CI-based Health Information Technology

SUMMARY

It has been realized that the application of cyberinfrastructure (CI)-based information technology in healthcare can improve the services if not reduce the costs. The health reform bill that has been signed into law by President Obama on March 23rd 2010 requires using Electronic Health Record (EHR) for clinical management of all patients by 2014. In collaboration with others both nationally and internationally, we are involved in developing tools and technologies for healthcare management. We have developed a web based EHR system, termed ***CHOIS*** for Childhood Obesity Informatics System, which specifically addresses obesity, a major concern in US. To address this issue, President Obama has recently established a task force on childhood obesity (White house, Office of the Press Secretary, February 09, 2010). An ideal EHR should be able to integrate a variety of data types and data formats, common to medical field, ranging from text (e.g., demographic data), graphics (e.g., X-Ray) to video (e.g., Colonoscopy), for generating reports crossing the "translational barriers" and visualization through its web interface. The access to the data and the report needs to be secured at multiple levels following HIPAA and FERPA regulations in addition to the usual protections imposed on medical data. Moreover, an EHR needs to be able to interchange data from other existing EHRs, which would be possible if developed based on standards, such as, HL7. Presently, lack of standards used for building the previous generation of EHRs causing multiple entries of the same data to various EHRs for various purposes, such as, clinical management, reporting, insurance claims, etc. Lack of interoperability between these EHRs is severely limiting the usefulness of any of these EHRs. We are developing CHOIS based on these standards following the standardized nomenclatures for building a semantic interoperability platform that serves to exchange information. However, data standardization and data interchange remains a challenge due to various reasons including policy. A national information exchange policy should be in place to adopt accepted standards and make interoperability possible. In addition, medical devices should be able to send the test results wirelessly to an EHR. Recently, the Institute of Electrical and Electronics Engineers (IEEE) has published a set of standards addressing the interoperability of medical devices. Medical devices manufactured based on these standards should be able to send the test results directly to an EHR using Bluetooth and other wireless technologies. We are also working on mobile technology to use Smartphone & Tablet in the field for Point-of-Care by the partnering organizations. In future, it will be possible to send the vital and other physiological data from a medical device directly to this CHOIS system. This on-going developmental project also involves identifying appropriate software tools for integration in this portal for data analysis and generating reports. In addition, relevant education/training materials are also developed for the users of these tools and technologies.

RELEVANT PUBLICATIONS

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For DEMO, visit: http://nucri.org/mychois.