Chapter 1.28
Electronic Oral Health Records in Practice and Research

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ABSTRACT

Electronic Oral Health Records (EOHRs) contains all personal health information belonging to an individual and is entered and accessed electronically by healthcare providers over the person's lifetime. This chapter presents a systematic review about EOHRs, describes the current status of availability of EOHR systems, benefits and barriers for implementation and EOHR usage in clinical, public health and research settings to pave the way for their rapid deployment. The chapter draws the scenario of how a fully integrated EOHR system would work and discuss the requirements for computer resources, connectivity issues, data security, legal framework within which a fully integrated EOHR may be accessed for real time data retrieval in service of good patient care practices. This chapter also describes the need for defining required criteria to establish research and routine clinical EOHR and how their differences may impact utilization and research opportunities to establish practice-based research networks.

INTRODUCTION

In 2003, Sittig, Kirshner and Maupomé (Sittig et al.2003) described an informatics-oriented, future-patient care scenario and identified key functions, applications, or technologies in the field of dental informatics. The scenario envisioned a completely paper-less series of interaction between a patient, his/her dentist, and several specialists starting from her initial presentation to completion of a series of procedures and scheduling periodic recall leading to an "ideal" treatment experience. It would be naive to think that such a system will not happen – its fundamentals are already in place. Such a system

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does not require technological marvels, but only needs proper integration of technologies that are in existence for some time. Central to this variety of tasks and sub-tasks in the oral health care system is the patient's health record.

Traditionally, patient information ranging from clinical history to research results has been stored in hard copy format all around the world. Such a storage system demands ever increasing space and is prone to easy destruction requiring great security systems for its physical existence and control of privacy of the information. Such a system also poses difficulty in duplication of data when needed, availability of real-time updated patient information over space and time, and poses even greater difficulty in organizing and aggregating the data for analyses. With the advent of computerized information processing and ever increasing cheap computer disk space and memory, it has become imperative to use this easily available resource to organize health records of patients in an easily retrievable manner in digitized format called electronic health records (EHRs).

EHRs digitize the contained information becoming a database that allows easy access to the information from individual EHRs, or in an aggregated manner. Development of electronic records for oral health requires substantial departures from standard EHRs because several specialty-specific nuances need to be incorporated to appropriately address the needs and maximize the benefits for patients, researchers, practitioners and academicians. Although EHRs have come into existence in routine medical care facilities, their adoption has been slow for a variety of reasons. Similarly, although development and incorporation of electronic oral health records (EOHRs) in day to day clinical practice has been anticipated, forecast and urged for long (Green 1996, Greenwood 1997, Miller 1995, Rada 1995, Schleyer 1995, Schleyer et al. 2001, 2003, Snyder 1995, Walther 1998), their adoption has been still slower. To respond proactively to the digital transformation of oral health care, dentists must become familiar with technologies and concepts (Umar 2002a, 2002b). They must learn what new information technology can do for them and their patients and then develop creative applications that promote the profession and their approaches to care (Bauer & Brown 2001).

WHAT IS EOHR?

Terminology of EHRs have undergone several changes and currently several terms are still used to represent EHRs. Terms such as: automated medical record (AMR), clinical data repository (CDR), computerized medical record (CMR), computerized patient record (CPR), computer-based patient record system (CPRS), electronic health record (EHR), electronic medical record (EMR), electronic patient record (EPR), lifetime data repository (LDR), virtual health record (VHR), virtual patient record (VPR) are some of the terms that have used interchangeably for EHRs. In dentistry, these systems have been variously referred to as: "electronic dental records", "dental electronic records", "electronic dental patient records", "electronic patient record system", "computer-based patient record", and "dental EHR". However, the term EOHR is more comprehensive compared to and is frequently being used universally – therefore, we resolved to use this term.

In general, EOHR is an electronic repository of patients oral health related information in form of a database at the back-end. Therefore EOHR contains a wide array of information (Heid et al.2002) including:

- Patient demographics
- Practitioner characterization
- Immunizations
- Health history
- Health conditions/ problems
- Examinations and findings