Chapter 5.13
The Electronic Health Record to Support Women's Health

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ABSTRACT

The seamless electronic health record is often hailed as the holy grail of health informatics. What is an electronic health record? This question is answered and consideration is given to the advantages and disadvantages of an electronic health record. The place of the electronic health record at the centre of a clinical information system is discussed. In expanding on the advantages several areas are covered including: analysis of data, accessibility and availability, and access control. Middleware technology and its place are discussed. Requirements for implementing a system and some of the issues that can arise in the field of women's health are elucidated. Finally, in this exciting and fast moving field, future research is discussed.

INTRODUCTION

Electronic health records (EHR) also known as Computerised Medical Records (CMR) and many other variations, have been an active area of research for more than 30 years. Many aspects of women's health lend themselves to computerised records, but the overarching aim of a computerised, holistic and appropriately accessible electronic record is still to be realised. A definition of the

EHR from PubMed is "Computer-based systems for input, storage, display, retrieval, and printing of information contained in a patient's medical record." It is important to note that the existence of an EHR does not exclude the continuing existence of paper-based systems and that the EHR is just a part of a clinical information system. It is also common that information about individuals is held by multiple systems.

This chapter will give a brief history of the use of EHR, an introduction to what EHR systems are for, what they do, and how they can assist clinical care, research and administration. A review of the particular role EHR's hold in women's health and some speculation on future trends complete the chapter

HISTORY

Computers have developed with a speed that has surprised even those working in the industry. The well known "Moore's law" postulates a doubling of computer performance every year to 18 months (Schaller & Schaller, 1997). The medical profession have traditionally shunned computers in their practice as a just another time-wasting device, however in recent years computers have shown themselves to be useful and time-saving (Horwood & Richards, 1988). One of the most striking features of the development of EHR, has been the widespread adoption of administration, billing and laboratory systems ahead of the clinical record.

In 1968 the first attempt to use computers in obstetrics was initiated by Thatcher in Australia (Thatcher, 1968). A pilot system was introduced in Australia at the Royal Hospital for Women, Sydney in 1968. In 1971 a pilot study was set up at St Thomas's Hospital in London (South & Rhodes, 1971) and in Victoria Australia(Cope, Greenwell, & Mather, 1971) whilst in America, the Duke University Medical Centre also went on line in their obstetric department in 1971. All these systems were based around a mainframe computer,

which were cumbersome and slow. These were the first 'microcomputers' which were within reach of smaller companies in terms of price.

In these early systems information was entered after the event (a retrospective system) by trained computer staff. The medical and midwifery staff had no role in data entry. It is well recognised data entered in this fashion is less accurate than data entered by a user (e.g. midwife) prospectively (at the time of the event).

As new faster microprocessors were developed, along with improved software and user interfaces, user based systems could be developed (Chard, 1987; Horwood & Richards, 1988; Lilford & Chard, 1981). The advent of the personal computer in the early 1980's made computers more accessible, smaller and cheaper (Shipton, 1979). The possibility of having computers in clinical areas began to be raised. Interest in computers in Obstetrics increased again. During the 1980's many hospitals developed systems, although most of these were retrospective in their method of data collection. One of the first hospitals to develop a prospective data collection system was King's College Hospital in London (Horwood & Richards, 1988). This system, EuroKing, relied on staff using a barcode reader and code book to take a booking history. This group found that with this system, the time to take a full booking history fell from one hour to ten minutes.

Systems in Current Use

Obstetrics lends itself to data collection. Each pregnancy is discrete with a final outcome. The options for most variables are limited. Most obstetric patients are well with no confounding illnesses. Over the last twenty years there has been a revolution in patient attitude and with it doctors have been called to account for their actions. This has resulted in all disciplines of medicine being required to keep records of the service they are offering. Audit has become an integral part of our training and clinical practice. Obstetrics as

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