Towards Developing an Undergraduate Interprofessional Biomedical Informatics Course

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Participants
• Organizer, Moderator, and Panelist: Saif Khairat, PhD, MS, Institute for Health Informatics, University of Minnesota
• Panelist: Martha B Adams, MD, MA, FACP, Duke Center for Health Informatics, Duke University
• Panelist: Glynda Doyle, RN, MSN, British Columbia Institute of Technology
• Panelist: Elaine Ayres, MS, RD, NIH Clinical Center, National Institutes of Health (NIH)
• Panelist: Tiffany Kelley, PhD, MBA, RN, Nexus Consulting

Abstract
Biomedical Informatics training has expanded to include almost all clinical specialties. Whether it is a Masters, PhD, or even the new Sub-Specialty in Clinical Informatics, graduate students and/or returning professionals have various informatics training options. However, Informatics education at the undergraduate level is not as well established. Despite initiatives such as TIGER and the Health Information Technology Scholars Program there is still a need to provide interprofessional education. As Informatics continues to grow and healthcare becomes more complex and data driven, there is a growing need to introduce fundamental concepts to undergraduate students to enhance their knowledge base and stimulate interest in the career of biomedical informatics.

The panelists are leading efforts to develop a Biomedical Informatics course that addresses fundamental concepts and core competency skills. This panel will explore the needs and challenges to build an undergraduate course that includes core competencies for various clinical specialties including medicine, nursing, and allied professions such as nutrition. The proposed course will serve as a foundation for health professionals, which is different from the advanced ONC funded Health IT Workforce Curriculum Components. Panelists specifically aim to further understand the expectations of the AMIA community with regards to developing an interprofessional informatics course. This course will be designed to accommodate undergraduate students. This effort intends to provide fundamental knowledge of Biomedical Informatics to pre-med, allied health, and IT undergraduate students. The aim is to present students with a general overview of the role of Informatics in clinical, research, and operation practices and hence, facilitate determining future career directions.

Learning Objectives
• Better understand the needs for interprofessional undergraduate informatics courses
• Identify core undergraduate informatics competencies (general and specialty specific)
• Learn about on-going and future efforts to integrate informatics in undergraduate education
• Collect feedback on the initial structure of the course
• Identify and invite qualified Informatics professionals to content writing
• Provide a report summarizing audience opinions

Audience
Due to its high relevance, this session will be of interest to all AMIA members.
**Topic controversy**

The controversy of undergraduate informatics lies not in the topic, rather in the presentation, structure, and organization of an undergraduate course. A multidisciplinary field such as Informatics includes multidimensional views and opinions, and the integration of all opinions may be a challenge. Therefore, the debate remains to be identifying the main goals of the course and its core competencies. For that reason, panelists and the audience will discuss what needs to be included in an undergraduate Informatics course, and what is considered advanced knowledge and skills.

**Panelist Presentations**

Saif Khairat, PhD, MS has been involved with Health Informatics since 2006. He is a Clinical Assistant Professor at the Institute for Health Informatics at the University of Minnesota. Dr. Khairat is the Co-Principal Investigator to a federal grant award from the Health Resources and Services Administration (HRSA) entitled “Telehealth Resource Center Grant Program”, at the University of Minnesota. Dr. Khairat earned his PhD in Health Informatics at the Informatics Institute at the University of Missouri with a focus on ICU clinical communication. During his Informatics training, Dr. Khairat worked as a Research Fellow at the Division of Clinical Informatics at Harvard Medical School. He also has track record of computer science training. Prior to pursuing a career in Health Informatics, Dr. Khairat has been involved with the design and development of Health IT systems. Dr. Khairat is lead author to numerous publications and serves as a scientific reviewer to national and international conferences and journals.

Dr. Khairat is the currently the Chair-Elect of the Education Working Group at AMIA, member of the AMIA Working Group Steering Committee, and he has served on Student Working Group committees. Among other goals, Dr. Khairat intends to develop an undergraduate Informatics course within his term period. Dr. Khairat also serves on the Clinical Informatics Board Review Course (CIBER); he participates to the development of exam questions for the Simulated Exam.

Dr. Khairat is the Co-lead of the EHR Task Force at the University of Minnesota. Dr. Khairat developed a set of core competencies that aim at identifying and acquiring electronic health records and informatics systems tools around which a high quality curriculum can be developed to educate and train health professions students and informatics specialist students at all levels within the context of interprofessional education and collaborative practice.

Dr. Khairat will address the importance of undergraduate informatics education; he will provide an overview of current progress of the proposed course. Dr. Khairat will talk about the course structure, the need for highly trained informaticians to participate in content development, and the need for content reviewers. He will pose questions to the audience related to the need for an undergraduate informatics course.

