
Panel
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ABSTRACT
Over the past two decades, HCIS has grown from a conceptual and academic research area to a major growing market segment that spans primary scientific and medical research to point-of-care precision medical treatment. Each year, trade and medical organizations like HIMSS, AMIA, and AHIMA, and clinical organizations in fields like cardiology, laboratory medicine, ophthalmology, pathology and radiology attract hundreds of thousands of attendees to discuss and display innovative HCIS projects and products. What was once a field dominated by the US and Europe is now being matched by similar programs in India, China, and throughout Latin America.

For this panel we have assembled a well-seasoned group of speakers, educators, researchers, and practitioners to advance our collective ability to teach “state of the art” courses in this critically important area.

Keywords (Required)
Healthcare Information Systems, Health Informatics, IoT, Education, pedagogy, and curriculum, Cybersecurity, Big data sciences and analytics

INTRODUCTION
HCIS has grown from a conceptual and academic research area to a major growing market segment that spans primary scientific and medical research to point-of-care precision medical treatment. Twenty years ago, the HCIS field was dominated by business, finance, public health reporting and clinical research needs. Today, healthcare data has increased in several significant dimensions, including A) scale (from molecular to continent/planet-wide); B) point, time, and location of collection (from real-time wearable sensor measurements to clinician and public health state and federal registries); and C) from coarse rules of thumb to precision and personalized clinical care.

The benefits to society are broadly discussed, including significant extension of active and productive living over the past century for many, if not most nations. At the same time, the costs and complexities of medical care have risen substantially, in part because longevity has increased the global challenge of supporting individuals through multiple acute and chronic diseases and disabilities through their entire lifetime.

Many ICT tools and systems are being rapidly adopted and adapted from other industries to healthcare (e.g., automation, logistics management, and fiscal efficiencies from industries like retail, manufacturing, and transportation), including the latest mobile and IoT techniques and technologies. All of these innovations have created a relative bonanza of clinical and operational data regarding health, wellness, and healthcare management and services.
In 2005, renewed interest in Healthcare topics at AMCIS led to a Panel discussion during our Annual Conference about appropriate curriculum for a reawakened, but still nascent, academic HCIS field. In the ensuing dozen years, every continent – and virtually every nation – has spawned hundreds of national and regional Healthcare Information Systems (HCIS) projects and investment of hundreds of billions of dollars around the globe.

In 2005, though, ICT advances like the iPhone, iPad, apps, cloud-based services and software, pervasive mobile broadband telecommunications, and terabyte SSD storage were barely more than concepts! The growth of these interrelated fields has, in turn, has spawned a burgeoning HCIS research and application market. The growth of HCIS has been stimulated by a confluence of many simultaneous factors, including the rapidly expanding fields of science, biomedical engineering, and medicine, the explosion of an aging and expensive global population with multiple chronic diseases, and the ICT industry’s unprecedented diffusion of affordable smart and mobile software and hardware technologies around the planet.

These technologies, systems, and growing repositories of health and environmental data have given rise to the “information age of healthcare,” and related research and application is growing rapidly around the globe. Government and WHO research has, however, identified workforce shortages and deficiencies to fulfill the need and potential in this century of growing and aging global populations and anticipated critical environmental stresses. Indeed, the need and opportunity for HCIS professionals has outstripped capacity from virtually every academic discipline, including medicine, computer science, engineering, and, of course, business.

Over the years, AMCIS attendees, members, and the SIG community have lamented the challenges of developing effective and contemporary curriculum for Healthcare MIS, and ways to meet the demand for professionals to support the underlying research and practice of HCIS. The field is now growing rapidly, and includes diverse information-, clinical-, and technology-oriented topics and sub-specialties like bioinformatics, nursing informatics, home healthcare technologies, telemedicine, privacy and cybersecurity, e-Health, mHealth, patient safety, policy, software and apps as a medical device, and a wide range of legal-, ethical-, patient-, clinical- and managerial-decision support and AI systems.

For this panel we have assembled a well-seasoned cross section of speakers and educators to advance our collective ability to teach “state of the art” courses in this critically important area. This panel of seasoned academics and healthcare industry experts will present and discuss new curriculum concepts and approaches that are designed to meet the rapidly expanding demands and opportunities across a wide spectrum of industries and disciplines.

**Panel Overview**

The objective of this panel is to present and discuss successful HCIS curriculum, identifying critical learning objectives for students from a variety of scientific, engineering, clinical, management, and business information backgrounds. The panel will also discuss methods of course enhancement and experiential learning and engagement, including case- and problem-based learning, applied laboratory learning exercises, and independent research. Innovations including blended classroom strategies will be discussed, including classroom and distance learning strategies, and non-traditional blended classrooms with adult learners from disparate backgrounds, disciplines, and professions.

Participants will be invited to actively share and engage with the panel and each other to expand the knowledge base for AMCIS and the entire community.

**Panel Layout and Flow**

Each panelist will present briefly substantiate their past HCIS curriculum successes and challenges, their current best practices, and their top three objectives future HCIS curriculum innovations needed in the next 3-5 years in order to meet the demand for “eHealth ready” scholars and workforces. Then, the floor will be opened by the moderator for all of the participants to discuss and share their own experiences, needs, and curriculum practices with each other and the panelists.

**Panel Bios**

Doug Fridsma, MD, PhD – President of the American Medical Informatics Association (AMIA) and former leader of the US Office of the National Coordinator of Health IT brings a wealth of experience as a physician, a medical informatics standards manager, and as a government official charged with overseeing the deployment of HCIS systems in physician offices and hospitals.
Vijay Gehlot, PhD – Professor and Graduate Program Chair for the Villanova University Computer Science Department, who has published a number of HCIS studies on application of process and Colored Petri Net simulation and has developed cross-cutting graduate HCIS courses and Certificates for blended cohorts of nursing, engineering, business, and computer science majors.

Robert Hoyt, MD – An unique physician who used his interest and passion for HCIS and Data Sciences to actively published books, book chapters and articles as well as curriculum development for nursing and medical informatics students. He has taught many professionals in these areas, and is actively developing open-source teaching and research patient data repositories and EMRs that apply the latest HL7 FHIR standards.

Angelo Thalassinidis, PhD – A former IT professional and consultant who, upon transitioning to business academic field, saw the opportunity and need to develop and offer classroom, online, and blended courses in HCIS at number of small campus sites located in over a half-dozen states.

Nilmini Wickramasinghe, PhD - An active leader of the AMCIS healthcare group and champion of the healthcare track and SIG in AMCIS for many years. Her simultaneous appointments in Melbourne, Australia has given her unique access to both medical research and education at Epworth Health as well business applications of HCIS at Deakin University.

MODERATOR

Elliot Sloane, PhD is a practitioner, researcher, and educator in the Clinical Engineering and MIS fields. He is the Emeritus Co-Chair of Integrating the Healthcare Enterprise International (IHE) standards organization, and he has over 40 years of experience in healthcare technology management and HCIS, serving hospitals, government agencies around the globe, and manufacturers. His pre-academic experiences as a CIO, CTO, and CRO in the healthcare industry focused on patient safety, healthcare technology management, and privacy and security. That background fuels and informs his passion for research, education, teaching, and practice in the HCIS field.