Chapter 13

Knowledge Management Infrastructure for the Success of Electronic Health Records

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ABSTRACT

Research emphasizes the barriers in adopting and interoperating of electronic health records (EHRs) as an important research gap needs addressed: limited adaptability negatively affects medical decisions. Though practitioners who use EHR must deal with information overload, they continue to complain that EHR is underutilized. No wonder medical errors and healthcare (HC) costs are rising. Also, there is scant literature evidence on how knowledge management (KM) systems are applied for enhancing the adoptability and interoperability of EHR. On the contrary, researchers focus on adapting electronic patient record (EPR) within KM. HC KM is a very important tool to facilitate interoperability and adaptability of EHR. Its advantages have been proven in other areas. This chapter proposes a solution - a conceptual HC KM infrastructure for EHR interoperability and adaptability. This solution reduces EHR adaptability barriers by improving interoperability and enhancing user interaction using KM tools within an e-health environment.
1. INTRODUCTION

Currently, each of the multiple hospital departments has its own systems. Each system has its own electronic patient record (EPR). EPR is a patient’s record local to a healthcare (HC) institution, only for a specific period of time (Jalal-Karim & Balachandran 2008). However, EHR is a lifelong system composed of multiple EPRs. Various developing countries (i.e. U.S.A., UK, Australia, New Zealand and Canada) are moving strong towards implementing EHR, while other South-eastern European countries are looking up to these developed countries (A Research Center of the University of Sheffield and CITY Liberal Studies, 2005). Studies have shown that attempt to adapt EHR actually slows normal procedures, due to immature data entry procedures. No solution utilizes modern advancing information and communication technology (ICT) input/output (I/O) systems using human computer interaction (HCI) (Saigh, Triala & Nathan, n.d.; Healthcare Computing, 2004). Automotive EHR functionalities get enhanced with improving ICT (A Research Center of the University of Sheffield and CITY Liberal Studies 2005).

A clinical system is a prerequisite for developing EHR to allow hospital inter-operate. However, there are alarming barriers in EHR, explained in detail in the next section. The challenge this paper seeks to solve, solves all these barriers summarized as EHR interoperability and lack of user acceptability. This paper proposed a solution to prevalent HC EHR-based barriers to improve EHR adoptability for HC professionals and patients, improve decision making power, reduce errors and establish glue to cements non-communicating systems and standards. This paper studies the applicability of KM in HC as well as other industries in collaboration with e-Health technologies to take advantage of the maturity of the communicating infrastructure and architecture of the Internet based commerce or in this case HC.

2. LITERATURE REVIEW

Reports show that developed countries (USA, UK, Australia, Canada and New Zealand) are focused towards developing national (NEHR) where USA has a theoretical unimplemented plan while Canada is still setting up the network architecture. All these countries intend to take advantage of Internet technology with languages like XML for safe transmission of interoperation data. Standardization is necessary for all these countries to achieve a successful NEHR implementation and data privacy sustenance. The ICT infrastructure is a pre-requisite for NEHR development to facilitate interoperability. Canada intends to deploy a distributed database framework with PKI standard, HCI to improve user-friendly NEHR and a broad bandwidth Internet service. New Zealand looks into knowledge management architecture. UK gives priority to a technical architecture with IT network for reliability and security upon common set of standards towards clinical data transfer within hospitals. Currently architecture lacks the ability to start NEHR but promises to utilize EHR. US report a need for common standards to support interoperability so to connect technology like teleHealth, web services and security technology health information exchange (A Research Center of the University of Sheffield and CITY Liberal Studies 2005).