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## THE CHALLENGE FOR NURSING AND HEALTHCARE IN THE DIGITAL AGE

Almost everywhere in the world, we are challenged to provide the best possible care for our patients. As Institute of Medicine (IOM) advises in *Crossing the Quality Chasm*,<sup>1</sup> “The current care systems cannot do the job. Trying harder will not work. Changing systems will.” What we need is a new system that is, as defined by the IOM, “safe, effective, patient-centered, timely, efficient, and equitable.” According to Angela McBride,<sup>2</sup> who spent a year as an IOM Scholar while at the Institute of medicine (now called the National Academy of Medicine) was pursuing its quality agenda. Clearly information technology is more than an “enabler” for nurses: it is a critical component towards transforming nursing practice and education. “There is no aspect of our profession that will be untouched by the informatics revolution in progress”.<sup>2</sup>

It is well known that the most respected profession and most trusted by our population is the nursing profession. In this digital age, nursing is playing a seminal role in bringing to the bedside, with the help of technology, the best possible care for their patients.

In our recent book entitled, *“Nursing Informatics: Where Technology and Caring Meet”*,<sup>3</sup> some of the most knowledgeable nursing Informaticians lent their expertise to address the daunting subjects addressing the following key subjects: Education and faculty development, Staff development, Informatics competencies, Standards, and Interoperability. What has now also taken center stage is the most important subject of, Usability, Clinical application design, Leadership development, and the Consumer/Patient Personal Health Record.

In a highly respected best seller book entitled, *“The Digital Doctor,”* by Robert Wachter,<sup>4</sup> we want to share with you the following statement he makes: “Physicians and nurses are far from perfect but creating a high functioning digital healthcare system is going to require far greater involvement.” Here, Dr. Wachter is referring to the nurse, the pharmacist, the social worker, and the interprofessional support team that, in this digital age, will be tightly aligned towards patient centered, quality care.

In this 21<sup>st</sup> century, we have finally come to realize the importance of a culture of respect for the individual within an organization. We can learned to appreciate a culture where every healthcare provider knows that he or she, who is providing care, has the freedom to speak, as a member of the healthcare team, be it the nurse, the pharmacist, the social worker, and the physician, each feeling free to stand shoulder to shoulder, with each bringing their own special expertise to the table. To have the freedom in such a collegial culture to feel free to bring up an issue not only if they are sure that something is wrong, but also when he or she is sure something is indeed incorrect. This kind of culture, in an interprofessional environment with open communication, collaboration, and respect, is key to providing the best safe care for the patient. This open team work in a safe culture allows us to crack the nut of patient safety using standardized tools, such as Concerned Uncomfortable Safety (CUS) which have been initiated to ensure that communication is fostered and heard across the healthcare team.<sup>5</sup>

In addition to the provider team described above, the patient or indeed the citizen/ consumer, now is also an empowered player, as a member of this team. Providers and the consumers must take the responsibility to be enlightened citizens.

For the rest of this short editorial, we want to share some of the United States key initiatives and recent innovative developments in the use of enabling technologies.

One initiative that has gained prominence is in education called the TIGER initiative. Which stands for Technology Informatics Guiding Education Reform.<sup>6</sup> TIGER has developed an impressive Virtual Learning Environment (VLE)\*, which we hope will be of interest.

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\* <http://www.himss.org/professional-development/tiger-initiative/virtual-learning-environment>

Now to share with you the latest trends and recent developments, and innovations in technology for healthcare.

Looking along the horizon of healthcare, there are many pillars that have marked the journey of improved safety in today's healthcare environment. Landmark reports, in the United States, *To Err is Human*<sup>7</sup> and *Crossing the Quality Chasm*<sup>1</sup> have depicted the safety gaps in American healthcare and the need for an environment of greater safety. Both reports also outlined the need to include health information technology in streamlining care and error reduction in addition to the culture aspect discussed above.

These reports have outlined that well-designed health IT can provide practice-based data and evidence on which to base patient and population-wide clinical decisions for care.

Most recently we are seeing key advances to this end in Artificial intelligence, Machine learning, Block Chain, Cloud technology, Precision medicine, and among other, a welcomed effort towards user friendly interfaces.

Specifically, and in more detail, efforts towards Patient Safety, Quality Improvement and Security.

As health IT has gained prevalence, experience has shown that poor design and implementation and misuse (intentional or otherwise) can create errors and harms. Increasing organizational and clinical dependence on electronic information systems has led to the discovery of vulnerabilities to new types of unforeseen failures.<sup>8</sup> Additionally, healthcare is facing threats to consumer safety system such as wide cyber-attacks and security breaches that require our attention.<sup>9</sup> In 2017, 23.7 % of data breaches occurred in healthcare/ medical industry as per the Identity Theft Resource Center.<sup>10</sup> Data security and subsequent ransomware cannot be underestimated, and the industry must respond to protect data across all data settings.

In closing, we would like to share with you some: New Technologies, New Opportunities, and New Challenges.

The evolution of electronic health records and connectivity has led to increased efforts to realize a vision of a data-driven national learning healthcare system to improve clinical knowledge and practice in areas such as cancer research and cardiovascular health.

New technologies, such as predictive analytics and cognitive computing, are being explored for their potential roles in improving and informing decisions and care for healthcare providers and for patients. Incorporating the use of Artificial intelligence combined with the use of wearables is providing predictive data and promise for those suffering from chronic disease, like heart failure.<sup>11</sup>

Most recently, the emphasis in our field is concentrating on the use of enabling technologies in patient safety, process engineering, change management, human factors, stress management, and clinical point of care initiatives. Patient safety has long focused on easily implemented technologies, like bar coding, in the medication administration process. Bar coding, while inexpensive to implement, is subject to work arounds in the clinical environment. Further emphasis on the care provider and the work process must be evaluated to find improved modalities of care. There are some innovative ideas that are improving the patient experience while providing cost containment. For instance, Lyft™ via Circulation.com, is being used to help transport patients to non-emergent appointments (like dialysis) and back home. Although still generating a cost to the organization or the provider, this service eliminates the costly use of ambulance service when no ambulance is necessary while ensuring that appointments are met.<sup>12</sup>

With the current enabling technologies and more recent analytic tools such as telemedicine, visualization, robotics, and machine learning and other innovations mentioned above that have become available, the field of health informatics can expect exponential growth in the use of technology to transform healthcare for the citizens of the world. One such example is the use of telemedicine. Telemedicine seeks to eliminate distance between patient and provider as evidenced by projects such as: the use of telehealth during Hurricane Harvey in 2017. Thanks to telehealth, 97% of patients took their tuberculosis meds and were compliant during a hazardous storm.<sup>13</sup> Non-compliant patients were contacted and connected to their provider.

There is no doubt the future is bright as more and more enlightened healthcare providers and consumers/patients embrace the new digital world and thereby benefit by getting the best possible care when Caring and Technology meet!

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