Invited Editorial

Celebrating Clinical Informatics as a Specialty Practice

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We are delighted to be the guest editors for the special topic in *Applied Clinical Informatics journal* commemorating the 2019 Clinical Informatics Conference (CIC), a recent addition to the American Medical Informatics Association's (AMIA) line up of national education conferences. Now on its third year, the CIC is directed toward clinical informatics specialists in medicine, nursing, and pharmacy as well as chief medical information officers (CMIO), chief nursing information officers (CNIO), researchers, health information technology (HIT) executives, educators, and quality improvement specialists. Prior to the CIC branding, this conference was known for several years as AMIA iHealth and was focused on implementation, information, innovation, and improvement. The primary focus of the CIC is applied clinical informatics. Applied clinical informatics is defined as "*the science and art of applying and managing data and information technology to improve clinical processes and outcomes in health care and disease prevention for individuals and populations—in short, applied clinical informatics is a vehicle by which data and knowledge are translated and transformed into standards and practice*."[1] The conference emphasizes the development and sharing of informatics tools to improve health care processes, decision support, workflow, quality, safety, clinician efficiency, high reliability, patient engagement, and evidence-based care.

We were honored to chair the 2019 AMIA CIC that took place from April 30 to May 2, 2019 in Atlanta, Georgia, United States, and are pleased to share some highlights and feature some articles from this year's very successful conference.[2] This year's CIC was remarkable in several aspects. There were 600 attendees this year, up 55% from previous year and approximately one-third were first-time attendees. The growing interest in applied clinical informatics was also evident in the attendees from 42 states and 8 countries. Thirteen percent of the attendees identified as executive roles (i.e., Chief Medical Officer, CMIO, CNIO, and chief clinical information officers). Physicians comprised the majority of attendees at 41%. A contributing factor is that the CIC is a convener for the Accreditation Council for Graduate Medical Education (ACGME)-accredited Clinical Informatics Fellowship Program. As of August 2019, there were 33 ACGME-accredited fellowship training programs in the United States.[3] The infusion of these early career physician informaticians has also strengthened the geographic diversity of the conference. In contrast, only 14% of the attendees identified as nurses. This indicator represents an opportunity to engage more nurse informaticians and CNIOs. We propose measures to attract more CMIO/CNIO partners to attend future CIC conferences together.

A major highlight of the 2019 CIC was the highly prestigious keynote speakers. The opening keynote was given by Stephen Klasko, MD, MBA, President of Thomas Jefferson University and CEO of Jefferson Health. Dr. Klasko's talk "*Is There an Avatar in the House: Changing the DNA of Healthcare in the Age of AI*" inspired and entertained the audience with many groundbreaking examples of innovations and best practices that are transforming health and health care. The closing keynote speech was given by John Lumpkin, MD, MPH, President of Blue Cross & Blue Shield of North Carolina. Dr. Lumpkin's passionate and unforgettable presentation, "*The Role of informatics in improving the Health of People and their Communities*," eloquently described the current state of health in the United States compared with other countries and was a stark reminder of our country's cost–quality conundrum. The range of conference topics continue to evolve in parallel with the evolution of the field of clinical informatics with increased emphasis on artificial intelligence (AI)/machine learning, Fast Healthcare Interoperability Resources (FHIR) advanced clinical decision support (CDS), and clinician burden.

Invited papers for this special topic by Korach et al describe the nursing informatics' application in machine learning and inpatient patient portals, respectively. Tom Korach and team's paper "*Unsupervised Machine Learning of Topics Documented by Nurses about Hospitalized Patients Prior to a Rapid-Response Event*"[4] discusses the specific application of machine learning in assessing the risk of deterioration from unstructured nursing documentation. Walker et al's article, "*Facilitating Organizational Change to Accommodate an Inpatient Portal*," explores the challenges to

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acceptance of an inpatient portal and strategies to enhance the change management process.[5]

Two invited papers touched on the adoption of standards, which is a very important topic in clinical informatics. Garcia et al presented "*Sync for Genes: Making Clinical Genomics Available for Precision Medicine at the Point-of-Care*" where her team describes the use of HL7's emerging FHIR standard in genomics.[6] While McClure et al's paper, "*Igniting Harmonized Digital Clinical Quality Measurement through Terminology, CQL, and FHIR*," shared an excellent overview of informatics standards in support of quality improvement.[7]

It would not be an informatics conference without mention of CDS systems. The invited paper by Chaparro et al, "*Reducing Interruptive Alert Burden Using Quality Improvement Methodology*," examines the value of managing CDS and alert fatigue using process improvement methods.[8] Another must-read is McGreevey et al's paper, "*Reducing Alert Burden in Electronic Health Records: State of the Art Recommendations from Four Health Systems*," which describes the risks of alert fatigue that lead to feelings of burnout and presents actionable recommendations from four clinical informatics leaders from diverse health care organizations.[9] Lomotan et al's paper, "*To Share is Human! Advancing Evidence into Practice through a National Repository of Interoperable Clinical Decision Support*," describes how the use of the Agency for Healthcare Research & Quality's CDS-Connect can provide a platform for peer-to-peer sharing of CDS tools.[10]

The United States is among the global leaders in the implementation of electronic health records (EHRs) and HIT[11,12]; however, the U.S. health care system lags behind comparable countries in most health care measures despite spending comparatively more per person. For example, in 2018, while the U.S. spent $10,586 on health care per capita (more than twice of Canada),[13] its life expectancy was 78.54 years, lower than Canada's 82.47 years.[14] This topic was a major theme of Dr. Lumpkin's keynote and a solemn reminder of the need for highly reliable and quality care at lower cost. Despite the challenges in health and health care today, the wide array of topics presented at the 2019 CIC epitomize the state of the art in applied clinical informatics, highlighting practical and promising use of CDS, AI, and machine learning, natural language processing, genomics, precision health, predictive analytics, standards like HL7 FHIR, as well as cloud computing. There was also a consistent theme of the need to decrease EHR documentation burden and to improve the systemness and high reliability of our health care processes in all venues of care. This is such an exciting time for clinical informaticians who are out in the trenches, solving real-word problems and making a significant impact in improving care delivery using the cutting edge informatics tools of the day.

We like to acknowledge the vision of the AMIA Board of Directors for establishing an interprofessional conference focused on applied clinical informatics as well as to the AMIA Staff and CIC Conference Program Committee for their leadership and tireless support that led to a very efficient conference programming and logistics. We were humbled and honored to work with them for almost a year. Lastly, we also want to extend our appreciation to the authors, reviewers, and editors for making this special issue possible.

We hope you enjoy the articles selected to highlight the 2019 AMIA CIC!

Conflict of Interest

None declared.

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