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Electronic Medical Record Implementation Challenges for the National Health System in Greece

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ABSTRACT

The purpose of this work is to expose challenges related to the implementation of quality electronic medical record (EMR) systems in public hospitals in Greece, a country where the national health system (NHS) has already acquired electronic medical records (EMRs). The level of EMR implementation, together with organizational maturity at a hospital level, are explored. What is discovered is that there are different adoption levels, not recorded in a systematic manner. The majority of physicians are either reluctant to implement EMRs or do not know options available to them. Implications include not continuous flow of events, cut off of critical information, lower quality of health services, patients not empowered to carry with them clinically significant information, unnecessary repetition of medical procedures and higher costs. It is concluded that focus should be paid on enabling the use of quality, interoperable and secure EMRs to better support medical decision, in an effort to improve the health of the population and to better control costs.

KEYWORDS

Electronic Health Record, Electronic Medical Record, EMR Adoption Model, Greece, Hospital Information Systems, Interoperability, Patient Safety

INTRODUCTION

Hospitals are complex institutions, devoted to the provision of patient treatment. They have specialized administrative, medical and nursing staff, as well as medical equipment. A hospital information system (HIS) encompasses the set of information technology (IT) applications used to manage hospital operations concerned with the administrative and clinical aspects of providing medical services within its boundaries. Subsequently, clinical and medical patient care activities are considered to be at the core of any HIS.

The EMR is defined as the electronic patient record created by providers for specific encounters in hospitals and ambulatory environments (Habib 2010; Kierkegaard, 2011). In contrast, the electronic health record (EHR) is a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting (Health Information and Management Systems Society, 2011). Unlike the EMR and the EHR, the personal health record (PHR) refers to a representation of health records related to the care of the patient that is managed by the patient (Tang et al., 2006).

With the growth of mobile computing, the number of records regarding personal health is increasing exponentially. That leads to the need for an integrated method of storing health-related data which could be used by health care providers and patients (Roehrs et al., 2017). Connecting to

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the EMR requires shifting from paper, establishing interfaces to link islands of information based on certain workflows, and semantically homogenising the produced information. It is not difficult for any health professional to see the direct benefits of using EHR and having both administrative and clinical data that are accessible, comparable, communicable, and confidential (Iakovidis, 1998). Streamlining patient information flow and its accessibility to other healthcare providers through national, regional and/ or patient controlled services has the potential to improve care quality and patient safety over time.

Today, comparable and high-quality administrative and clinical data form the basis for effective and efficient management of public and clinical health. All current national initiatives focus on how to control costs and improve services. That is why electronic prescription (ePrescription – the ability to send readable and error-free prescriptions electronically from the healthcare provider to the pharmacy) and electronic reimbursement (eReimbursement – the ability to submit and follow-up electronically on claims with health insurance organizations) services seem to be of high priority together with electronic identification initiatives. Development of national infrastructures to support cross-border services is high on the agenda (World Health Organization and International Telecommunication Union, 2012; European Commission, 2012) and a move towards connecting the patient's team of healthcare providers to facilitate informed decision making.

Healthcare in Greece is provided by the NHS, or ESY (Greek: Εθνικό Σύστημα Υγείας, ΕΣΥ). It consists of a universal health care system provided through national health insurance, and private health care. In 2000, the Greek government, in accordance with the European Union (EU) recommendations, procured an operational program for implementing the information society strategy for Greece in a coherent and integrated way (Katehakis et al., 2011). The program aimed to provide IT support for regional health authorities and the public health organizations they supervise, to achieve better management of human resources, performance, containment of total cost, and continuous improvement of processes. Foreseen benefits included an upgraded quality of services to citizens through business process re-engineering and reduction of medical errors, secure exchange of medical information, and efficient access to the EHR.

That resulted in the introduction of modern IT systems for the vast majority of hospitals in the country. Incidentally, the conclusion of this effort coincided with the beginning of the economic crisis in the country, which subsequently led to an increasing number of admissions to public healthcare facilities, and deterioration of self-rated health (Kastanioti et al., 2013; Simou et al., 2014). The intention of the paper is not to discuss the challenges of the Greek healthcare system but rather challenges related to EMR implementation within the Greek NHS. An in-depth description of the NHS in Greece is beyond the scope of this work.

In the section that follows the methods used for conducting this work are described, EMR characteristics are outlined, the digitization status in the NHS of Greece is presented, EMR adoption at a hospital level is explored together with key factors contributing to EMR adoption. In the results section, EMR implementation challenges in Greece are described, followed by some discussion and conclusions in the corresponding sections.

METHODS

In order to conduct this work, a literature review was performed on established work, and information was retrieved from available published material and websites. Emphasis was paid on examining available source in regards to clarifying EMR characteristics, documenting EMR implementation status in Greece, reviewing work related to EMR adoption levels, and examining factors affecting EMR and EHR adoption.

In the following subsections, EMR characteristics are clarified, and the distinction between the concepts of EMR, EHR, and PHR is further explained. EMR implementation status in Greece, relevant legislation, and plans for the future are presented. Reference is made to the extent that medical files are

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