

mHealth: The Wireless Future of Cardiovascular Medicine

A transdisciplinary Perspective



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Program Synopsis

mHealth: The Wireless Future of Cardiovascular Medicine

Moderated by Vivek Shetty (UCLA), the mini-symposium will articulate a P5 Medicine vision (Precision, Predictive, Preventive, Personalized, and Participatory) that can increase patient participation, reduce healthcare burden, and improve health via prediction and prevention. Mobile health is critical to realizing this vision. Applying big data analytics to continuous sensor data collected in the natural environment will allow early detection of vulnerable states and timely interventions to prevent adverse health events (e.g., heart failure) through preemptive action (e.g., adjusting medication to remove excess lung fluid, avoiding high sodium diet). Using the backdrop of a large academic health system, the speakers will illustrate the disruptive potential of mHealth via two specific examples for congestive heart failure management – point-of-care diagnostics (John McDevitt) and EasySense non-invasive contactless sensors for tracking fluid accumulation in the lungs (Santosh Kumar).

The symposium will conclude with a guided discussion (speakers and attendees) about a general framework for applying the mHealth technologies to other health conditions and leveraging UCLA's institutional strengths and functional academic units (e.g., UCLA Health System, CTSI, Medical School, Bioengineering, Electrical Engineering, Computer Science) to realize the P5 Medicine vision.

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Date

Thursday March 2013 (1-3 pm)

Location

Neuroscience Research Building (NRB) Auditorium - 132 NRB

Host

Department of Bioengineering

Symposium Themes

- Background – Needs and Opportunities
 - Cardiac health – top cause for readmission and a leading cause of mortality
 - Lack of efficacious early warning systems mean little time to act and high cost to treat
 - Existing solutions such as implantables (e.g., CardioMEMS) only applicable to a small fraction of the most needy patients; most others still dependent on the health system
 - Mobile health (mHealth) has a potential to bring revolutionary new capabilities – can provide early warning, help with rehabilitation, and prevent the recurrence via behavior modification
- Mobile Health for early warning, diagnosis, and treatment out of hospital
 - New sensors such as EasySense can monitor fluid accumulation non-invasively
 - Other markers such as changes in cardiac output, respiration pattern, resting heart rate variability, mobility patterns, etc. can help bolster confidence in early warnings
 - Integration with EHR can provide instant notification to care providers and provide data for timely diagnosis
- Mobile Health for preventing recurrence
 - Can monitor adherence to medication and lifestyle regimen, excessive sodium intake, and activity patterns
 - Provide these data for cardiac researchers to identify risk factors
 - Real-time monitoring of these risk factors can be used to intervene and promote healthy behaviors
- Making it all work
 - Confluence of computing, engineering, and health providers
 - Research needed to realize the potential of mobile health in all the above disciplines
 - Translating mobile health research into practice not as expensive as traditional health technology
 - UCLA health system can be the ground for early trials to evaluate the technology as they mature
 - Students involved in the project can directly lead or contribute to productization and commercialization of proven technology
 - Need an umbrella structure that facilitates identification of opportunities, assembling the expertise, and executing the pipeline of “research -> evaluation -> productization -> commercialization”
- Establishing a UCLA Advantage
 - Being home to outstanding computing, engineering, and health research talent combined with nation’s leading hospital system provides an ideal combination to lead the nation in revolutionizing health system via mHealth.