CHOIS: Enabling grid technologies for obesity surveillance and control

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Abstract. CHOIS, the Child Health and Obesity Informatics System, is developed using open source portal technology with three-tiered Open Grid Services Architecture, an accepted standard for accessing Grid Computing and other services under Open Grid Collaborating Environments (OGCE). Its web application provides web based forms with 112 different fields to enter data ranging from demographic, height & weight for BMI, to genomic information. Automatic computation of BMI, BMI percentile and the risk of obesity alert are embedded into this system. After successful testing of the prototype, CHOIS is now ready to be used by the Illinois Department of Human Services School Health program (DHS) for obesity surveillance. This HIPAA & FERPA compliant secure system, integrating large databases in a high performance grid computing environment, enables school-nurse to collect data on school children and report statistical and surveillance information on BMI to identify those at-risk and obese for obesity prevention and intervention programs.

Keywords. Obesity, Body Mass Index (BMI), Portal technology, OGCE, wellness program, grid technology, mobile technology

Introduction

Obesity is from the Latin word *obesitas*, which means "stout, fat, or plump". In simple term, it can be defined as the excessive accumulation of fat in certain parts of the body to the extent that it may have an adverse affect on health, leading to reduced life expectancy. This metabolic disorder is often associated with an increased risk for developing a variety of serious health related conditions including social and emotional problems [1, 2]. Recent study has shown that the maternal obesity may even cause a serious congenital heart defect to the new-born baby [3]. The imbalance of energy intake and energy expenditure in the body is the underlying cause of obesity [4 and the references therein]. A 2006 review identified ten possible contributors to the recent increase of obesity [6]. It is the result of interplay between genetic and environmental
InSORS (now IOCOM) are available to us for video conference. These will be seamlessly embedded into this system for the clinicians, researchers and other users to communicate in a real-time.

**Conclusion**

Automatic computation of BMI, BMI percentile and the risk of obesity alert embedded into CHOIS have made this system very useful for the school-nurse and healthcare service providers in Illinois to collect data on children and report statistical and surveillance information on BMI with more than 99% accuracy to identify those at risk and obese students. Its web API has made it possible for SHCs uploading the data from Clinical Fusion™ directly into the system and, thus reduced the workload and data redundancy. Moreover, this system can be used for surveillance of other chronic diseases including Asthma.

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