Suomen Telelääketieteen ja eHealth seura
Finnish Society of Telemedicine and eHealth

eHealth2022 International Conference

**The 27th Finnish National Conference on
Telemedicine and eHealth**

"Digital Health - from Research to Applied Solutions"

28.-30.9.2022

Helsinki - Stockholm - Helsinki

Suomen Telelääketieteen ja eHealth seura

Finnish Society of Telemedicine and eHealth

eHealth2022 International Conference

The 27th Finnish National Conference on
Telemedicine and eHealth

"Digital Health - from Research to Applied Solutions"

28.-30.9.2022

Helsinki - Stockholm - Helsinki

Editors: Arto Holopainen, Liisa Klemola, Pirkko Kouri, Jarmo Reponen

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Foreword

The 27th Finnish National Conference on telemedicine and eHealth
Outi Ahonen, President
Finnish Society of Telemedicine and eHealth

Distinguished invited guests, dear participants in the conference,

It is my great pleasure to warmly welcome all of you to our eHealth2021 and 27th annual conference to Oulu, of which the theme is "Digital Health & Welfare – from Research to Applied Solutions".

Finnish Society of Telemedicine and eHealth (FSTeH) have been promoting the use of information and communication technology in health care since 1995. Our most important activity is to arrange educational events and to participate to the national discussion. Our society also publishes the Journal of eHealth and eWelfare (FinJeHew) together with the Finnish Social and Health Informatics Association (FinnSHIA). Since 2004, we have delivered the annual Finnish eHealth award from the significant accomplishments in the field of telemedicine and eHealth. The required activity can be for example a doctoral thesis in this area or some other important activity in the national or international level supporting the society´s goals.

We are supporting further education and training of health professional in the eHealth sector by coordinating special competence for healthcare information technology to physicians, dentists, and veterinarians together with the Finnish Medical Association, the Finnish Dental Association and the Finnish Veterinary Association. Our conference will contribute 10 hours of theoretical training for Finnish physicians´, dentists´ and veterinarians´ special competence for healthcare information technology.

Our society supports the international visibility of Finnish eHealth expertise by scholarships. Our society is a founding member of Nordic Telehealth Association (NTA) and International Society for Telemedicine and eHealth (ISfTeH). Our society´s secretary Pirkko Kouri holds one of the ISfTeH´s board member seats as ISfTeH´s vice-president.

This year´s conference covers themes from updating the knowledge about International, Nordic eHealth and national digital health trends and solutions. Furthermore, the conference highlights the special features brought by the reform related to novel health and wellbeing service counties. The conference offers unique meeting place and new information to physicians from versatile fields, nursing and different professional groups in welfare and rehabilitation sector interested in the digital health and welfare services. The conference also brings new knowledge to those responsible for the administration, planning and training. Our conference includes a parallel program in English and Finnish tracks as well as joint plenaries. Our conference organizes sessions and exhibitions for researchers and developers.

On behalf of Finnish Society of Telemedicine and eHealth I would like to express my gratitude to all lecturers and scientific abstract presenters for their valuable contributions. Our sincere thanks belong to all our exhibitors. In addition, we thank International Society for Telemedicine and eHealth (ISfTeH) for creating the international atmosphere of the conference. Without all your support, this conference could not be the networking event it is today. Our special thanks belong to our active board members and active fellow organizers to coordinate congress and local visits. Finally, we want to give special thanks to the students and teachers of the universities of applied sciences.

I wish everybody a very successful conference!

Outi Ahonen

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Esipuhe

The 27th Finnish National Conference on telemedicine and eHealth
Outi Ahonen, puheenjohtaja
Suomen telelääketieteen ja e-Health seura ry.

Arvoisat kutsuvieraat, hyvät konferenssipäiviin osallistujat,

Suomen telelääketieteen ja eHealth seuran puolesta minulla on ilo toivottaa teidät tervetulleeksi eHealth2022 konferenssiin ja samalla 27. vuotuiseen kansalliseen konferenssiimme Helsingin ja Tukholman väliselle risteilylle, jonka teemana on "Digital Health & Welfare – from Research to Applied Solutions".

Seura on jo vuodesta 1995 edistänyt tieto- ja viestintätekniikan käyttöä terveydenhuollossa. Tärkein toimintamuotomme on koulutustilaisuuksien järjestäminen ja kansalliseen keskusteluun osallistuminen. Seuramme julkaisee nyt kahdettatoista virallista vuosikertaa Finnish Journal of eHealth and eWelfare (FinJeHeW) -lehdestä yhdessä Sosiaali- ja terveydenhuollon tietojen käsittely-yhdistyksen (STTY) kanssa. Vuodesta 2004 alkaen olemme jakaneet vuosittaisen kansallisen eHealth- tunnustuspalkinnon ansiokkaasta toiminnasta telelääketieteen ja eHealthin alueella kuten alan väitöskirja tai muu merkittävä seuran tavoitteiden mukainen toiminta kansallisella ja kansainvälisellä tasolla.

Tuemme ammatillista jatkokoulutusta vastaamalla osaltamme lääkäreiden, hammaslääkäreiden ja eläinlääkäreiden terveydenhuollon tietotekniikan erityispätevyysohjelmasta yhdessä Suomen lääkäriliiton ja Suomen hammaslääkäriliiton ja Suomen eläinlääkäriliiton kanssa. Konferenssista myönnetään 10 tuntia teoreettista koulutusta lääkäreiden, hammaslääkäreiden ja eläinlääkäreiden terveydenhuollon tietotekniikan erityispätevyyteen. Seuramme tukee stipendein suomalaisen eHealth osaamisen näkymistä kansainvälisesti. Seuramme on perustajajäsen pohjoismaisessa Nordic Telehealth Association (NTA) järjestössä sekä toiseksi vanhin jäsen International Society for Telemedicine and eHealth (ISfTeH) järjestössä. Seuramme sihteeri Pirkko Kouri työskentelee ISfTeH:n johtoryhmässä varapuheenjohtajana.

Vuoden 2022 konferenssissa tuodaan uusinta tietoa kansainvälisestä, pohjoismaisesta sekä kansallisesta digitaalisen sosiaali- ja terveydenhuollon kehityksestä ja ratkaisuista. Lisäksi otetaan huomioon hyvinvointialueiden käynnistymisen tuomat erityispiirteet. Kohtauspaikkana konferenssi tarjoaa tuoretta tietoa niin eri alojen lääkäreille, hoitotyön ja kuntoutuksen eri ammattiryhmille, sosiaalialan toimijoille sekä sosiaali- ja terveydenhuollon digitaalisten palveluiden kehittämisestä kiinnostuneille ammattiryhmille. Konferenssi tuo uutta tietoa sosiaali- ja terveydenhuollon hallinnosta, suunnittelusta ja koulutuksesta vastaaville toimijoille. Tukholman vierailukohteet tarjoavat näköalapaikan uusien ratkaisujen käytännön soveltamisesta sosiaali- ja terveydenhuoltoon ja ihmisten arkeen. Konferenssimme järjestää tutkijoille ja kehittäjille mahdollisuuden esittää tiivistetysti tuloksiaan suullisesti ja posterinäyttelyssä.

Konferenssimme sisältää englanninkielisen ja suomenkielisen rinnakkaisohjelman.

Suomen telelääketieteen ja eHealth seuran puolesta haluan kiittää kaikkia luennoitsijoitamme korkeatasoista esityksistä. Samoin kiitän kaikkia näytteilleasettajiamme ja järjestäjiä. Haluamme kiittää myös kansainvälistä seuraamme ISfTeH konferenssin kansainvälisen ilmapiirin luomisesta. Erityinen kiitos konferenssistamme kuuluu seuramme hallituksen jäsenille, aktiivisille yhteistyökumppaneille paikallisten tutustumiskäyntien organisoinnista ja ammattikorkeakoulujen opettajille ja opiskelijoille osallistumisesta konferenssin järjestelyihin. Ilman teidän kaikkien osallistumistanne konferenssimme ei olisi se oppimisen ja verkostoitumisen paikka, jona se nyt palvelee.

Toivon kaikille osanottajille antoisaa konferenssia!

Outi Ahonen

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Organizer

Suomen Telelääketieteen ja e-Health seura
Finnish Society of Telemedicine and eHealth

BOARD OF DIRECTORS 2022

President
Outi Ahonen, RN, PhD
Tel. +358 40 077 2053
members@telemedicine.fi
Principal Lecturer,
Laurea University of Applied Sciences

Vice-President
Jarmo Reponen, MD, PhD
Tel. +358 40 541 2718
vice-president@telemedicine.fi
Professor, Health Information Systems
University of Oulu

Secretary
Pirkko Kouri, RN, PhD
Tel. +358 44 347 8422
secretary@telemedicine.fi
Principal Lecturer (retired)

Treasurer
Liisa Klemola, RN, PhD
Tel. +358 44 785 6203
treasurer@telemedicine.fi
Senior Lecturer
SavoniaUniversity of Applied Sciences

Board Member
Birgitta Tetri, RN, MSSc
Tel. +358 40 529 9954
birgitta.tetri@laurea.fi
Project Specialist
Laurea University of Applied Sciences

Board Member
Aleksi Schrey, MD, PhD
Tel. +358 41 730 8256
aleksi.schrey@yths.fi
Chief Medical Officer (digital affairs)
Finnish Student Health Service (FSHS)

Board Member
Timo Tuovinen, MD
Tel. +358 41 502 7864
timo.tuovinen@oulu.fi
University Instructor
University of Oulu
Oulu University Hospital

Board Member
Vesa Jormanainen, MD, MSc
Tel. +358 40 171 5061
vesa.jormanainen@thl.fi
Research Fellow
Finnish Institute for Health and Welfare (THL)
Senior Ministerial Advisor, Medical Affairs
Ministry of Social Affairs and Health

Board Member
Jari Numminen, RN, BEng
Tel. +358 50 322 0003
jari.numminen@simakka.fi
Consultant
Simakka

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Finnish Society of Telemedicine and eHealth

Finnish Society of Telemedicine and eHealth is an important forerunner in the field of telemedicine and eHealth in Finland as well as internationally. The aims of the Finnish Society of Telemedicine and eHealth are to promote the health of the population through telecommunication and to disperse the expert knowledge within health care. To reach the aims the Society will arrange seminars, lectures and presentations, courses and symposia, develop a functioning electronic communication system between the members, exert publishing activities, supports research within the discipline, formulate statements in issues dealing with telemedicine and have contact with other telemedicine organisations.

We have a close collaboration with other national and international organisations, health care service providers and users. The purpose of the society is to promote education and development in the field of telemedicine and eHealth. Finnish Society of Telemedicine and eHealth is member of international networks such as International Society for Telemedicine and eHealth, Nordic Telemedicine Association, IHE International and European Connected Health Alliance.
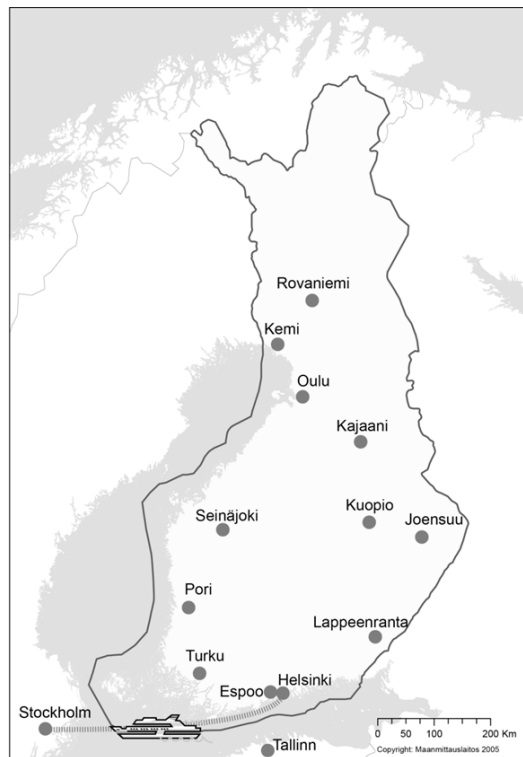
The board accepts the members based on application. Membership will be available for individuals or companies and organisations, as well as supporting membership. Foreign and overseas members do not pay an annual fee, if they submit a regular report of the progress of eHealth in their respective countries

Each year, the FSTeH delivers the Finnish National eHealth Award to a distinguished person in the field.

