Position Paper – Interactive Visual Exploration of Electronic Health Records

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I am a clinical endocrinologist on faculty at Johns Hopkins University with a joint appointment in the Department of Medicine and the Division of Health Sciences Informatics. My research efforts to date have focused on the development of graphic schemes for the organization and display of clinical information used to make treatment decisions at the point of care. As an extension of my clinical work, I have developed a graphic scheme for the display of insulin prescription and blood glucose information targeted to facilitate the management of patient with diabetes treated with multiple daily injection regimens. I conducted a formal simulation evaluation that demonstrated the extent to which use of this scheme favorably impacted the accuracy and efficiency of real-time decision making. I have presented the results of this work at research conferences, and published a manuscript outlining the essential features of the scheme and the result of the simulation evaluation in Diabetes Technology and Therapeutics.[1] I have since implemented this scheme as the central feature of the presentation layer of a rich internet application that allows providers to view profiles of aggregate blood glucose reading to adjust multiple daily injection regimens over time.

My recent work has focused on the development of a rich internet application that can be used to generate anatomic abstraction diagrams to guide the evaluation and management of patients presenting with thyroid neoplasia. I have developed a fully functioning prototype of this application that I am currently using to track the status of patients who have undergone thyroid ultrasounds, fine needle aspiration biopsies of thyroid nodules and lymph nodes, and surgery for the treatment of thyroid cancer. If it proves to be scalable, this application may serve as a portal for the collection of a large volume of data that could be mined to divine prognostic information about the diagnosis and treatment of different types of thyroid cancer.

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[1] Kim MI. An integrated graphic scheme for the display of insulin prescription and blood glucose information. Diabetes Technol Ther 2006;8(4):505-12.