Healthcare in Evolution: Needs, Opportunities and Technologies

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***Abstract*— This presentation will provide a range of perspectives so as to offer insight and potential solutions to the critical area of Electronic Medical Systems and how to use that data to benefit quality of healthcare offerings and delivery options.**

I. Healthcare Evolution

The Healthcare system in the United States and worldwide continues to evolve at a rapid pace. The pressures catalyzing this rapid evolution are numerous, including financial issues, population dependencies, disease–burden and the rapid rollout of the electronic health record [1]. Automating electronic medical records (EMR) and the processing of this data is one the fastest areas of growth in healthcare software, spearheaded by the American Recovery and Reinvestment Act of 2009, which included incentives for EMR adoption versus the continued use of paper records. Table 1 demonstrates this meteoric rise.

	2008	***2013***
Meaningful use of EMRs by Doctors	17%	50%
Meaningful use of EMRs by Hospitals	9%	80%

Table 1: Use of EMR by doctors and hospitals

Specifically, the EMR market was estimated to have reached $22.3 billion in 2015.

II. Opportunities

This transition to electronic data collection has created a massive amount of data that now is ripe for analysis to provide better patient care [2]. One target in this area is to build disease-state modeling corresponding to population level data. Other ideas include, but are not limited to, synchronizing pharmaceutical and clinical data, predictive analytics, health code billing, maximizing rebates, etc. All of the above mentioned areas of research could lead to billions of dollars of savings in healthcare costs that can be passed through the system – to all involved, and most notably to patients. The key to the success of making this a reality is the adoption of Big-Data processing technologies [3].

III. Technologies

In this Invited Session Presentation, we will address the stresses and burdens facing healthcare with a vision to resolution using Big-Data strategies. We will specifically address the issues and challenges of using Big-Data technologies in solving the opportunities discussed above [4]. We will also address the integration of new monitoring and embedded computing interfaces with the EMR to accelerate this revolution.

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