Internet: www.telemedicine.fi
Facebook: www.facebook.com/ehealthfinland
Twitter: www.twitter.com/FSfTeHP

The main activity of the FSTeH is annually organized the Finnish National Conference on Telemedicine and eHealth. The conference rotates between different cities and telemedicine sites to give local organizers the opportunity to promote their achievements

- 2022 – Cruising Helsinki-Stockholm (International)
- 2021 – Oulu (International)
- 2020 – Virtual conference (International)
- 2019 – Kuopio (International)
- 2018 – Cruising Helsinki-Stockholm (International)
- 2017 – Turku
- 2016 – Cruising Helsinki-Stockholm (Nordic)
- 2015 – Espoo
- 2014 – Tallinn, Estonia (International)
- 2013 – Seinäjoki
- 2012 – Cruising Helsinki-Stockholm
- 2011 – Joensuu
- 2010 – Cruising Helsinki-Stockholm
- 2009 – Oulu
- 2008 – Cruising Helsinki-Stockholm
- 2007 – Kuopio
- 2006 – Helsinki, Nordic Congress of eHealth and Telemedicine, NCeHT (International)
- 2006 – Cruising Helsinki-Stockholm
- 2005 – Lappeenranta
- 2004 – Kemi
- 2003 – Cruising Helsinki-Stockholm
- 2002 – Seinäjoki
- 2001 – Rovaniemi
- 2000 – Turku
- 1999 – Kajaani
- 1998 – Pori
- 1997 – Oulu
- 1996 – Kuopio (International)
- 1995 – Turku

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Acknowledgements

We warmly thank the following institutions and enterprises for their support:

ESKO Systems LTD
www.eskosystems.fi

Hyvinvoiva terveydenhuolto
www.hyvinvoivaterveydenhuolto.fi

Ninchat
www.ninchat.fi

Clinipower Finland
www.clinipower.fi

Mediconsult
www.mediconsult.fi

Verso Vison
www.versovision.com

BeeHealthy
www.beehealthy.com

Hoivita
www.hoivita.com

MedicubeX
www.medicubex.com

Special thanks to the teachers and students for conference arrangements.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Table of contents

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Conference Program

WEDNESDAY 28.9.2022 (Finnish time, Eastern Europe Time)

Venue: Silja Symphony

11.00   **Registration opens**
Ferry terminal at South Harbor (Eteläsatama), Olympia Terminal, Helsinki

12.00   **Boarding**
After boarding there will light lunch available

Session 1: Path to Digital Decade in EU
Chair: President Outi Ahonen, Finnish Society of Telemedicine and eHealth (FSTeH)

13.00   **Conference Opening Words**
Outi Ahonen, President, Finnish Society of Telemedicine and eHealth
Michele Griffith, President, International Society for Telemedicine and eHealth

13.15   **European Commission Opening Address**
Konstantin Hyppönen, Policy Officer (SNE), DG Health and Food Safety (SANTE), EU commission, Brussels

13.35   **Digital Compass/ The Digital Economy and Society Index (DESI)**
Jarkko Levasma, Government Chief Information Officer, Ministry of Finance, Finland

13.55   **Ilkka Winblad Honorary Lecture: Accelerating Mobile Health**
Dipak Kalra, President of The European Institute for Innovation through Health Data (i~HD), Prof of Health Informatics at University College, London, UK

14.20   **Delivery of Finnish National eHealth Awards**

14.30   **Networking Break, Coffee, Refreshments, Exhibition and Posters**

Exhibition

Session 2A: Integrated Healthcare in Nordic Health
Chair: Board Member Vesa Jormanainen, Finnish Society of Telemedicine and eHealth (FSTeH)

15.00   **Case Helseplattformen: Towards One Citizen — One Patient Record in Central Norway**
Arild Faxvaag, Professor, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

15.15   **Case: Apotti in Helsinki and Uusimaa Hospital District, Finland**
Vesa Jormanainen, Research Fellow, Finnish Institute for Health and Welfare (THL)

15.30   **Case: HealthCare Denmark**
Katrine Vedel, Chief Advisor, Healthcare Denmark

15.45   **Case Iceland: Using the National Citizens´ Health Portal, Heilsuvera, to improve quality of care**
Guðrún Auður Harðardóttir, Project Manager, Directorate of Health, Iceland

16.00   **Scientific Rapid Presentations**

O-1: Application and Implementation of Telemedicine Services Designed for the Elderly Population During the COVID-19 pandemic: A Systematic Review
Motti Haimi, MD, PhD, School of public health, University of Haifa, Israel

O-2: Relationships Between Physicians' Satisfaction in Health Information Exchange and Associated Organizational Features in Hospitals
Niina S. Keränen, FinnTelemedicum, Research Unit of Medical Imaging, Physics and Technology (MIPT), University of Oulu

O-3: Students' Self Evaluation Competence at the Beginning of Student in Digital Health and Social Care Service Special Education
Outi Ahonen, PhD, Laurea University of Applied Sciences, Espoo, Finland

16.15   **Corporate Presentations**
- Mediconsult (8 min)

16.25   **Networking Break, Coffee, Accommodation**

17.00   **Ship Leaves Helsinki**

Session 2B   *Exhibition*

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

WEDNESDAY 28.9.2022 (Finnish time, Eastern Europe Time)

Sessio 2B: HYTE -uudistus - Tilannekuva vajaa 100 päivää starttiin (Session in Finnish)
Puheenjohtaja: Erityisasiantuntija Timo Ukkola, STM

15.00	**HYTE -uudistuksen pääkohdat** *Timo Ukkola, Erityisasiantuntija, STM*	
15.15	**Hyvinvointialueiden valmistelutilanne** *Karri Vainio, Erityisasiantuntija, Kuntaliitto*	
15.30	**Case: Uuden tietojärjestelmän valmistelu** *Jari Porrasmaa, Digijohtaja, KSSHP*	
15.40	**Case: Tietojärjestelmäuudistuksen valmistelu hyvinvointialueella, case Keusote** *Antti Ylä-Jarkko, Digi- ja tietojohtaja, Keski-Uudenmaan sote*	
15.50	**Toiminnan muutoksen tukeminen hyvinvointialueilla tietojärjestelmien avulla** *Juha Korpelainen, vs. Sairaanhoitopiirin johtaja, Pohjois-Pohjanmaan sairaanhoitopiiri*	
16.05	**Scientific rapid presentations** **O-4: Creating Professional Career Model - Based on Informatics Competencies in Health and Social Care** *Jaana Kotila, MNsc, RN, Helsinki University Hospital, HUS, eHealth services, Helsinki, Finland* **O-5: Digital support model for North Karelia social and health services', Siun sote's, clients** *Pirjo Vesa, PhD, RN, Karelia UAS, Finland*	Session 2A / Exhibition
16.15	**Corporate Presentations** • Esko Systems (10 min)	
16.25	**Networking Break, Coffee, Accommodation**	
17.00	**Ship Leaves Helsinki**	

Session 3A: New Health Apps and Services: What Are Our Choices as a Citizen?
Chair: Vice-President Jarmo Reponen, Finnish Society of Telemedicine and eHealth

17.30	**Digital Maternity Care - Patient Perspective on New Technical Solutions** *Stefan Hansson, Professor, Chief Physician, University of Lund, Sweden*	
17.45	**Citizen Engagement and Data-Driven Patient - Provider Collaboration** *Anne Moen, Professor, University of Oslo, Norway*	
18.00	**Citizen Attitudes Toward Digital Health Behaviour Change Interventions** *Elina M. Mattila, Customer account lead, VTT Health Technologies, Finland*	
18.15	**Case: Self-Care in Diabetes, an Ecosystem of Many Apps and Devices** *Mikael Rinnetmäki, Founder of Sensotrend Ltd, Finland*	
18.30	**Scientific Rapid Presentations** **O-6: Older person's motivations to participate in the use of mobile smartphone App monitoring of hypertension in Uganda** *Juliet Nakazibwe Kiwanuka, MPH, Victoria University, Uganda (excused absence)* **O-7: Remote Measurement of Glucose in Home Care** *Kati Honkanen, Lic.Adm.Sci, Päijät-Häme Joint Authority for Health and Wellbeing* **O-8: Older Adults' Perception of ICT's Role in Alleviating Social Isolation During the Covid-19 Pandemic** *Sari Heikkinen, PhD, Research programme director, sustainable and versatile social and health care, Laurea University of Ap-plied Sciences, Vantaa, Finland* **O-9: How Well Does the eHealth Tool Recognize the Health Challenges in Comparison to a Nurse among the Long-Term Unemployed?** *Tuomas Koskela, MD, Docent, Tampere University, Faculty of Medicine and Health technology, Finland (excused absence)*	Session 3B / Exhibition
18.50	**Corporate Presentations** • Hyvinvoiva terveydenhuolto/ Laurea UAS (10 min)	
19.00	**End of Day 1 Sessions**	
19.30	**Dinner,** *Grande Buffet*	

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

WEDNESDAY 28.9.2022 (Finnish time, Eastern Europe Time)

Sessio 3B: Eri näkökulmat digin toteutukseen, "koodi 774C" Paneelikeskustelu (Session in Finnish)
Puheenjohtaja: Hallituksen jäsen Jari Numminen, Suomen telelääketieteen ja eHealth seura

17.30	**Ensihoito** *Dimitry Lisitsyn ja Mikko Aaltonen, EKSOTE*	
17.35	**Muistiongelmat ja ammattilaisten digiosaaminen** *Heli Kekäläinen, TKI-asiantuntija, Savonia-ammattikorkeakoulu, Pohjois-Savon Muisti RY*	
17.40	**Yhdenvertaisuus digipalveluissa** *Tarja Heponiemi, Tutkimusprofessori, THL*	
17.45	**Sosiaalityö** *Tuukka Pajuniemi, projektisuunnittelija, Hämeenlinnan kaupunki*	
17.50	**Paneelikeskustelu edellisten alustusten pohjalta (40 min)**	
18.30	**Scientific rapid presentations**	
	O-10: Remote Patient Monitoring in Support of Multi-Service Customer and Case Management: Systematic Literature Review Results *Anna Lahti, Master of Healthcare, RN, PhD student, LUT university, Finland*	
	O-11: Well-being and Health Technology and Digital Service Management as a Future Competence Requirement in Social and Health Care *Merja Männistö, PhD, Oulu University of Applied Sciences; Finland*	
	O-12: Radiological Image Reconstruction and Computer-Assisted Diagnosis on the Edge *Erkki Harjula, DSc, MSc, Centre for Wireless Communications – Networks and Systems, University of Oulu, Oulu, Finland*	
18.45	**Corporate presentations** • MedicubeX (5 min) • Hoivita (5 min) • BeeHealthy (5 min)	**Session 3A** / **Exhibition**

19.00	**End of Day 1 Sessions, Networking, Free Time**

19.30	**Dinner,** *Grande Buffet*

THURSDAY 29.9.2022 (Swedish time, Central European Time)

Session 4: Site visits at Stockholm
Coordinator: Board MemberVesa Jormanainen, Finnish Society of Telemedicine and eHealth

10.00	**Bus transportation to site visits at Stockholm from the ferry terminal**	
to	**Visit 1** *Business Finland / Embassy of Finland and Swedish e-Health companies*	
13.45	**Visit 2** *Karolinska Institutet - The Hospital's Operational Development through Digitalization. Innovation in Information-Driven and Location-Independent Healthcare*	**Exhibition**
	Visit 3 *Siemens Healthineers*	
	Visit 4 *Cambio*	
	Visit 5 *eHälsomyndigheten - The eHealth Vision of 2025 in Sweden*	
	Note! Site visits have limited seats available	

13.45	**Networking Break, Light Lunch, Refreshments and Exhibitions**

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

THURSDAY 29.9.2022 (Swedish time, Central European Time)

Session 5A: Digital therapeutics and digital medicine
Chair: CEO Annette Kainu, Medzilla Ltd.

