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Health digitization & the internet of things: Impact on Next Generation human health & well-being on a global scale

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The last few decades have been marked with rapidly changing demographics, major destabilization of global economies, ongoing environmental disasters and other unpredictable events, such as the Fukushima accident, global climate change impacts, ongoing terrorist activities and warfare. These events emphasize a need for healthcare that is more cost-effective, affordable, timely, and most importantly, able to effectively coordinate efforts among different nations, disciplines and organizations. Traditionally, health service providers and healthcare workers are often regarded as key guardians of the health and well-being of global citizens, yet a need for community-relevant, self-administered healthcare services is now overwhelming, for the insured as well as the "non-insured". In an era of low-costsmart technologies and wireless communication capabilities, many countries will now be looking for a new generation of well-trained and engaged users of these new and innovative e-health technologies. These users will include both healthcare professionals and patients, as well as other end users in varying and unpredictable roles, such as community healthcare workers, family members, military and non-governmental organizations. These users, large in numbers and diverse in roles, will now require a certain level of knowledge and skills when working with these new e-health technologies, so that the possibility of delivering healthcare in an unstable context with large-scale effects. Referred to as e-health informatics competencies, they provide a significant advantage over wasteful, poorly coordinated and expensive conventional medical procedures, and hold the potential for leveling the playing fields in terms of delivering care where and when it may be most critically needed, especially for the underserved. Understanding the e-health informatics competency challenges and trends is therefore a critical step towards identifying the various roles that could or should be played to aid policymakers, vendors, and/or researchers in this age of the Internet of Things. This talk overviews the prevailing e-health informatics competency challenges and megatrends in this new era of healthcare. Starting with contributions of the major reference disciplines to e-health informatics competencies, the talk will survey current developments, provide insights on new opportunities and ongoing challenges arising from use of these newer technologies. Challenges include the need for securing networks and infrastructures for lifestyle changes, automated health monitoring, self-help and more. In contrast to the centuries old traditional practice of conventional medicine, the discussion will offer the audience important directions and insights related to the next phase research, developments and practices of health digitization and care models. Among other things, key challenges include knowledge to translate technology-based competencies into self-care healthy lifestyle changes and practices, self-empowerment and accelerative m-health applications. These challenges include the design of intelligent and appealing interfaces for medical devices, use of emerging m-health & cloud-based strategy, the role of innovation ecosystems for operationalizing the best-of-breed technologies, understanding the influence of social media, and debating on the value of digital alerts, monitoring and patient assisted self-care interventions. While identifying the different e-health informatics competencies, challenges and trends needed by new generations of patients, care providers and healthcare workers, I will also provide critical thoughts and lessons gleaned from a few ongoing studies conducted at McMaster University and elsewhere. For example, we are looking at health informatics competencies for paramedical professionals across all Canadian Provinces, and the influence of informatics competencies on outcomes in nursing. Finally, the talk will conclude with the observation that regardless of how e-health technologies evolve, it will still be limited within the confines of regulatory policies, sustainable paradigm changes, the challenge of interoperability, standards, privacy, security, socio-political, legal and ethical concerns.

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