ABSTRACT

Homecare is an important component of the continuum of care as it provides the potential to improve quality of life and quality of healthcare delivery while containing costs. Personal Health Record (PHR) systems are intended to reach patients outside of care settings and influence their behaviors thus allowing for more effective homecare services. To this end, these systems need to evolve well beyond providing a consolidated patient record, in ways that make it more widely applicable and valuable to health systems. The development of applications on top of PHR systems can allow them to function as a platform for both patients and healthcare professionals to exchange information and interact with the health system. This paper presents a prototype PHR-based system that aims at supporting chronic disease management at any point of care or decision making through familiar environments such as Google's Android. In particular, it assists healthcare professionals in assessing an individual's condition and in forming the appropriate treatment plan for him/her while it provides individuals with step-to-step guidance to their treatment plans.

Keywords: Chronic Disease Management, Decision Making, Health System, Healthcare Professionals, Homecare, Personal Health Record (PHR), Quality of Life

INTRODUCTION

In recent years, the demand for homecare services has increased substantially due to rising healthcare costs and subsequent lower availability of beds in healthcare institutions which result in a movement towards earlier patient discharge (Lang, Edwards & Fleiszer, 2007; Hudon et al., 2012; General Assembly of the United Nations, n.d.; World Health Organization, 2011; Bloom et al., 2011; Ansari, Laditka & Laditka, 2006; Bindman, et al., 1995). Homecare is considered to be a key point for the provision of support to medically fragile children and elderly, individuals with chronic diseases, disabilities or terminal illnesses, enabling them to live independently at their homes (Lang, Edwards & Fleiszer, 2007; Maglaveras, Prentza, Maglaveras, Lekka, Sakka and Leonardidis, 2006; Culler, Parchman & Przybylski, 1998). Homecare services may be requested by the patient himself (or the patient’s family), the
general practitioner or some other specialist and usually require instant availability of patient information which, nowadays, is scattered around disparate and geographically dispersed systems hosted by the healthcare providers where the patient has received medical care in the past. A solution to overcoming physical obstacles to exchanging patient medical record information across healthcare institutions can be provided by utilizing Personal Health Records (PHRs) for storing and retrieving essential patient data (Lee, Delaney & Moorhead, 2007).

Recently, there has been a remarkable upsurge in activity surrounding the adoption of PHR systems (Tang, Ash, Bates, Overhage & Sands, 2006). Unlike traditional EHRs which are based on the ‘fetch and show’ model, PHRs’ architectures are based on the fundamental assumptions that the complete records are held on a central repository and that each patient retains authority over access to any portion of his/her record (Lauer, 2009; Wiljer, Urowitz, Apatu, DeLenardo, Eysenbach, Harth, Pai & Leonard, 2008). PHR data can come from EHRs or directly from the patient – including non-clinical information (e.g. exercise habits, diet, etc). In broad terms, a PHR system can be defined as a set of tools that allow patients to access and coordinate their lifelong health information and make appropriate parts of it available to those who need it. As such, PHR systems are intended to reach patients outside of care settings, influence their behaviors, and satisfy their demand for greater information and access (Alberta Health Services, 2009). Thus, they can have tremendous impact in enabling and encouraging patients to actively participate in their own healthcare (Bagchi, Moreno & af Ursin, 2007). Since Personal Health Records contain a significant amount of sensitive information, security constitutes a major concern when building PHR-based applications (Win, Susilo & Mu, 2006; Lemos, 2001). For privacy and security of individually identifiable health information to be ensured, a number of privacy, safety and security standards and regulations have been specified. These include Health Insurance Portability and Accountability Act (HIPAA) (Health insurance portability and accountability act, 1996; U.S. Congress, 2010), Personal Health Information Protection Act in
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