14.30	**Promise of Digital Therapeutics for Finland and Europe** *Johannes Ahlqvist, Specialist, Finnish innovation fund Sitra, Finland*		
14.45	**How is Finland Related to European Development?** *Jari Haverinen, MSc, MHSc, Senior Planning Officer, Finnish Coordinating Center for Health Technology Assessment (FinCCHTA)*		
15.00	**Case: More Stamina, an Evidence-Based App for Citizens with Multiple Sclerosis** *Guido Giunti, Adjunct professor of Digital Health Design and Development, University of Oulu, Finland*		
15.15	**Scientific Rapid Presentations** **O-13: The Impact of EU Digital Services Act and Digital Markets Act on Health Information Systems** *Alpo Värri, Dr.Tech., Faculty of Medicine and Health Technology, Tampere University, Finland* **O-14: Nurse-Led Telehealth Research 2021, 2022: Evidence for Practice** *Claudia C Bartz, PhD, RN, International Society for Telemedicine & eHealth* **O-15: Pathways to Wellbeing for People with Diabetes** *Tuulikki Salminen, Planner, Pathways to Wellbeing for People with Diabetes -Project, Finnish Diabetes Association, Finland*	Session 5B	Exhibition
15.30	**Corporate Presentations** • Clinipower Finland (8 min)		
15.40	**Networking Break, Coffee, Refreshments, and Exhibitions & Guided Poster Session**		
16.45	**Ship Leaves Stockholm**		

Sessio 5B: Etävastaanoton erilaiset esimerkit (Session in Finnish)
Puheenjohtaja: Pirkko Kouri, Suomen Telelääketieteen ja eHealth seura, International Society for Telemedicine and eHealth

14.30	**Laadukas vuorovaikutus etävastaanotoilla** *Elisa Snicker, Lehtori, Savonia ammattikorkeakoulu*		
14.45	**Mitä pitää oppia ennen kuin etävastaanotolle?** *Aleksi Schrey, Digitaalisten palveluiden ylilääkäri, Ylioppilaiden terveydenhoitosäätiö (YTHS)*		
15.00	**Käytännön kokemuksia suunterveyden etäpalveluista Vantaan kaupungin suun terveydenhuollossa** *Anu Ramberg, kehittämispäällikkö, Vantaan kaupunki*		
15.15	**Scientific Rapid Presentations** **O-16: The Usability of iPana Maternity Supports Partially the Work of a Midwife** *Elisa Snicker, Lehtori, Savonia University of Applied Sciences* **O-17: Exoskeletons in Providing Support to Professionals in Home Care** *Honkanen Kati, Licentiate of Administrative Sciences, Project manager, Päijät-Häme Joint Authority for Health and Wellbeing (excused absence)* **O-18: SHAPES Ethical Framework and the Need for User Support When Using Digital Care Services** *Sari Sarlio-Siintola, MSc (Econ), MSc (Social Ethics), Laurea University of Applied Sciences, Finland* **O-19: Virtual appointments – Value co-creation and challenges with accessibility** *Arja-Tuulikki Malin, D.Sc. (Admin.), Lic.Sc (Ed.), M.Soc.Sc, LAB University of Applied sciences* **O-20: The Meaning of Telepresence in Contact between the Elderly and Family Members** *Sari Heikkinen, PhD, Research Programme Director, sustainable and versatile social and health care, Laurea University of Applied Sciences, Vantaa, Finland*	Session 5A	Exhibition
15.40	**Corporate Presentations** • Nichat (10 min) • Verso Vision (8 min)		
16.00	**Networking Break, Coffee, Refreshments, and Exhibitions & Guided Poster Session**		
16.45	**Ship Leaves Stockholm**		

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

THURSDAY 29.9.2022 (Swedish time, Central European Time)

Session 6: Promoting sustainable wellbeing
Chair: President Michele Y. Griffith, International Society for Telemedicine and eHealth (ISfTeH)

17.00	**Using a Network of Ecosystems to Help Promoting Sustainable Wellbeing** *Andy Bleaden, Communities Director, European Connected Health Alliance, Ireland*
17.15	**My Health and My Food - Biotics in Personalized Nutrition for Better Preventive Wellbeing** *Seppo Salminen, Professor, University of Turku, Finland*
17.30	**Sustainable Weight as Your Wellbeing Asset** *André Heikius, Chief medical officer, Obesmart Ltd, Finland*
17.45	**Digital Transformation in Public Health** *Sari Palojoki, Principal expert, EU European Centre for Disease Prevention and Control (ECDC)*
18.00	**Scientific Rapid Presentations**
	O-21: The Stimulation of Polymodal Sensory Perception by Skarżyński (SPPS-S): Comparison of Stationary and Remote Therapy Results *Piotr Henryk Skarżynski, Department of Teleaudiology and Screening, World Hearing Center, Institute of Physiology and Pathology of Hearing, Kajetany, Poland (excused absence)*
18.05	**Summary and Closing Words** *Outi Ahonen, President, Finnish Society of Telemedicine and eHealth*

(right margin, vertical text: Exhibition)

18.30	**End of Day 2 Sessions, Networking, Free Time**
19.30	**Buffet Dinner,** *Grande Buffet*

FRIDAY 30.9.2022 (Finnish time, Eastern Europe Time)

10.30	**Ship Returns to Helsinki** *Ferry terminal at South Harbor (Eteläsatama), Olympia Terminal, Helsinki*

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Session 1: Path to Digital Decade in EU

Chair: President Outi Ahonen, Finnish Society of Telemedicine and eHealth (FSTeH)

Wednesday 28th September 2022

13:00 – 14:30

1-1 **Conference Opening Words**
Outi Ahonen[1], President, Michele Griffith[2], President
[1]Finnish Society of Telemedicine and eHealth
[2]International Society for Telemedicine and eHealth

1-2 **European Commission Opening Address**
Konstantin Hyppönen, Policy Officer (SNE), DG Health and Food Safety (SANTE)
EU commission, Brussels

1-3 **Digital Compass / The Digital Economy and Society Index (DESI)**
Jarkko Levasma, Government Chief Information Officer
Ministry of Finance, Finland

1-4 **Ilkka Winblad Honorary Lecture: Accelerating Mobile Health**
Dipak Kalra[1,2], President, Professor
[1]The European Institute for Innovation through Health Data (i~HD)
[2]University College, London, UK

1-5 **Delivery of Finnish National eHealth Awards**

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Conference Opening Words
Outi Ahonen[1], President, Michele Griffith[2], President

[1]*Finnish Society of Telemedicine and eHealth*
[2]*International Society for Telemedicine and eHealth*

Biography Outi Ahonen

Outi Ahonen, PhD of Health and Human Services Informatics, MHSc, RN works a as principal lecturer in master's degree Digital unit at Laurea University of Applied Science (UAS). She coordinates the research theme of digitalization and information management in society. Her main research interest is multidisciplinary competences in developing digital services in eHealth and welfare. She has been the project manager in many projects, which developed digital competencies e.g., the national SotePeda 24/7 -project (2018-2020) developing competences for eHealth and eWelfare Services in multiprofessional teams. In addition to teaching, currently she manages two projects: firstly, the UUDO project, creating special education to eHealth and Welfare Services, together with the 14 universities of applied sciences; secondly, the EU funded project Master of Managing Digital Transformation in the Health Sector creating the new international master studies related to the digital transformation in the health sector. She is the first female President of Finnish Society of Telemedicine and eHealth (FSTeH). She is the member of the Council of the Finnish Nursing Association (FNA). She has been twice the chair of expert the team building the National eHealth Strategy for the Finnish Nursing Association. The strategy guides and supports nurses in digital nursing work.

This year we are having our National Conference on Telemedicine and eHealth for the 27th time. The theme of the Conference is *Digital Health & Welfare – from Research to Applied Solutions*. This is the seventh time our conference has been carried out on a cruise between Helsinki and Stockholm. The board members were responsible for organizing the conference. I thank our board members for the great commitment to this work. In addition, we have had temporary help and I thank you our students from different universities of applied sciences.

In Finland we will have special period. In spring 2023 the novel system, namely health and wellbeing service counties, begin its work. This means, and that we plan different multidisciplinary patient-pathways with digital services crossing boundaries in new constructed counties. We adapt technological tools to take care of patients and simultaneously our citizens can take better care of their health and wellbeing. In our Society, we bring our members information about the effects of digitalization in social and health care, also considering largely international perspective, especially Nordic area, EU and worldwide.

Our Society offers a network and platform to our members who are interested in taking part of both exchange and innovation ideas around digital health care in multidisciplinary context. Our Society will contact its members during this year through different ways to reveal the needs of the members. This cruise gives a great environment to the conference, which brings together top experts, researchers, large and small companies both regionally, nationally, and internationally; decision-makers from both the public and private sectors and, of course, start-ups and young future health and welfare professionals. In the sessions, practical examples and experiences are shared by more than 40 lecturers from Finland and abroad. Conference includes five different site-visits in Stockholm offering unique possibility to get hands-on experiences in solutions for better and more effective healthcare. During these days we have great possibility to multidisciplinary, national, and international discussion. Finally, I thank you all for being here. I wish everybody a very fruitful conference and I hope you have time to experience unique Nordic archipelago.

Outi Ahonen

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Biography Michele Griffith

Dr. Michele Y. Griffith has over 25 years of experience as a physician specializing in Internal Medicine and Integrative Medicine. She has been utilizing telemedicine to deliver healthcare since 2008. "I became an early adopter of telehealth because I saw it as a means of increasing access to healthcare for the underserved and unserved. It has the potential to eradicate barriers and disrupt healthcare as we know it." As a member of the International Society for Telemedicine and eHealth (ISfTeH) since 2012, she advocates for the expansion of telemedicine and digital health globally and the increased representation of women in the field. Dr. Griffith has practiced in both the acute care and outpatient settings; the first half of her career in hospitals and acute care facilities. Passionate about holistic, preventive care, she switched her focus to outpatient care over 13 years ago. An unrelenting patient advocate, she has empowered her patients with the education and tools necessary to maintain wellness. At Premise Health, a leading worksite health care company in the United States, she served as Medical Director for Fortune 100 company, TIAA, for over 13 years. In that role, she collaborated with other clinicians, wellness coaches, mental health counselors and disease management nurses to provide high quality, cost effective care to employees and trained midlevel providers in the art of telemedicine to successfully implement a clinical blended healthcare delivery model. She is Founder of 21stMD.com, a platform for telemedicine advocacy and direct primary care. She recently joined the staff of Calibrate, an obesity management telemedicine start-up with a mission of "changing the way the world treats weight". Dr. Griffith lectures internationally on Telemedicine/digital health. She enjoys traveling, outdoor activities, the arts and spending quality time with her 5 children.

Greetings from International Society for Telemedicine and eHealth,

On behalf of the International Society of Telemedicine and eHealth, I welcome you to the International Finnish Society's eHealth 2022 Conference. I would like to thank current ISfTeH board member and Vice President Pirkko Kouri and the organizers of this event for giving me the opportunity to address the attendees. The Finnish Society of Telemedicine and eHealth has been an active member organization of the ISfTeH for many years and its contribution to the expansion of digital health is significant.

The mission of the International Society of Telemedicine and eHealth (ISfTeH) is to facilitate the international dissemination of knowledge and experience in Telemedicine and eHealth. During its quarter century of existence, the ISfTeH has become a primary resource for the expansion of access to care through the use of digital health.

The ISfTeH is going beyond the propagation of ideas at assemblies, conferences and events. With a footprint in over 100 countries and territories we can identify and work with structures, organizations and entities that are capable of localizing these ideas to the realities of their context, and putting them into practice - in other words, coordinating forces for digital health within countries, who can do the work of expanding access to care through digital health.

As you network, innovate and collaborate over the next couple of days, I challenge you to consider 2 questions:
* "How can we convert our collective knowledge into a global public good, that is accessible to all, thus enabling each actor in the digital health ecosystem to benefit from what others know through the establishment of a Global Knowledge Commons (GKC) network?"
* How do you coordinate digital health forces within your own country to expand access to care and promote wellness?

I look forward to engaging with you all as we work towards a day in the near future when digital health/eHealth is fully integrated into our health ecosystem and referred to as simply "healthcare".

Michele Y. Griffith, MD
President
International Society of Telemedicine and eHealth (ISfTeH)
Basel, Switzerland

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

European Commission Opening Address
Konstantin Hyppönen, Policy Officer (SNE), DG Health and Food Safety (SANTE)
EU commission, Brussels

Biography Konstantin Hyppönen

Dr. Konstantin Hyppönen is a policy officer working on digital health in DG SANTE of the European Commission. He is currently participating in work on the European Health Data Space. Previously, he has taken part in a number of international projects, including setting up the EU Digital COVID Certificate system and cross-border ePrescription and Patient Summary services between EU member states (MyHealth@EU). He currently acts as a policy owner of MyHealth@EU, working on the expansion of this infrastructure. Before joining the Commission, in Finland, Dr. Hyppönen had worked as a chief architect in Kela's Information Services, responsible for the technical architecture of the Finnish eHealth hub, Kanta Services. Kanta also provides support for social services.

