Introduction to Minitrack: Technologies for Clinical Decision-Making, Interventions, and Wellness

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Abstract

The objective of this minitrack is to address the challenges facing mobile and Internet-based health-related applications and devices that are geared toward facilitating and improving clinical decision-making and enhancing wellness. These goals address the promise of mobile health to direct healthcare professionals and consumers toward proven methods that will increase the likelihood of positive outcomes. The papers in this minitrack explore innovative approaches that include analytic strategies to improve care efficiency, an ingestible device to monitor treatment adherence, a scale for assessing attachment to mobile devices, and vital-sign monitoring.

1. Introduction

Although technology-based health applications and devices are evolving quickly, barriers such as patient adherence remain. In short, even after a technology has reached a point of utility, human factors can present barriers to implementation.

This minitrack addresses the human aspect of this challenge with research papers presenting novel solutions to the human challenge in mobile design. The following presentations comprise the minitrack:

• “How Does Business Analytics and Business Intelligence Contribute to Improve Care Efficiency?” by Hoda Moghimi, Stephen Vaughan, Steven McConchie, and Nilmimi Wickramasinghe, Deakin University, Victoria, Australia. They report that the growth in volume, variety, and velocity of data provides a climate in which business analytics techniques, and tools can improve the analysis of multi-spectral healthcare data for optimal patient outcomes. This exploratory study outlines applying business analytics techniques to oncology in a large, private hospital in Melbourne, Australia.
• “Ingestible Biosensors for Real-Time Medical Adherence Monitoring: MyTMed,” by Peter Chai, University of Massachusetts Medical School, United States; Rochelle Rosen, The Miriam Hospital, Rhode Island, United States; and Edward Boyer, University of Massachusetts Medical School, addresses medication nonadherence with an ingestible device called My/Treatment/Medication (MyTMed). The device obtains direct measures of medication adherence or nonadherence with a “digital pill” that contains a radio-frequency emitter that activates on contact with gastric pH. A relay hub captures the radio-frequency signal and transmits it to a cloud based server that connects patient and physicians via a bidirectional interface.
• “Development of a Mobile Phone Attachment Scale” presents a new instrument for assessing an individual’s relationship with his or her mobile device, by Beth Bock and Herpreet Thind, Brown Medical School, Rhode Island, United States; Joseph Fava and Kristen Walaska, The Miriam Hospital, Rhode Island, United States; Nancy Barnett, Brown School of Public Health, Rhode Island, United States; Rochelle Rosen, The Miriam Hospital; Regina Traficante, Community College of Rhode Island, United States; and Ryan Lantini, The Miriam Hospital. Rather than assuming that high technology use is an indication of pathology, this more balanced approach takes advantage of technology attachment to enhance mobile interventions.
• “Mobile Health Monitoring: A case analysis of an app in a Diabetes and Hypertension Clinic” by Aniruddha Banerjee, Binghamton University, New York, United States; R. A. Ramanujan, Diabetic Care Associates, Binghamton; and Saligrama Agnihothri, Binghamton University, compares home or ambulatory vital sign blood pressure monitoring with routine clinical cuff measurements in the clinic. The presentation summarizes the app design and usage and results of implementation by 1,500 patients at a diabetes and hypertension clinic.