient Record (ePR). Fragmented clinical data will no longer be accepted. This system will enable integration and interfacing of clinical data from various sources (clinical data repository) to build longitudinal patient clinical records in chronological order. Information technology will certainly bring doctors and patients closer in this Millennium.