Proposal for the European Health Data Space: a major milestone in the development of digital health in Europe

On 3 May 2022, the European Commission presented a proposal for a regulation to set up the European Health Data Space (EHDS). Its overall goal is to unleash the full potential of health data. More specifically, the proposed regulation would support individuals to take control of their health data, improve the use of health data for healthcare purposes (primary use of health data), and facilitate better research, innovation and policy making (secondary use of health data). It would enable the EU to make full use of the potential offered by a safe and secure exchange, use and reuse of health data.

The EHDS is the first sector-specific data space based on the European strategy for data. It builds on horizontal legal frameworks: the General Data Protection Regulation (GDPR), proposed Data Governance Act, draft Data Act and Network and Information Systems Directive. Being sector-specific, the EHDS would establish a health-specific ecosystem comprised of rules, common standards and practices, infrastructures and a governance framework.

The proposal aims at empowering individuals through increased access to and control of their electronic personal health data, at national level and EU-wide, as well as at fostering a genuine single market for electronic health record systems, relevant medical devices and high-risk AI systems (primary use of data). Furthermore, it would provide a consistent, trustworthy and efficient setup for the use of health data for research, innovation, policymaking and regulatory activities (secondary use of data).

Trust is a fundamental enabler for the success of the proposed EHDS. The EHDS aims to provide a trustworthy setting for secure access to and processing of a wide range of health data, both for primary and for secondary use.

The EHDS proposal is closely linked to the goals of the Europe's Digital Decade, supporting the achievement of targets for digital development. In particular, in relation to the digitalization of public services, there is a goal of 100% of citizens having access to medical records by 2030. The right to access electronic health data online immediately and free of charge is included in the EHDS proposal. In addition, the EHDS proposal contains provisions related to the use of electronic identification in the health domain. This is linked to the goal of having 80% of citizens using digital ID, also included in the targets of the EU's digital decade.

The EHDS proposal is currently being negotiated by the colegislators (the European Parliament and the Council).

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Digital compass/ The Digital Economy and Society Index (DESI)
Jarkko Levasma, Government Chief Information Officer
Ministry of Finance, Finland

Biography Jarkko Levasma

Jarkko Levasma (Master of Science) is Director General (Government CIO) of Public Sector ICT in the Ministry of Finance in Finland. Public Sector ICT department steers public sector ICT, common services, prepares information policies and related legislation. Previously Jarkko Levasma has worked as a senior director and as a chief development and information officer in the Finnish Tax Administration. He also has experience from a private ICT company.

Finland is among the first countries in the EU to draw a national roadmap for digital transformation based on EU's digital compass. We supplement the EU compass with our own objectives, creating leverage for exerting influence within the EU. National digital compass includes a shared vision and objectives, and key results by 2030. In addition to EU's targets, ambitious national objectives Finland seeks a forerunner position globally. Digital compass provides a shared national and international situational and overall picture for the ministerial group, government, and stakeholders. It also identifies Finland's key strengths and challenges nationally and internationally. Digital compass is a tool for intersectoral and long-term planning, prioritisation, and timing to avoid any bottlenecks. Framework for evaluating effectiveness of the investments made in digitalization and development of the data economy.

The vision for Finland's digital compass is to build a digitally capable Finland that is attractive, competitive, sustainable, and prosperous. Digital compass defines main objectives for four different areas:

- Skills
  - Finland is a digitally well-educated country
  - Digital basic skills for everyone
  - Digital skills and competence for working life and research
- Infrastructures
  - Finland will be a global leader in data-based economy by 2030
  - Finland is a world class player in the field of cybersecurity
  - Finnish communications and server infrastructure is comprehensive and energy efficient
- Business
  - World class digital technologies in chosen areas of expertise
  - Green transition-based innovations and solutions form a remarkable competitive advantage for Finland
  - Digital maturity of SMEs and data-based business models will increase
- Public services
  - Public services are human centric
  - Public sector is a key player to boost green transition
  - Public services are data intensive and interoperable
  - Comprehensively secure digital public services

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Ilkka Winblad Honorary Lecture: Accelerating Mobile Health
Dipak Kalra, President, Professor
The European Institute for Innovation through Health Data (i~HD), University College, London, UK

Biography Dipak Kalra

Dipak Kalra is President of The European Institute for Innovation through Health Data (i~HD). He plays a leading international role in research and development of Electronic Health Records, including the development of ISO standards on EHR interoperability, personal health records, EHR requirements, security and data protection. Dipak has led multiple Horizon 2020 and IMI projects in these areas, alongside pharma companies, hospitals, patient and professional organisations and ICT companies. His current projects include the generation and acceptance of real world evidence in pregnancy, the governance of patient-centric clinical trials, scaling up the quality, interoperability and the reuse of health data for research, the readiness of hospitals to generate evidence for value based care, and a new initiative to explain the value of research using health data to the public. Dipak is Professor of Health Informatics at University College London, Visiting Professor at the University of Gent, a member of CEN and ISO standardisation bodies and a former GP. Specialties: Health informatics, electronic health records, clinical knowledge modelling, eHealth privacy and confidentiality management

The COVID-19 pandemic suddenly forced health systems around the world to find a solution for managing healthcare delivery, especially long-term disease monitoring, without a dependency on face-to-face contact. Investments in telehealth solutions were rapidly accelerated, across many disease areas and care pathway situations, not only in relation to COVID itself, and have seemingly been a sustained digital health transformation [1]. For example, in the US a 38-fold increase in Telehealth claims to health insurers was observed during 2020 [2]. The cost in human and financial terms from suboptimal management of long-term conditions is a huge burden, for example in heart failure which contributes substantially to hospitalisation and healthcare costs, and where remote tele-monitoring has been demonstrated to improve heart function and quality of life whilst reducing hospitalisation [3]. The use of digital health tools is increasingly acceptable to patients, demonstrated through the pandemic, and there is a rich diversity of benefits that patients experience and wish to experience, including the tracking of their own health status and outcomes and the ability to compare their progress through disease and rehabilitation with other similar patients [4]. Project like the European H2O initiative are developing scale-up solutions for health outcomes captured from patients and the contribution of these to joint decision-making between clinician and patient [5]. There are still variations in outcomes observed, for example across Europe, that cannot be easily, and which need further research requiring big data solutions.

Europe is thankfully investing substantially in such big data learning health infrastructures, such as the EHDEN network [6], the European Medicines Agency DARWIN EU network planned to start shortly [7], and the recent high-profile European Commission initiative: the European Health Data Space [8].

If we are to learn from large-scale health data resources, preferably at a European scale, then we need to address more urgently the challenge of interoperability. There are plenty of standards that could contribute towards computable information sharing, but adoption remains weak and significant expense and time is required to harmonise data derived from multiple EHR systems. Almost no effort is currently invested in interoperability for patient generated data. Data quality is another issue that needs to be addressed, because the quality of a lot of data captured in EHR systems today is not always of good quality [9]. There is a perverse incentive challenge here, with the busy junior staff and the cash limited hospitals not having the budget that they wish to invest in data quality, even though there are plenty of external stakeholders who need better data quality than is currently available. We don't invest at all in training patients about data quality!

The quality of mobile health applications is also variable, despite the Medical Device Regulation. A recently published ISO technical specification, ISO/TS 82304-2, defines criteria for health and wellness apps that would allow products to have a quality label [10]. A new European project, Label2Enable, is intending to implement this technical specification as a Europe-wide programme of app quality labelling and educational support across stakeholders.

Very good, affordable and high impact telehealth solutions require very sophisticated planning, design, training, implementation, and embedding within health systems including appropriate reimbursement models. This is a complex area in which European countries are still struggling with best practice in assessment and approval processes alongside the best ways to calibrate reimbursement [11]. A recently completed European

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

project, the European Mobile Health Hub, has launched a Web portal and resources to try to support different stakeholders collaborating on future mobile health programmes [12]. This will shortly transition into a sustainable Hub environment, which hopes to help support the scale up of high quality and high impact telehealth programmes and digital health innovation.

References:
[1] Nittari, G.; Savva, D.; Tomassoni, D.; Tayebati, S.K.; Amenta, F. Telemedicine in the COVID-19 Era: A Narrative Review Based on Current Evidence. Int. J. Environ. Res. Public Health 2022, 19, 5101. https://doi.org/10.3390/ijerph19095101

[2] McKinsey. Telehealth: A quarter-trillion-dollar post-COVID-19 reality? July 9, 2021. Available from https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/telehealth-a-quarter-trillion-dollar-post-covid-19-reality

[3] Ware, P., Ross, H. J., Cafazzo, J. A., Boodoo, C., Munnery, M., & Seto, E. (2020). Outcomes of a heart failure telemonitoring program implemented as the standard of care in an outpatient heart function clinic: pretest-posttest pragmatic study. Journal of medical Internet research, 22(2), e16538

[4] DHE Consultation with citizens/patients on the European Health Data Space. The Digital Health Europe project. Available from https://digitalhealtheurope.eu/wp-content/uploads/2020/12/DHE-Consultation-with-citizens-patients-on-EHDS.pdf

[5] Health Outcomes Observatory. Please see https://health-outcomes-observatory.eu

[6] European Health Data & Evidence Network. Please see https://www.ehden.eu

[7] Data Analysis and Real World Interrogation Network. Please see https://www.ema.europa.eu/en/about-us/how-we-work/big-data/data-analysis-real-world-interrogation-network-darwin-eu

[8] Please see https://health.ec.europa.eu/ehealth-digital-health-and-care/european-health-data-space_en

[9] Please see https://www.i-hd.eu/data-quality

[10] ISO/TS 82304-2:2021. Health software — Part 2: Health and wellness apps — Quality and reliability. Available from https://www.iso.org/standard/78182.html

[11] Sitra. How can digital therapeutics help Europe? Available from https://www.sitra.fi/en/publications/how-can-digital-therapeutics-help-europe/

[12] The European Mobile Health Hub. Please see https://mhealth-hub.org

About the Ilkka Winblad honorary lecture:

In order to honor the memory of Adjunct Professor Ilkka Winblad from University of Oulu, a former vicepresident of the society, who passed away in 2011, The Finnish Society of Telemedicine and eHealth decided to start in 2012 a series of honorary lectures, asking a prominent person in the international eHealth field to summarize his/her experience. According to the plan, this keynote lecture will be in the conference program at least every second year, especially on cruising conferences which by their nature are already international meetings.

As Ilkka Winblad was the first de facto professor of clinical telemedicine and eHealth in Finland during his years at FinnTelemedicum, University of Oulu, and had built the basis for new research directions and education in the field, also the keynote is expected to reveal an extended perspective and future targets. The first ever honorary lecture was given by Professor Richard Wootton from United Kingdom in 2012.

The successive lectures have been given by Professor Christian Nohr from Denmark in 2014, Professor Stanton Newman from United Kingdom in 2015, Associate Professor Piotr Henryk Skarzyñski from Poland in 2017, Global Strategist Digital Health Lucien Engelen from Netherlands in 2019 and Professor Bernd Blobel from Germany in 2021.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Finnish National eHealth Awards

Finnish National eHealth award is delivered by President and Secretary of the Finnish Society of Telemedicine and eHealth.

The Board of Finnish Society of Telemedicine and eHealth (FSTeH) delivers annually national eHealth award. The award is based on significant accomplishments in the field of telemedicine and eHealth. The required activity can be for example a doctoral thesis in this area or some other important activity in the national or international level supporting the society's goals. The award is delivered during annual Finnish national conference on telemedicine and eHealth. In the year 2022, Finnish national eHealth award is delivered for the 19th time.

eHealth award for life-long work

The Board of FSTeH decided to deliver during the 27th Finnish National Telemedicine and eHealth Conference one joint eHealth award emphasizing both the recipients´ personal achievements and their seamless collaboration in their life-long work for the benefit of telemedicine and eHealth. For the first time in the history of FSTeH, recognition is given to a couple:

DDS Sinikka Salo has made a major contribution to the benefit of telemedicine and eHealth during her professional career. Already her academic thesis was related to health data management and secondary use of health data in dental sciences. During her years in the FSTeH she served as a board member and as the vice-president of the society. While working as a chief dentist in the city of Kemi, she was the main local organiser of the year 2004 annual Finnish telemedicine conference, having then as keynote speakers e.g. the later prime minister of Finland, Mr Jyrki Katainen and the later CEO of Danish MEDCOM organisation, Mr Lars Hulbaek. She was one of the first dentists in Finland to achieve a special competence in healthcare information technology. Sinikka Salo has served several years in Japan as the CEO of the Finnish-Japanese Welfare Center, assisting numerous Finnish enterprises to establish connections and creating personal relationships with Japanese experts in the field. She has also served as a deputy mayor of the city of Oulu, promoting citizen-centered selfcare and health technology innovations. She has also served in the Finnish Ministry of Social Affairs and Health with special duties connected to healthcare and social care reform.

