

# Innovations in Informatics

UC DAVIS Health Informatics Program 3<sup>rd</sup> Annual Conference

Saturday - March 7, 2009

## Course Descriptions

### Keynote Presentation: Innovations in Health Informatics for the U.S. Army

Col. Ronald K. Poropatich, M.D., F.A.C.P., F.C.C.P.

U.S. Army Health Informatics addresses the needs of deployed soldiers as well as the U.S.-based beneficiary population. Topics include the use of cell phones in diabetes and traumatic brain injury clinical care, web-based tele-surgical mentoring from a U.S. hospital in Iraq, bioinformatics, and the role of the semantic web in clinical informatics. Integration of these systems into the Department of Defense remains an important challenge and migration strategies for this implementation will also be discussed.

### Olfactory Testing: Breath Analysis as a Tool for the Future

Cristina Davis, Ph.D.

Several thousand chemical compounds have been detected in human breath and appear to relate to health and disease status. Breath analysis provides a wide range of opportunities for diagnosis of pathophysiological conditions in a non-invasive and potentially inexpensive manner. Three things are preventing breath analysis from being widely adopted in clinical settings: (1) identification of robust chemical biomarkers associated with diseases of interest; (2) miniaturization to produce small, portable and easy-to-use chemical analysis systems; and (3) advanced chemometric algorithms and digital signal processing methods. Dr. Davis' research group is developing multiple approaches to create miniature analytical sensor modules capable of integration into a single portable device for breath diagnostics and is developing data mining approaches to identify breath biomarkers of significance.

### Geographic Information Systems (GIS): Innovative Uses in Emergency Response and Disaster Management

Estella M. Geraghty, M.D., M.S., M.P.H./C.P.H.

A geographic information system is a multidisciplinary software system that is capable of input, storage, analysis, retrieval and visualization of spatial data. In this talk the use of GIS in support of National Preparedness Goals will be discussed. Specific examples will be provided to illustrate how GIS is used to prevent, protect against, respond to and recover from major disaster events.

### Regional Response: Informatics Platforms in Emergency Preparedness

Christian Sandrock, M.D., M.P.H.

Emergency preparedness, on a regional level, requires a coordinated response between a number of disparate partners including private industry, hospitals, public health and emergency response. The movement of patients, resources and critical information across and through these partners requires standardization of information and a standardized platform for communication. This process will provide the transmission of patient information, allow for standardization of patient-tracking and medical records, and create a rapid response for emergency changes in patient care. Discussion includes telemedicine uses in an emergency situation, patient-tracking via RFID, and various national EMR initiatives and trends.

*(Course Descriptions Continued on Reverse)*

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## Virtual Worlds and Health Environments in Second Life

Peter Yellowlees, M.B.B.S., M.D., Larry Hiner, Psy.D., Martin Leamon, M.D., James Cook, M.D., M.S., and Bernadette Daly Swanson

Created and released by Linden Lab in 2003, Second Life has become a well-known 3-D real-time virtual environment and social network that has over a million residents and is rapidly increasing in popularity as a teaching and collaborative research tool. Universities are now offering courses (and entire post-graduate degree programs) exclusively within the Second Life environment. Researchers are finding this environment, without the constraints of the physical world, to enhance collaboration and speed discovery. This multi-media talk will include speakers presenting from the classroom as well as from within the Second Life environment. Speakers will show a variety of successful programs to include teaching, research collaboration, retail and public education environments.

## Breakout Session #1: Center for Virtual Care

Betsy Bencken, M.S.

Just as technology is transforming the practice of medicine and the experiences of patients, it is also changing the way tomorrow's doctors, nurses and other health-care professionals are being trained. At the UC Davis Center for Virtual Care, practitioners have access to an unprecedented array of sophisticated teaching aids from human patient simulators that breathe and respond to treatment like real patients to surgical robots that hold instruments and respond to voice commands. Workshop attendees will participate in two patient care scenarios using the patient simulators - disaster response, and clinical pathways.

## Breakout Session #2: Telemedicine Education Program

Shelley Palumbo, M.S., CCC-SLP, Javeed Siddiqui, M.D., M.P.H.

Telemedicine plays a key role in connecting patients and providers in geographically remote areas to specialists in large urban facilities. In addition to providing access to care this technology is being expanded for use in emergency and disaster response situations. At the Telemedicine Education Program workshop, participants will learn how videoconferencing technologies can be used in disaster response situations for triage, patient care, and provider education. Participants will experience telemedicine by participating in a variety of hands-on, role playing scenarios utilizing videoconferencing and medical peripherals.

## Breakout Session #3: RFID - Patient and Resource Tracking

Stacey Cole, M.B.A.

RFID, or Radio Frequency Identification, has historically been successful in resource-tracking within confined environments. As this technology becomes more sophisticated, RFID technology is being applied to a broader range of applications, such as patient and resource tracking in mass casualty incidents. This fast-paced hands-on workshop will engage participants in a role-playing scenario that will take them from the hypothetical location of a natural disaster, to the triage site, to the emergency department, and eventually to the hospital bed. Throughout this process, participants utilize RFID technology to track the patient through the process, collecting additional critical patient medical information along the way.

## Breakout Session #4: Functional MRI – Imaging Center

John Daniel Ragland, Ph.D.

fMRI is a powerful tool that is providing new insights into how we think, feel and make decisions, as well as how these processes are supported by the brain. This method has broad applications in biomedicine from basic and clinical neuroscience to ethics and decision-making. This workshop will explore various cognitive and affective neuroscience "translational" applications utilized for indexing human brain functions.

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