#eHealth2019: Special issue - Data-driven Health

Finnish Society of Telemedicine and eHealth (FSTeH), the second oldest national member of International Society for Telemedicine and eHealth (ISfTeH), organised the XXIV international ISfTeH conference in collaboration with the Kuopio University Hospital. The conference had separate tracks in English and in Finnish. In the English track both international and national experts shared their knowledge related to following themes: Data-driven Health, Smart Care, Data Driven Precision Medicine, Patient Safety in Practice, Artificial Intelligence and Robotics in Health as well as Visions of Future Health. The Finnish track had following themes: Utilisation of Data Lakes, eEducation & eResearch, Mobile Health Solutions and Innovations. As part of the conference there were even Hackathon and Games for Health sessions which gave an insight to how innovative ideas can be realized for the healthcare field.

During the event many actual topics were discussed in several sessions. The concept of big data is utilized for describing the rapid increase in volume and variety of available information. Data lakes mean shared data environments that consists of multiple repositories and make use of big data technologies. Healthcare systems need different architectural models to make use of data lakes. The data lakes are expected to help in creating a data-driven approach to problem-solving in healthcare. Smart care means that data is intelligently and immediately forwarded from one facility to another depending on where e.g. chronic patient is scheduled to go next. Smart care saves costs and promotes productivity as well as enhances patient's own initiative and self-care. One session dealt with data-driven precision medicine in connection to myeloma and diabetes treatment. In the precision medicine a digital platform is utilized for organizing, synthesizing, and rationalizing a wide spectrum of research and clinical information in ways that change the way we conduct patient care and medical research.

Scientific committee invited article submissions for this special issue based on the abstracts and the presentations. New services empowering citizens are discussed in the article by Jormanainen et al., namely how a patient portal service called My Kanta Pages has been adopted in Finland since 2008. It is part of the Finnish Kanta service system consisting of e.g. Patient data repository and Archiving of old patient data, Client data archive for social welfare services, Prescription service, Pharmaceutical database, and those My Kanta Pages. This entire system represents a relatively rare solution in global comparison, because it is a centralised health information exchange covering the whole country. The Patient portal is an online service where citizens can browse their own information stored in the Prescription centre and the Patient data repository regardless of whether they have used public or private health care services. The study revealed that half of the Finns in general, and two out of three adults had used My Kanta Pages patient portal by the end of year 2018.

Näpänkangas and Tolonen present in their article how digital pathology (DP) is expected to reduce healthcare costs. This is due to improved pathologist productivity with the help of advanced image analysis, shared workload and more accurate subspeciality-based diagnoses. The authors suggest that using a central national archive as a storage for digitized histological slide images could minimize costs of local imaging storages and furthermore support a wide adoption of DP. This central DP repository could serve as an invaluable database for e.g. biobank research.

Obesity and obesity-related morbidities are an enormous public health problem in Finland and world-wide. Väätäinen et al. found in their cost-benefit analysis related to HealthyWeightHub patient service (HWH) that HWH, a virtual coaching and education service, is a more affordable alternative to conventional group couching. HWH can potentially free capacity and enable more efficient use of resources targeted at combating the increasing obesity epidemic. HWH could enable weight management for larger populations than previous methods.

According to current literature, there is no single methodology for performing usability testing for health information technology solutions, however a successful testing can be critical for the e-health application. In their paper Ylilehto et al. describe the recruitment methods used for eTriage Service usability testing and the feasibility of those methods. Two different recruiting methods were discussed: online recruiting with remote testing and supervised on-site testing occasions. To ensure high-quality and safe services, healthcare professionals involved in the e-health appli-

cation development should understand the principles of service usability testing. Service developers often have to choose applicable recruitment and testing methods according to the available resources.

Haverinen et al. studied in their article latest Health technology assessment (HTA) methods for mHealth, artificial intelligence (AI) and robotics. Systematic HTA evaluation of the properties, effects, and impacts of these health technologies is highly needed. The new technologies must provide evidence-based benefits and be safe to use, and their impacts on patients and organizations need to be clarified. The results showed that some good assessment practices already existed, but further development is still needed, especially in the AI and robotics fields. Based on studied information, authors produced a framework called Digi-HTA, first HTA-framework tailored for digital healthcare services.

Constant education and capacity building is essential for the education of future healthcare professionals. Levy at al. describe in their article how national MedDigi project develops and implements digital teaching, learning and assessment solutions and provides possibilities for national harmonization of undergraduate medical and dental education. Special attention is given to the eHealth knowhow of future professionals and to the pedagogical skills of teachers in the digital environment. The most important outcome will be the extensive national collaboration that will be then invested in the development of medical and dental education. The current digitalization effort will offer opportunities to change teaching models and to have more digitally skilled workforce.

Pirkko Kouri, Principal lecturer, Savonia University of Applied Sciences; Secretary of FSTeH; Vice-President of ISfTeH

Jarmo Reponen, Professor, University of Oulu, Vice-president of FSTeH