MSc (Eng) Harri Salo has been a member of the society since early 2000, serving as the official webmaster of the society for nearly 20 years. During Sinikka´s years in the board, Harri simultaneously contributed to the arrangements of various society activities and continued his career as an editing webmaster thereafter without breaks even through their years abroad. The society president and board members could always trust that the information presented on the website was up-to-date. While in Sendai Japan, Harri Salo contributed to and organised visiting programs to numerous Finnish delegations, including the FSTeH board. He also helped to establish necessary connections for organising joint telemedicine and eHealth conferences with Japanese colleagues. Harri Salo has helped to collect the heritage of the society, after new persons in charge have taken the leading roles.

On these grounds, Finnish Society of Telemedicine and eHealth presents Sinikka Salo and Harri Salo with the year 2022 eHealth Award in recognition of their extensive life work in the field of Telemedicine and eHealth.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Session 2A: Integrated Healthcare in Nordic Health

Chair: Board Member Vesa Jormanainen,
Finnish Society of Telemedicine and eHealth (FSTeH)

Wednesday 28th September 2022

15:00 – 16:25

2A-1 Case Helseplattformen: Towards One Citizen — One Patient Record in Central Norway
Arild Faxvaag, Professor
Norwegian University of Science and Technology (NTNU), Trondheim, Norway

2A-2 Case: Apotti in Helsinki and Uusimaa Hospital District, Finland
Vesa Jormanainen, Research Fellow
Finnish Institute for Health and Welfare (THL)

2A-3 Case: Digital health and telemedicine in Denmark
Katrine Vedel, M.Sc.
Denmark

2A-4 Case Iceland: Using the National Citizens´ Health Portal, Heilsuvera, to improve quality of care
Guðrún Auður Harðardóttir, Project Manager
Directorate of Health, Iceland

Scientific Rapid Presentations

O-1 Application and Implementation of Telemedicine Services Designed for the Elderly Population During the COVID-19 Pandemic: A Systematic Review
Motti Haimi, MD, PhD, MHA
School of public health, University of Haifa, Israel

O-2 Relationships between Physicians' Satisfaction in Health Information Exchange and Associated Organizational Features in Hospitals
Niina S. Keränen
FinnTelemedicum, Research unit of Medical Imaging, Physics and Technology (MIPT), University of Oulu

O-3 Students' Self Evaluation Competence at the Beginning of Student in Digital Health and Social Care Service Special Education
Outi Ahonen, PhD
Laurea University of Applied Sciences, Espoo, Finland

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Case Helseplattformen: Towards One Citizen — One Patient Record in Central Norway

Arild Faxvaag, Professor

Norwegian University of Science and Technology (NTNU), Trondheim, Norway

Biography Arild Faxvaag

Arild Faxvaag is a professor in Health informatics at Norwegian University of Science and Technology in Trondheim, Norway. His research is centered around understanding how health professionals and patients utilize knowledge to analyse and solve health problems and around using this insight to develop IT-solutions that enables patients, personnel, institutions and governments to realize knowledge-based care in a safe, equal and more sustainable way. Arild Faxvaag is also a consultant in Rheumatology at St.Olavs hospital

Background: Helseplattformen ('The health platform') is an ambitious, > 340 mEuro 6-year-in-the-making electronic health record (EHR) procurement, configuration and implementation project in Central Norway. In 2019, Epic Systems Corporation(™) was chosen as EHR vendor. As of August 2022, the configuration of the system has been fully designed, developed and tested. The system has been taken into use in Trondheim municipality, the largest municipality in the health region. Trondheim University Hospital is scheduled to go live with the system on November 1. The other hospitals and municipalities will follow in 2023 and 2024. Objective: To present the motivation, agenda, activities, criticalities, outcomes achieved, and lessons learned (so far) in the project.

Methods: Review and assessment of publicly available project documentation.

Results: The ambitions of the project are reflected in the owners' willingness to invest in a highly configurable EHR system, take health personnel out of clinical service and arrange to have their knowledges, insights and routines expressed in the configuration of the system. First and foremost, the new platform will de-balkanize the health information system landscape in Central Norway. The chosen configuration will create a new division of labor between healthcare worker and machine. Maintenance and update of the configuration builds will create a completely new set of workflows. The principles for, and preliminary design of these workflows is a work-in-progress.

Conclusion: Helseplattformen is an ambitious, pan-healthcare system EHR procurement, configuration and implementation project in the making.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Case: Apotti in Helsinki and Uusimaa Hospital District, Finland
Vesa Jormanainen, Research Fellow
Finnish Institute for Health and Welfare (THL)

Biography Vesa Jormanainen

MD, MSc, Specialist in Public Health Medicine. Current position is Senior Ministerial Advisor, Medical Affairs in the Ministry of Social Affairs and Health in Finland at Service System Unit since 2021. He also holds Research Fellow position in the Finnish Institute for Health and Welfare (THL), Welfare State Research and Reform unit, Health and Social Service System Research team. He is a PhD Student in Doctoral Programme in Population Health, Department of Public Health, Faculty of Medicine, University of Helsinki. Previously he worked in the THL as Chief Specialist at Performance Assessment of the Health and Social Service System. In addition, he worked in the THL as Director of Operational Management to make real large-scale implementation and adoption of the national Kanta ICT services for social welfare and healthcare services in Finland in 2010–2017. He has international working experience from major pharmaceutical companies in health economics, outcomes research and pricing as Team Manager. Previously he was in Board of Directors at the European Health Telematics Association (EHTEL, Brussels, Belgium). Currently he is the Chairman of the Finnish Association of Public Health Medicine and Board Member at the Finnish Society of Telemedicine and eHealth.

Background: Apotti is a change project created by the customer and owner organisations. Its objective is to develop social and health care services and to maintain the electronic social and health record currently in production. Early on in the Apotti project, it was established that the electronic social and health record would consist of a core system entity, comprised of the Epic system, and supplementary systems and integrations. The aim of this presentation is to highlight project stages and issues brought up in regional implementation, adoption and deployment of the new comprehensive commercial health information system, an Epic-based Apotti in 2012–2022 for the Helsinki and Uusimaa Hospital District (HUHD).

Results: The Apotti project was launched in February 2012. The Apotti project phased its stages in planning (2012−2013), procurement (2013−2016), definition (2013−2019), implementation (2016−2020), and deployments (2018−2023). During the planning stage before the procurement, a cost-benefit calculation was carried out. It showed that during a 10-year peri-od, a new system would produce EUR 335–430 million costs, and the breakeven would take place in 6–7 years. Quantitative benefit potential was calculated EUR 330 million for a 10-year period. There were many qualitative benefits, the monetary value of which could not be expressed. The procurement process started in late August 2013. In the first round in November 2013, ten service provider coalitions left their participation documents and out of which six coalitions were chosen to the second round in December 2013. Many coalitions left the negotiations in spring 2014, and two service provider coalitions were chosen for the second negotiation round in summer 2014. The publicly-owned company Oy Apotti Ab was established in June 2015. The project steering board reached their decision and Epic Systems Corporation was recommended to be the service provider in August 2015. The total project costs were estimated EUR 575 million for a 10-year agreement period, out of which EUR 385 million were Epic system costs. Oy Apotti Ab and Epic Systems Corporation reached the decision and made a 10-year agreement in April 2016.

The Apotti system has been integrated into one unified entity, and it enables joint data use and open interfaces in real time within the boundaries or legislation. The first Apotti system implementation and adoption took place in Peijas hospital in Vantaa in November 10, 2018. Currently the Apotti system is used in all of the HUHD's hospitals, in Vantaa town by most social care and health care units, and in Helsinki, Kauniainen and Kerava in healthcare, home care, services for the elder-ly and substance abuse services. Helsinki also uses the system in the services for the disabled. In addition, the system is used in most medical imaging services of the HUHD Diagnostic Center. Deployments will also take place in Kirkkonummi, Inkoo, Siuntio and Loviisa. A total of some 47,000 professionals use the Apotti system.

Discussion: Many of the issues brought up during and after the Apotti system regional implementation, adoption and deployment were observed also in other jurisdictions. Compared to original plans, observations indicate towards more costs and delays in timetables. In addition, the system's usability is under heated discussions.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Case: Digital health and telemedicine in Denmark
Katrine Vedel, M.Sc.
Denmark

Biography Katrine Vedel

Katrine Vedel has been working in the field of digitalisation and innovation in the public sector since 2006. She Holds an MSc. in interdisciplinary IT and her experience within the field of healthcare IT includes leading the national programme for architecture and security for healthcare IT in Denmark, Running an innovative test and demonstration facility for telemedicine, IOT and e-health as well as establishing and leading a regional cyber - and information security effort for healthcare IT

Background: The solutions for digital health and telemedicine in Denmark are based on a very solid foundation and a strong tradition for data registration. The registration of healthcare data dates back more than a hundred years, for example causes of death were registered as early as the 18th century and these data are still available for research today.

In 1994 the non-profit organisation Medcom was established and the first local tests of digital communication between the GP's and the hospitals were carried out. The use of digital solutions for healthcare expanded further over the years and telemedicine projects were also carried out. First locally and later also at a national scale. This early start has enabled Denmark to be at the forefront of digital health providing the Danish citizens with digital access to their own healthcare data and making several different digital solutions available for Danish citizens and health and care professionals. The most ground-breaking of these solutions being the Shared Medication Record which ensures continuously updated information on medication data provided for and by the GP, care personnel in the municipalities, the hospitals, pharmacies and the patients themselves. One of the more recent solutions is an app for pregnant women. This solution is currently under pilot test.

In terms of governance for digital health and telemedicine, Denmark can boast of a government authority for digital health under the ministry of health as well as a set of mandatory standards for IT applications and data sharing in the healthcare sector. In order to further the use and scaled implementation of telemedicine and digital health a number of national steering committees with broad representation from the regions (who runs the hospitals) the municipalities (who are responsible for home care) and the state have also been established.

Discussion/what is happening next: In my presentation I will give an overview of digital health and telemedicine as well as some examples of what is in store next in the country.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Case Iceland: Using the National Citizens´ Health Portal, Heilsuvera, to improve quality of care

Guðrún Auður Harðardóttir, Project Manager

Directorate of Health, Iceland

Biography Guðrún Auður Harðardóttir

Gudrun is a project manager at the Directorate of Health, National Centre for eHealth in Iceland. She has decades of experience working on the development and implementation of digital health including the National Citizen Health Portal and the National Electronic Health Record. She worked in healthcare for years, both as a clinician and an administrator. The past 17 years she has worked at the policy level, first at the Ministry of Health and since 2012 at the Directorate of Health. She serves on several eHealth committees, both domestically and internationally. She has a BSc in Nursing from the University of Iceland and a PhD in Health Informatics from The University of Iowa, USA.

Citizens´ health portals have become part of modern healthcare services on a global level. Health portals can facilitate access to healthcare and have the potential to increase patient engagement, treatment adherence, and improve quality of care for better health outcomes. It is the aim of the health authorities in Iceland to implement integrated, national digital solutions to support high quality health care and better health outcomes for the citizens.

Health portals are important tools which can be used in systematic symptom monitoring and assessment, especially in the case of long-term illnesses where healthcare professionals are able to monitor remotely, diagnose and respond to symptoms in a timely manner. This is especially important for the increasing number of patients being diagnosed with cancer, where most patients stay at home between treatments, dealing with various physical and psychological symptoms that are important to respond to and ameliorate in time.

The citizens´ health portal in Iceland is integrated with the national electronic health record and has been in operation since 2014. It is free of use to citizens via an eID and there is only one point of access for all citizens, no matter where they are seeking their health services. It has all the core features of health portals, such as view and request for medication, eBookings, vaccination information, allergies, visits, maternal health record, questionnaires, and secure messaging with health professionals.

Since January 2022, cancer patients receiving treatment at the National Hospital in Reykjavík have had access to a designated space in the portal, with interactive questionnaires, tailored education material and secure messaging with their health professionals via the citizens´ health portal while staying at home. The questionnaires are sent from the electronic health record system, the patient fills it out and sends back. Replies are automatically saved in their EHR and based on the answers may trigger an immediate response from the nurse on call. Tailored educational material can also be sent automatically from the EHR, based on the patient´s answers. Furthermore, the patient has access to secure messaging with the health professionals on the cancer unit.