Martha B. Adams, MD, MA, FACP is a member of the Duke Center for Health Informatics. She is an emeritus professor, a clinician in applied informatics (handheld technology, telegenetics, information security, social media), author of an enterprise-wide research data security plan for Duke and co-founder of an antimicrobial stewardship framework deployed at Duke University Hospital and 30 hospitals in the Netherlands; she is recently advisor to projects of continuous learning quality improvement and another in personalized medicine involving genomics and cardiovascular disease. Her leadership and informatics track record position her well in academia as former vice chair for clinical affairs in the Department of Medicine, member of the Curriculum Committee of the School of Medicine at Duke, and the University’s Academic Council and Open Access Advisory Group. She continues membership in the AAMC Group on Information Resources, its Security Working Group.

Dr. Adams will provide insights from her own career and the challenges of implementing informatics education. She will submit provocative questions for the panelists and audience about solutions, all towards stimulating career interest and responding to the goal set by the Institute of Medicine that, “by the year 2020, at least 90% of clinical decisions will be supported by accurate, timely, and up-to-date information that reflects the best available evidence”, a goal that requires more than technology, it requires an interdisciplinary approach of the science and how we use data.

Glynda Doyle, RN, MSN teaches at the British Columbia Institute of Technology (BCIT) in Vancouver, British Columbia. She completed her MSN at the University of British Columbia in 2011 where she first discovered her passion for health informatics. Ms. Doyle is focused on the integration of informatics into the BCIT Bachelor of
Science in Nursing (BSN) and Specialty Nursing curricula. She is particularly interested in the role of mobile technologies and their impact on nursing student’s clinical judgment and decision making.

Ms. Doyle has many years of national and international experience in critical care in South Africa, the United Kingdom and the United States. She has been teaching at BCIT in the BSN program since 2005, and is dedicated to engaging students with stimulating and relevant educational environments. Although fairly new to the Health Informatics arena, Ms. Doyle is passionate about integrating Health Information Technologies and the Science of Informatics into nursing education to help improve patient safety and quality of care.

Ms. Doyle is a co-investigator in several inter-disciplinary research projects within BCIT and also in collaboration with other Canadian nursing schools studying the impact of mobile devices laden with clinical resources, social networks and e-portfolios on nursing students and their education.

Ms. Doyle intends to ensure that there is a strong nursing component to the development of this course and is aware of the extensive work already accomplished in the nursing field. She would like to share this information and knowledge with other professionals and provide support to educators who are not informaticians but who are tasked with the integration of informatics in their programs and courses. She would also like to see this course available not only in its entirety to educators, but also as subsections to support the integration of informatics into undergraduate courses such as Ethics, Professional Practice, Evidence Based Practice and Communication.

Ms. Doyle hopes to gather more information from the audience as to their experiences and knowledge of currently available resources and to hear their suggestions as to how best we can format this course and ensure its relevance to as many undergraduate programs as possible.

Elaine Ayres, MS, RD  is a registered dietitian who through training and practical experience now works in the field of informatics. Ms. Ayres completed her undergraduate training in nutrition at Cornell University, and her master’s in nutrition at the University of Maryland, College Park. She completed her dietetic internship at the Massachusetts General Hospital in Boston, MA. Trained as a research dietitian, Ms. Ayres was asked to manage a food and nutrition computer system at the NIH Clinical Center in 1992. This was in addition to her responsibilities as the Director of the NIH Dietetic Internship, a post-graduate didactic and experiential training program required for registered dietitians. The NIH Dietetic Internship has always ensured that students were well versed in informatics principles and practices as a result.

Ms. Ayres then spent a decade in hospital administration (1998-2008) learning the business and funding of large IT systems, including the current NIH Clinical Center electronic health record (CRIS). While involved in the implementation of CRIS, Ms. Ayres identified the need to involved dietitians in the selection and implementation of health care systems. Working closely with what is now the Academy of Nutrition and Dietetics; Ms Ayres chaired the Nutrition Informatics Committee and the Subcommittee on Interoperability and Standards. She was also the principle on the Delphi Study to develop nutrition informatics competencies. Ms. Ayres is now the Project Manager for the Biomedical Translational Research Information System (BTRIS) at the NIH Clinical Center.

Ms. Ayres will address how undergraduate program content in informatics can be used to enhance the curriculum of nutrition students, and how specific topics and competencies from the nutrition domain will serve to enhance the understanding and engagement of students in other disciplines. Audience suggestions on how to maximize the value of interdisciplinary undergraduate education in informatics will be solicited.

Dr. Tiffany Kelley, PhD, MBA, RN is a Registered Nurse for 11 years, currently; she is a Senior Consultant at Nexus Consulting and the founder of Nightingale Apps, a Health information technology company offering mobile applications to nurses in hospital settings. She earned a PhD in Nursing from Duke University with a focus on Health Informatics and an MBA from Northeastern University. She was the past chair of the Student Working Group and the elected Student Representative to AMIA Board of Directors. She has lead numerous AMIA committees looking to introduce various health profession students to Informatics.

Dr. Kelley will address the vision for an undergraduate informatics course that facilitates pursuing more advanced and specialized informatics training. She will shed light on the challenges novice students face in their post-graduate studies, as well as the challenges of today’s professionals in industry and ways to improve training new informatics workforce. Dr. Kelley will talk about the demand for informatics professionals who may not possess graduate education to serve in various organizational roles.

All panelists agree to participation if the panel is accepted.