HEALTECH – HealTech: Healthcare Technology Trends

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Abstract— **Nowadays Biomedical Engineering is a new and interesting area. New technologies person-centred (patients, nurses and physicians) are designed and developed every day. HealTech is a good forum to present and discuss new technology trends in healthcare with a huge impact to the society. This special track is looking for new and innovative solutions in healthcare.**

Keywords-Pervasice; ICD9; Cloud; analytics; interoperability; Electronic Health Record (EHR); telehomecare; chronic disease change management; consumer health.

I. INTRODUCTION

"The health sector represents a tricky situation for the people and systems responsible for the storage and processing of that kind of information. The problem is not in the lack of data but in the diversity and complexity of the health field. A hospital offers a wide range of services for each patient per clinical condition leading to hundreds or even thousands of specific and unique situations." [1]

"The technological developments related to the diminishing of electronic components have been enormous. At the same time, the creation and spread of the Internet, connecting all machines and providing the worldwide sharing of information capacity reinforce the value of computing. Also, the developing new techniques and new technologies, on par with an ever-growing capacity of miniaturisation of the devices and their cost reduction, developed the research capacity in this area.

Huge advances were achieved regarding the portability and storage capability, as well as new arrangements of human-computer interaction and wireless communication technologies, allowing to find computing and communication technologies anywhere and anytime. This situation has allowed and potentiated new interactions between people and their physical environment." [2]

One of the examples is the care of chronic disease. "To meet the growing needs of patients, moving the front desk of healthcare from hospital to home is essential. Recently, cloud computing has been applied to healthcare domain; however, adapting to and using this technology effectively for home-based care." [3]

II. SPECIAL TRACK

This track is addressing three different thematics: Medical Codification Tools, Pervasive Business Intelligence and Healthcare Cloud for Home-based Chronic Disease Care. The works are about Improving Diagnosis-related Groups with a Computerized Clinical Coding Tool for ICD-9-CM Codification, Pervasive Business Intelligence in Intensive Medicine - An Overview of a Clinical Solution and Future Directions of Applying Healthcare Cloud for Home-based Chronic Disease Care

Cecília Coimbra et al. [1] stated that "in recent years, in Centro Hospitalar do Porto (CHP), a major Portuguese hospital at the North of the country, there has been felt an increasing need for a computerized clinical coding tool to aid in the codification of the episodes of hospital discharges from patients admitted to its healthcare units. The process was slow and performed manually by the coding professionals, not having a centralization and unification of the information and processes associated with the clinical coding of a hospital discharge. Thereby, a single-page application (SPA) for ICD-9-CM was designed in order to help health professionals of CHP in their daily work, namely the clinical coding of the episodes of hospital discharges. The main advantages and contributions of the development and use of this Web application are the centralization of information and tasks associated with the coding of hospital discharges, the increase of productivity and the reduction of wastes of time. Consequently, the ambition is sought to mainly improve the quantity and the quality of work performed by coding professionals."

Ana Pereira et al. [2] studied the possibility of having information available anywhere and anytime using Business Intelligence Concepts. Pervasive Business Intelligence (PBI) arises as a new technological field. This solution is focused on a person-centered approach, where the patients and the clinicians are the core. In this paper, the Pervasive Computing area is addressed having in consideration the Pervasive Health Care and the Intensive Care units. At first, the Strengths, Weaknesses, Opportunities and Threats analysis are presented, and then an overview of a PBI solution is described.

The authors of the third work [3] proposed a conceptual hybrid cloud model for chronic disease home-based care, and have evaluated its future feasibility by a case study of

diabetes care in Blekinge, Sweden. In this paper, they discuss some possible future opportunities and challenges to apply this cloud model with the huge population for home-based chronic diseases care. To apply this model in practice, a professional IT healthcare education team is needed for both healthcare providers and healthcare recipients. For home-based healthcare, a monitoring system with an automatic alarm to healthcare providers is also necessary in some cases.

III. CONCLUSION

The development of new tools focus in the patient is welcome to the society. These works presented a new and intuitive way to coding ICD-9-CM Codification, a new solution combining Pervasive Computing and Business Intelligence for intensive care and a Clinical Solution of Applying Healthcare Cloud for Home-based Chronic Disease Care.

These works present innovative solutions in the area of biomedical engineering and represent new approaches of technology trends in health care.

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