This kind of patient engagement and interactive cooperation with a healthcare provider in the form of systematic assessment, tailored education material and secure messaging can be implemented in all kinds of health services for patient monitoring and assessment, including diabetes, COPD, high blood pressure, depression, and health promotion. Questionaries can also be used to assess patients before hospital admission, before and after surgery, in the ER, and to monitor progress.

Use of the citizens´ health portal has increased exponentially since COVID-19 started. Last year 83% of all Icelanders, 16 years and older, used the health portal at some point in time, an increase of 30% from the year before. For the first time male and female usage was almost equal.

Results from a citizen survey conducted in early 2020 (before COVID-19), where the response rate was 60%, showed that 90% of respondents were in favor of eHealth services, 80% were satisfied with the citizens´ portal, and 80% believed that access to the citizens´ health portal saved time.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-1: Application and Implementation of Telehealth Services Designed for the Elderly Population During the COVID-19 Pandemic: A Systematic Review

Motti Haimi[1,2,3] MD, PhD, MHA, Anat Gesser-Edelsburg[3,4] PhD
[1]*Clalit Health Services, Israel*
[2]*Rappaport Faculty of Medicine, Technion, Haifa, Israel*
[3]*School of Public Health, Faculty of Social Welfare & Health Sciences, University of Haifa, Israel*
[4]*Health and Risk Communication Research Center, University of Haifa, Haifa, Israel*

Background: Telehealth (or Telemedicine) is the delivery of healthcare services by healthcare professionals, where distance separates between the participants. During the last years it has become a convenient way for patients to obtain valuable information and health consultation.

Since December 2019 the world has been facing a global pandemic threat, known as "Covid-19," in which social distancing and travel restrictions have been imposed and enforced around the world.

Telemedicine is an effective way, especially during this time, to provide wide access to caregivers, and increase equality in care, while keeping patients and health workers safe. The elderly population may benefit the most from telehealth services, especially during the Covid-19 era since they are at greater risk of developing severe disease.

Objective: The aim of this meta-analysis was to explore the availability, application and implementation of telehealth services during the Covid-19 era, designed for the aged population (age 65 and more), who needed them the most during this challenging period.

Methods: This meta-analysis was conducted by searching the most popular databases including PubMed, Embase, and Web of Science. This systematic review was conducted based on systematic reviews and meta-analyses (PRISMA) guidelines. Inclusion criteria included studies clearly defining any use of telehealth services in all aspects of health care during the COVID-19 outbreak, aimed for the elderly population (age 65 and more) published in peer-reviewed journals. Two reviewers independently assessed search results, extracted data, and assessed the quality of the included studies. A narrative synthesis was undertaken to summarize and report the findings.

Results: A total of 3,225 articles were identified after removing duplicates. After reading the full texts of 40 articles, we finally included eleven articles. The contents of the services included consultations for instance symptoms, prevention and therapy, for Covid-19 related issues, or for routine health maintenance issues.

Some of the telehealth usage services for patients were control and triage during the outbreak of the COVID-19 pandemic, self- and distance monitoring and treatment, requested follow-ups for patients living in health centers, and implementation of online health services.

Conclusions: The use of telehealth improves the delivery of health services, in routine times and especially during outbreaks like Covid-19.

However, although the elderly population may benefit the most from telehealth services, especially during a pandemic and social distancing restrictions, still, not enough services were developed and implemented directly to satisfy the needs of this population.

In order to maximize the benefits of telemedicine, additional initiatives, should be implemented, to address the challenges that elderly patients may experience in accessing these services.

References are available from the first author.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-2: Relationships Between Physicians' Satisfaction in Health Information Exchange and Associated Organizational Features in Hospitals

Niina S. Keränen[1,2], Timo Tuovinen[1,2], Tinja Lääveri[3,4], Tarja Heponiemi[5], Peppiina Saastamoinen[6], Johanna Viitanen[4], Maarit Kangas[7], Jari Haverinen[1,8], Jarmo Reponen[1]

[1]*FinnTelemedicum, Research unit of Medical Imaging, Physics and Technology (MIPT), University of Oulu*
[2]*Medical Research Center Oulu (MRC Oulu), Oulu University Hospital and University of Oulu*
[3]*Vaccine Research Center, Inflammation Center, HUS Helsinki University Hospital and Helsinki University*
[4]*Department of Computer Science, Aalto University*
[5]*Finnish Institute for Health and Welfare*
[6]*The Finnish Medical Association*
[7]*Northern Finland Birth Cohorts, Arctic Biobank, Infrastructure for Population Studies, University of Oulu*
[8]*Finnish Coordinating Center for Health Technology Assessment (FinCCHTA), Oulu University Hospital*

Introduction: In the STEPS 3.0 project, the health information exchange (HIE) features of hospital districts were surveyed, both as physicians' experiences (2021) and as availability reported by hospital administration (2020). We look into the combined data to see which organizational features are related to physicians' satisfaction in HIE.

Materials and Methods: The original survey methods have been described elsewhere [1-3]. In the physician usability survey, user satisfaction in HIE was asked as "Collaboration on and information exchange between physicians working in different organizations" on a 5-point Likert scale from "Very well" to "Very poorly". The respondents were filtered to include only physicians who primarily worked in hospitals and used electronic health records (EHR) for patient care (n=2714). Organizational information was obtained from all 21 hospital districts. Hospital district was used as the key to combine the datasets. Mann-Whitney U test was used to compare whether there was a difference in user satisfaction in HIE between groups with and without a certain organizational feature.

Results: Statistically significant relationships were found between a host of organizational features and reported satisfaction in inter-organizational physician collaboration. (Table 1).

Table 1. Organization features (yes/no) and average HIE satisfaction on a 1-5 scale, where 1 is the best satisfaction.

Feature	Mean satisfaction		p-value
	Yes	No	
Joined one or more regional HIE system	3.83	3.53	<.001
Regional HIE information integrated seamlessly into EHR	3.32	3.99	<.001
Kanta information integrated seamlessly into EHR	3.80	3.65	0.021
EHR text is at least partly visible from hospital to healthcare centres, outside Kanta*	3.78	3.87	0.566
EHR text is at least partly visible from healthcare centres to hospitals, outside Kanta*	3.91	3.15	<.001
EHR text from other hospital districts is visible, outside Kanta*	2.94	3.90	<.001
Referral from private sector in use	3.79	3.45	0.014
Sending epicrisis to private sector in use	3.79	3.67	0.104
Electronic consultation with private sector in use	3.83	3.64	<.001
Televideoconsultation between physicians in use	3.79	3.64	0.026
Hospital is part of a single registry (with primary healthcare)	3.80	3.58	0.001
Primary and secondary healthcare are provided by the same organization in hospital district	3.51	3.81	<.001
IT departments combined or collaborating	3.51	3.83	<.001

Discussion: There are a number of statistical differences in physician satisfaction in HIE between groups with a specific organizational feature. Most satisfied physicians were found in regions where texts from other hospital districts are visible also through methods other than the national archive, or where regional HIE information is included seamlessly into the EHR view. Surprisingly not all features corresponded to increased satisfaction. More research is needed into the best technological methods of supporting inter-organizational physician collaboration.

References:
[1] Reponen J, Keränen N, Ruotanen R, Tuovinen T, Haverinen J, Kangas M: Tieto- ja viestintäteknologian käyttö terveydenhuollossa vuonna 2020. Tilanne ja kehityksen suunta. Terveyden ja hyvinvoinnin laitos, Raportti 11/2021.
[2] Suomen Lääkäriliitto (2021). Potilastietojärjestelmät lääkärin työvälineenä 2021: Ennakkotuloksia https://www.laakariliitto.fi/site/assets/files/5229/tiedotemateriaalit_polte_2021_final.pdf [accessed 6.6.2022]
[3] Hyppönen H, Kaipio,J. Heponiemi T, Lääveri T. Aalto AM, Vänskä J, Elovainio M. 2019. Developing the national usability-focused health information system scale for physicians: validation study. Journal of medical Internet research, 21(5), p.e12875.

O-3: Students' Self Evaluation Competence at the Beginning of Student in Digital Health and Social Care Service Special Education

Outi Ahonen[1], PhD, Päivi Sanerma[2], PhD, Jarmo Heinonen[1], PhD, LicSc, Minna Tiainen[3], MSc, Anna Rauha[4], MSc, Merja Männistö[5], PhD

[1]*Laurea University of Applied Sciences, Espoo, Finland*
[2]*HAMK University of Applied Sciences, HAMK SMART research unit*
[3]*Tampere University of Applied Sciences, Tampere, Finland*
[4]*Seinäjoki University of Applied Sciences, Seinäjoki, Finland*
[5]*Oulu University of Applied Sciences, Oulu, Finland*

Introduction: Lifelong learning is an important element in professionals' personal development [1] and co-creation activities in health and social care. This study is part of UUDO- project [2] which purpose is to strengthen professionals' health care and social welfare informatics competencies [3]. The project has produced a specialization education - Multidisciplinary competencies in developing digital health and social care services [2] based on collaboration of 14 Universities of Applied Sciences. The aim of this study was to evaluate that education using students' self-assessment of importance of competences focusing on the importance of the competence area in the digitalization of health and social care, and how they assess their own competencies at the beginning of education.

Material and Methods: Sample was collected from 274 special education students in the years 2021 and 2022. The Background information was concerning years of work experience, professional education area and study credits. Survey with 64 questions (likert scale 1=disagree to 4=agree) based on earlier studies were formed [3]. Cronbach's alpha was 0,962 (N=126) for all the material. SPSS 27.0 program with t-test was used for statistical analyses to see the relationship between how important the competence is and the level of students' current competencies. Paired t-test between variables were calculated and standardized by using average of variances. Confidence interval percentage of the difference was 95 %. A significant level was 5 %.

Results: In every pair arithmetic mean for the How Important was higher than the Current Competence. The average means of all competencies was 1,04 between how important the competence was to the students and what was the current understanding of a particular competence. Significance was in 1 % with paired t-test. The average mean of competencies was from largest to smallest: Service design competences 1,46; Online guiding competencies 1,31; Knowledge-based management 1,07; Monitoring 1,07; Societal Competence 1,04; Ethical 0,95; Online interaction 0,90; Client-oriented digital service 0,78 and Informatics 0,75

Discussion: The results show that Service design competencies have the highest average level of students' competencies and variance in competence. The second largest variance was in Online guiding competences, which is one of the clearest competencies students to understand the content. Other competencies are more abstract at the beginning of the studies. Results may be explained by expert bias, when a person with a lot of knowledge rates their own level of knowledge lower where a person with less knowledge does the opposite. Also, optimism bias can explain the results. [4] Lifelong learning needs new cooperation between working life and higher education in order to strengthen the expertise competence to meet future working life needs.

References:
[1] European commission (2021). Council Resolution on a strategic framework for European cooperation in education and training toward European Union Area and beyond (2021-2023). Official Journal of the European Union.
[2] Special Education. 2020. Multidisciplinary competencies in developing digital health and social care services. [accessed 17.5.2022].
[3] Tiainen, M., Ahonen, O., Hinkkanen, L., Rajalahti, E., & Värri, A. 2021. The definitions of health care and social welfare informatics competencies. Finnish Journal of EHealth and EWelfare, 13(2), 147–159. [accessed 17.5.2022].
[4] Hanoch Yaniv and Barnes Andrew J. 2017 Behavioral economics and healthy behaviors: key concepts and current research. London, NewYork Routledge, Taylor & Francis Group

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Sessio 2B: HYTE -uudistus - Tilannekuva vajaa 100 päivää starttiin

Puheenjohtaja: Erityisasiantuntija Timo Ukkola, STM

Keskiviikko 28.9.2022

15:00 – 16:25

2B-1 HYTE -uudistuksen pääkohdat
Timo Ukkola, Erityisasiantuntija
STM

2B-2 Hyvinvointialueiden valmistelutilanne
Karri Vainio, Erityisasiantuntija
Kuntaliitto

2B-3 Case: Uuden tietojärjestelmän valmistelu
Jari Porrasmaa, Digijohtaja
KSSHP

2B-4 Case: Tietojärjestelmäuudistuksen valmistelu hyvinvointialueella, case Keusote
Antti Ylä-Jarkko, Digi- ja tietojohtaja
Keski-Uudenmaan sote

2B-5 Toiminnan muutoksen tukeminen hyvinvointialueilla tietojärjestelmien avulla
Juha Korpelainen, vs. Sairaanhoitopiirin johtaja
Pohjois-Pohjanmaan sairaanhoitopiiri

Scientific rapid presentations

O-4 Creating Professional Career Model - Based on Informatics Competencies in Health and Social Care
Jaana Kotila, MNsc, RN
Helsinki University Hospital, HUS, eHealth services, Helsinki, Finland

O-5 Digital Support Model for North Karelia Social and Health Services', Siun sote's, clients
Pirjo Vesa, PhD, RN
Karelia University of Applied Sciences, Finland

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

HYTE-uudistuksen pääkohdat
Timo Ukkola, Erityisasiantuntija
STM

Biography Timo Ukkola

Timo Ukkola (M.Sc., Vocational Teacher, Registered Nurse) is a Senior Specialist at Ministry of Social Affairs and Health. He is an experienced professional working over a decade in the field of (ICT) transformation of public health and social services starting from municipalities level. Timo's educational background covers hands-on professional health care and Master's degree in Health and Human Services Informatics (HHSI). At the moment he is focused on digitalization and information management issues related to health and social services reform. Previously he gathered a national state of customer and patient information systems (CPIS) working in the Association of Finnish Local and Regional Authorities. Timo has vast experience in rationalization and consolidation of customer and patient information systems, nationally significant CPIS-projects i.e. Apotti and Aster. Currently, he has an special interest in user-based development of ICT, users being both citizens and social and health care professionals. Among large networks inside and outside of academic communities Timo is a member i.e. in social and health care knowledge management forum and the FinCC expert group. Please find more information and network with Timo via LinkedIn: https://fi.linkedin.com/in/timoukkola

Health and Social Services Reform

The responsibility for organising health, social and rescue services will be transferred from municipalities to wellbeing services counties from the beginning of 2023. Municipalities will remain responsible for promoting the health and wellbeing of their residents, including child daycare, education, sports and cultural services. The public sector will remain the organiser and primary provider of services. Private sector actors and the third sector will supplement public health and social services. Five collaborative areas for healthcare and social welfare will be created to secure specialised services. People will continue to be allowed to use health and social services across regional boundaries.

The highest decision-making power in each wellbeing services county is exercised by a county council, whose members and deputy members are elected in county elections. The activities of the wellbeing services counties is mainly be funded by central government. The funding is divided among the counties by using imputed factors that describe the service needs and circumstantial considerations in regard to health, social and rescue services duties. Some of the funding is based on population numbers and some is determined by criteria for health and wellbeing performance. The funding of rescue services is determined on the basis of a risk coefficient.

More information in English https://soteuudistus.fi/en and https://thl.fi/en/web/social-welfare-and-health-care-reform

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

Hyvinvointialueiden valmistelutilanne
Karri Vainio, Erityisasiantuntija
Kuntaliitto

Biografia Karri Vainio

Karri Vainio toimii Kuntaliitossa sote-uudistuksen erityisasiantuntijana ja on työskennellyt tiiviisti uudistuksen ja siihen liittyvien digitalisaatio- ja tiedonhallintakysymysten parissa vuodesta 2012 lähtien. Karrin vastuulle Kuntaliitossa tällä hetkellä kuuluu mm. sote-uudistuksen toimeenpanoon liittyvä kunnille ja hyvinvointialueille tarjottava muutostuki.

Final countdown is on. How has the implementation of the reform progressed in regions and what kinds of questions still need to be resolved before the responsibility of social, healthcare and rescue services is transferred? Will the salaries and invoices be paid? Will the information systems work? Are the most important services for citizens still be up and running in January 2023?

Presentation is going to give a quick review of the situation of the implementation in regions, municipalities and nationwide

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Case: Uuden tietojärjestelmän valmistelu
Jari Porrasmaa, Digijohtaja
KSSHP

Biography Jari Porrasmaa

Jari Porrasmaa (MSc) has been working in healthcare informatics for over 2 decades. He is currently working as the chief digital officer of the hospital district of central Finland and primarily focusing of the implementation of the regional reform on social and healthcare in Finland. Jari's past career includes positions at the ministry of social affairs health in Finland (MOSAH) as well as the university of Eastern Finland (UEF). At the MOSAH position Jari was responsible for the national architecture and the development of national (Kanta) services for social and healthcare and also working on related legislation. During the UEF term Jari was involved in various R&D projects with hospital districts and companies working in the area. He is currently serving as the chair of board of HL7 Finland has been actively working on interoperability issues on national as well as international arenas.

Esitys käsittelee hyvinvointialueiden käynnistymiseen liittyviä asioita.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Case: Tietojärjestelmäuudistuksen valmistelu hyvinvointialueella, case Keusote

Antti Ylä-Jarkko, Digi- ja tietojohtaja

Keski-Uudenmaan sote

Biografia Antti Ylä-Jarkko

Antti Ylä-Jarkolla on IT-johtajakokemusta vuodesta 2007 lähtien. Vuosien 2007 – 2013 välisenä aikana hän työskenteli Opetushallituksen tietohallintojohtajana, jolloin luotiin kansallinen opintopolku.fi -palvelu. Vantaan kaupungin tietohallintojohtaja hän työskenteli 2013 – 2019, jolloin kaupungin toimintaa digitalisoitiin vahvasti. Tällä hetkellä Antti Ylä-Jarkko työskentelee Keski-Uudenmaan sote -kuntayhtymän tieto- ja digijohtajana, vastaten kuntayhtymän tuottavuudesta, strategisista hankinnoista, moniammatillisesta työskentelymallista konsernissa, tiedolla johtamisesta sekä tietohallinnon johtamisesta.

Central Uusimaa Welfare Region Information Management and Structures

Background: The Central Uusimaa Social Health and Welfare municipal region started its productive operations in 2019. The presentation briefly describes how the ICT and knowledge management structures have been set up between 2019 and 2022. The establishment project has included all the measures that have been taken in Finland for future welfare areas. The presentation will briefly describe the establishment of the knowledge management entity, ICT activities and knowledge-based management.

The aim of the project has been to create a fully operational social welfare region, with a strong emphasis on knowledge-based management.

Results: The presentation will show some of the data management views in use.

Discussion/what is happening next: The main challenge will be to operate within a given budget and with ever-increasing demand for services

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Toiminnan muutoksen tukeminen hyvinvointialueilla tietojärjestelmien avulla

Juha Korpelainen, vs. Sairaanhoitopiirin johtaja

Pohjois-Pohjanmaan sairaanhoitopiiri, The Northern Ostrobothnia Hospital District

Biography Juha Korpelainen

Juha Korpelainen (born 1959), was graduated MD in 1985 and a specialist in neurology in 1992, in University of Oulu, Finland. Korpelainen received his PhD in 1993, and was nominated as a docent of neurology at the University of Oulu in 1999. He also has an eMBA and a special qualification in social and health care management, and in medical rehabilitation. Juha Korpelainen has worked as a Medical Director in the Oulu University Hospital since 2017, and before that as a Chief Administrative Physician since 2007 and as a clinical neurologist since 1993. Korpelainen has a long experience in research, development and innovation activities in social and health care, and he is particularly interested in the utilization of technology in hospitals. Academic activities: 97 scientific articles, supervisor of 8 doctoral and 14 master theses. Today he works as a director at Oulu University Hospital.

Supporting the health and social service reform in the Oulu Region by using information systems

The health and social services reform will restructure the organization of public healthcare and social welfare in Finland. Rescue services will also be restructured as part of the reform. Currently, the municipalities and hospital districts are responsible for organizing health, social and rescue services. In future, the wellbeing services counties will be responsible for ensuring that you receive the health, social and rescue services you need. The municipalities will continue to organize certain services, including child daycare, education, sports and cultural services. The reform will be carried out in a people-oriented manner, with a focus on services. As society is changing, services need to change with it.

The goal of the reform is to safeguard equal and quality health and social services for all and reduce inequalities in health and wellbeing. Health and social services will use the best and most efficient practices. The aim is to ensure the availability of skilled labour, improve safety and respond to the challenges arising from changes in society.

In the Oulu Region, the new strategy of the county includes twelve aligning principles, and concrete actions, measures and goals for the services. The strategy obliges an intensive digitalization of the services and an extensive development of the information system for the social and health services.

Our aim is to harmonize and integrate the present social and health information systems seamlessly with one another. Esko information system will be the core of the entity that will be integrated with several systems of the partners.

The core information systems are developed together with our professionals, i.e. medical doctors and nurses, who are the main users of the systems. Service designers are largely used in planning the service models and processed used in the whole region.

The enterprise architecture of the region is directed by the county, and in-house companies like Esko Systems are used to develop and maintain the main information systems.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-4: Creating Professional Career Model - Based on Informatics Competencies in Health and Social Care

Jaana Kotila[1], MNsc, RN, Outi Ahonen[2] PhD, RN, Pirkko Kouri[3], PhD, RN, Nina Hahtela[4] PhD, RN, Kaija Saranto[5] PhD, RN
[1]Helsinki University Hospital, HUS, eHealth services, Helsinki, Finland
[2]Laurea University of applied sciences, Digital Unit, Espoo, Finland
[3]Finnish Society for Telemedicine and eHealth, Finland
[4]Finnish Nurses Association, Helsinki, Finland
[5]University of Eastern Finland, Faculty of Social Sciences and Business Studies, Kuopio, Finland

Introduction: According to 2030 Digital Compass statement the digital skills are crucial on the way to functional European e-society. Modern health and social care needs both the digitally skilled citizens and professionals. Future more there is growing need of digital experts. [1] The Finnish Nurses Association (FNA) has launched its renewed strategy for digital nursing, and to strengthen the role of nurses both in developing and running digital services. Healthcare professionals need new knowledge and updating of skills, as well as support for the change produced by technology-mediated services. [2] The purpose of this paper is to illustrate liaison between AURA model [3] and Staggers competence levels [4].

Material and Methods: Based on the literature the skill levels for the digital nurse model were established by comparing the AURA model [3] and combining it in to the Staggers competence levels [4]. In addition to a digital nurse model was established by combining the AURA model and Staggers' levels in nursing informatics.

Results: The comparison shows that nurse training must include informatics competence along nurse education and in working life. Our model shows four phases of digital nursing career model. Novice nurse has basic knowledge and skills in informatics; Experienced nurse has expertise in his/her own specialty and is proficient in informatics; Digital mentor shares his/her own experiences, solves problems, and encourages the introduction of digital services; Nursing Informaticists, is innovator and an informatics developer. Furthermore, Nursing Informaticists develop theories and lead informatics practices and research. [3]

Discussion: Based on our literature review the new assessment criteria is needed for nurse´s career model in informatics. The model shows four competence and career levels. Nurses work in digital environment and there is growing need of digital mentors' support. Nurses, especially experienced nurses, have a role in narrowing the gap both among staff nurses and between clinical nursing and ICT. Nurses should participate in the development of information systems.[4] The model suggest that lifelong learning is the key factor to promote professional e-competencies. The model helps the leaders to identify professional competencies and role in working life. Model boosts digital education ecosystem in deep cooperation with working life [1].

References:
[1] Digital Compass: The European way for the Digital Decadecommunication-digital-compass-2030_en.pdf (europa.eu) [Assessed 25.5.2022]
[2] FNA 2021. Finnish Nurses Association's Digital Social and Health Services Strategy. https://sairaanhoitajat.fi/wp-content/uploads/2021/06/E-health-2021_.pdf [Assessed 25.5.2022]
[3] Meretoja R, Lindfors K, Kotila J. 2019. Professional Practice Competence Framework for Nurse Leader. (s.115- 127). DOI: 10.1007/978-3-030-10964- 6_9
[4] Staggers, N, Gassert, CA, Curran C. 2002. A Delpi study to determine informatics competencies for nurses at four level of practice. Nurs Res Nov-Dec 2002;51(6):383-90. doi: 10.1097/00006199-200211000-00006.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-5: Digital Support Model for North Karelia Social and Health Services', Siun sote's, Clients

Mira Koivula [1], RN, Master of Health Care, Irina Laatikainen [1], RN, Master of Health Care, Pirjo Vesa [1], RN, PhD, MSc
[1]Karelia University of Applied Sciences, Finland

Introduction: Social and health care services are digitized at a rapid pace. The development of digital services should always proceed from a customer point of view and the services meet client's needs. The potential of digital services can also be considered in support of well-being and health promotion, in which case it is important to help and support the client in the use of digital services. The purpose of Karelia UAS Master's thesis was to find out what kind of digital support North Karelia social and health services', Siun sote's, clients need for digital services and the development task was to create a model of digital support for customers. [1]

Material and Methods: The thesis was carried out as a research development work, in the implementation of which research knowledge was applied. A quantitative survey was used to determine what kind of digital support Siun sote's clients need for digital services. The survey was conducted as an electronic and paper survey and the final sample was 364 responses (n=364). The responses were analyzed using the Webropol reporting tool. The continuous evaluation of research development work was carried out through development meetings, two of which were organized. The goal of the development meetings was to evaluate dialogically the perspective table using the digital support model from an expert, staff and organizational perspective. [2,3]

Results: Based on the results support for the use of digital services is needed in every age category and at the skill level. Digital services are perceived to be useful. The respondents have the comprehensive use of the equipment needed for digital services and strong authentication tools. The majority hoped digital support would take place as training, either online or local education. The skilled dig users hoped for training to take place remotely. As a form of near support, the digital control points were highlighted most strongly and remote support telephone consultation and more skilled chatrooms were wanted through the services. [3]

Discussion: Based on the survey and research data carried out in development work, it can be confirmed that everyone needs digital support at some point in their lives and that electronic services are a strong part of everyday life for residents of the North Karelia region. Support for the use of digital services is vital so that everyone has equal access to increasing and evolving health services. The model makes it possible to establish digital support as part of quality services in the welfare area and to promote electronic social and health care services. [4]

References:
[1] Valtiovarainministeriö. 2022. Digitaidot uusia kansalaistaitoja. https://vm.fi/digitaidot-uusia-kansalaistaitoja.2.2.2022
[2] Valtiovarainministeriö. 2017. Digituen toimintamalliehdotus. AUTA-hankkeen projektiryhmän loppuraportti. Valtiovarainministeriö. https://urly.fi/2s60. 16.5.2020.
[3] Innokylä. 2021b. Näkökulmataulukko – ratkaisujen kehittämisen matriisi. https://innokyla.fi/fi/tyokalut/nakokulmataulukko-ratkaisujen-kehittamisen-matriisi. 20.11.2021.
[4] Koivula, M. & Laatikainen, I. 2022. Siun soten asiakkaille annettavan digituen malli. https://www.theseus.fi/bitstream/handle/10024/745015/Koivula_Mira_Laatikainen_Irina_2022_04_13.pdf?sequence=2&isAllowed=y. 19.5.2022.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Session 3A: New health apps and services: What are our choices as a citizen?

Chair: Vice-President Jarmo Reponen, Finnish Society of Telemedicine and eHealth

Wednesday 28th September 2022

17:30 – 19:00

3A-1 **Digital Maternity Care - Patient Perspective on New Technical Solutions**
Stefan Hansson, Professor, Chief Physician
University of Lund, Sweden

3A-2 **Citizen Engagement and Data-Driven patient - Provider Collaboration**
Anne Moen, Professor
University of Oslo, Norway

3A-3 **Citizen Attitudes toward Digital Health Behaviour Change Interventions**
Elina M. Mattila, Customer Account Lead
VTT Health Technologies, Finland

3A-4 **Case: Self-Care in Diabetes, an Ecosystem of Many Apps and Devices**
Mikael Rinnetmäki, Founder
Sensotrend Ltd, Finland

Scientific Rapid Presentations

O-6 **Older Person's Motivations to Participate in the Use of Mobile Smartphone App Monitoring of Hypertension in Uganda**
Juliet Nakazibwe Kiwanuka, MPH
Victoria University, Uganda

O-7 **Remote Measurement of Glucose in Home Care**
Kati Honkanen, Lic.Adm.Sci
Päijät-Häme Joint Authority for Health and Wellbeing

O-8 **Older Adults' Perception of ICT's Role in Alleviating Social Isolation During the Covid-19 Pandemic**
Sari Heikkinen, PhD, Research programme director, sustainable and versatile social and health care
Laurea University of Applied Sciences, Vantaa, Finland

O-9 **How Well Does the eHealth Tool Recognize the Health Challenges in Comparison to a Nurse among the Long-Term Unemployed?**
Tuomas Koskela, MD, Docent
Tampere University, Faculty of Medicine and Health technology, Finland

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Digital Maternity Care - Patient Perspective on New Technical Solutions
Stefan Hansson, Professor, Chief Physician
University of Lund, Sweden

Biography Stefan Hansson

Professor Stefan Hansson works as professor and senior consultant in obstetrics and gynecology at Skåne University Hospital and is the Head of Obstetrics and Gynecology and deputy Head at the Department of Clinical Sciences Lund, at Lund University. SH has a basic training in chemistry. He graduated from medical school in 1994, became licensed in 1999 and specialist in Obstetrics and Gynecology in 2004. In parallel with his clinical training he pursued a scientific career. Between 1994 and 1997 he held a postdoc position at National Institutes of Health, Bethesda, USA, were he trained in molecular biology and neuroscience. Since 1994, over 135 papers have been published and four patents have been filed. Beginning during his residency, he applied his molecular knowledge and developed a translational research group that has been focusing on preeclampsia. Based on findings from protein- and gene array studies, free fetal hemoglobin has been shown to be a potential new predictive- and diagnostic marker for preeclampsia. Furthermore, in collaboration with Bo Åkerström, SHs research group is currently focusing on a new potential treatment for preeclampsia based on the free heme scavenger, alpha-1-microglobulin (A1M). A new potential therapeutic drug is being developed in the drug company-Guard Therapeutics (formerly namned A1M Pharma), that they founded in 2007. In 2011, SH was awarded the largest Swedish prize for clinical research, the Athena prize.

Background: Preeclampsia (PE) is a severe pregnancy-related disorder that affects approximately 8.5M pregnancies worldwide. It is a leading cause of maternal and perinatal morbidity and mortality, responsible for approximately 18% of all maternal deaths and up to 40% of neonatal deaths globally (1). Women with a history of PE are at a higher risk of developing future cardiovascular disease (CVD) than those with normotensive pregnancies (2), which imposes an additional burden on healthcare (3).

The diagnosis of PE is based on maternal clinical symptoms: high blood pressure (BP) and evidence of organ damage presenting after 20 weeks of gestation. Symptomatic BP treatment is the only available treatment for PE and delivery is the only known cure. However, these are crude measures, and PE progression is often unpredictable and may occur rapidly without warning when looking at clinical symptoms. Hence, there is an urgent need for biomarkers and strategies to identify women with PE that are at risk of developing more severe forms of PE, and for predictive markers to help identify women that are at high-risk of developing CVD after their PE pregnancy.

The smartphone application ANURA is artificial intelligens-based and uses the phone camera to measure BP by scanning the face for 30 seconds (www.anura.ai) (4).

Aim: to evaluate the use of the mobile apllication ANURA for maternal BP self-monitoring during pregnancy to provide a better predictive value for the development of PE, and to identify women at risk of developing postpartum depression following PE.

Results: The recruitment for the study has already started as of January 2022. The women manage the ANURA application well, and the data have successfully been collected from cloud-based storage. Anticipated outcomes: We anticipate that ANURA will enable timely identification of high-risk pregnancies, to enable individualized care and intervention. In the long-term, AI prediction could be used to combine mobile phone-generated data with other clinical data and biomarker profile, for a personalized risk classification.

Discussion: PE is the leading cause of both maternal and neonatal mortality. Global healthcare costs for women with PE and their premature babies are estimated to be 30 billion US dollars annually. Increased long-term risk of CVD associated with PE imposes an additional burden on the healthcare system. While the management of PE is currently reactive, effective diagnostic markers are needed to allow physicians to offer prophylactic treatments and optimize time of delivery. In the general population, home BP monitoring for diagnosing hypertension has proven to yield lower BP measurements than those monitored at the hospital and reduced the need for hospital visits (5). In this project, we will involve the patient, by using a mobile application for home monitoring of BP and mental wellbeing. This is a new approach that focus on the patient perspective which also educates the patients and makes them actively involved in their care.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

References:
[1] WHO, http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2015/en/. 2015.
[2] Wu, P., et al., Preeclampsia and Future Cardiovascular Health: A Systematic Review and Meta-Analysis. Circ Cardiovasc Qual Outcomes, 2017. 10(2).
[3] Bellamy, L., et al., Pre-eclampsia and risk of cardiovascular disease and cancer in later life: systematic review and meta-analysis. BMJ, 2007. 335(7627): p. 974.
[4] Barszczyk, A. and K. Lee, Measuring Blood Pressure: from Cuff to Smartphone. Curr Hypertens Rep, 2019. 21(11): p. 84.
[5] Parati, G., et al., European Society of Hypertension practice guidelines for home blood pressure monitoring. J Hum Hypertens, 2010. 24(12): p. 779-85.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Citizen Engagement and Data-Driven Patient - Provider Collaboration

Anne Moen, Professor

University of Oslo, Norway

Biography Anne Moen

Anne Moen, RN, PhD, FACMI, FIAHSI is full professor at the Faculty of Medicine at the University of Oslo, Oslo, Norway, and adjunct Professor, Norwegian Center for eHealth Research, Tromsø, Norway. Her program of research seeks to better understand digital citizens centered services, based on opportunities to "collect, curate and control" all relevant, personal health information. She has led and participated in national and European interdisciplinary R&D projects and networks that combine in-depth insights in healthcare with design and deployment of accessible, user-empowering ICT-solutions, emphasizing broad, inclusive citizen participation, digital health literacy and overall engagement for health and wellness. Professor Moen is the Coordinator of "Gravitate – Health: Empowering and Equipping Europeans with Health Information from trusted sources for active, safe, secure personal health management and adherence to treatment" Innovation Medicine Initiative Public-Private Partnership (project 945334, IMI2 JU, 2020-2025). Gravitate-Health's mission is to prepare and test innovative, easy-to-use, elegant digital services that actively engage and empower citizens and their support network with access to and understanding of health information from trusted sources. More information is available at www.gravitatehealth.eu Professor Moen served as EFMI representative in EU eHealth stakeholder group (2015 – 2019), and was rapporteur for special focus area on "Citizens – health data". She served as President of EFMI (European Federation for Medical Informatics) (2014 – 2016), and IMIA-EFMI Vice President (2016-2018). She was elected to ACMI (American College of Medical Informatics – 2015), is a founding fellow of IAHSI (International Academy for Health Sciences Informatics – 2017), and named Honorary Fellow of EFMI, 2019. Anne Moen is an RN (1985), and holds a master degree in nursing science (1996), and PhD in social sciences (Dr. polit) – specialization in health informatics (2002) from University of Oslo, Norway. She was Fulbright fellow (2002) and postdoc at University of Wisconsin-Madison and UiO (2002 – 2005), and visiting scientist at University of Wisconsin-Madison – Health systems Lab (Patricia F. Brennan PI) (2005 – 2012, 2015).

To advance eHealth - across the European regions - it is urgently needed to equip citizens with novel tools and services, capacities, and digital capabilities. Today a plethora of ad-hoc, highly personal and time-consuming strategies to collect, comprehend and use health information are in use. Common for all of them is limited scalability, little reliable guidance, or variations in quality control. The Citizen is the not properly supported with digital tools and services to engage in personal health management activities, self-monitoring, and follow-up of ongoing treatment. I will discuss potentials in digital health data services that engage and enable active and personalized support for personal health activities, support variation in personal preferences for convenience, discretion, and control with personal health data, and enrich patient – provider collaboration. A trusted "Personal Health Data Space" can enable a thriving European Health Data Space, health data altruism and advance active use of health data for everyday purposes, and drive health outcomes and quality of life, as well as research and policy development.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Citizen Attitudes toward Digital Health Behaviour Change Interventions
Elina M. Mattila, Customer Account Lead

VTT Health Technologies, Finland

Biography Elina M. Mattila

Elina Mattila is Customer Account Lead in health technologies at VTT Technical Research Centre of Finland. She has over 15 years of research experience focusing on the design and evaluation of theory-based digital behaviour change interventions for health promotion and disease prevention. She received her M.Sc. (Tech.) and Ph.D. (Tech.) degrees at the Faculty of Computing and Electrical Engineering at Tampere University of Technology, Finland, in 2004 and 2010, respectively. She has co-authored over 40 scientific publications.

Introduction: Digital behaviour change interventions (DBCIs) have been developed and studied for decades. They hold great promise in delivering behaviour change support in a timely and personalized manner with high fidelity. However, maintaining users' interest and sufficient engagement to ensure health benefits is challenging. Yardley et al. [1] divided engagement into micro-level engagement, i.e., interaction with the intervention and macro-level engagement, i.e., engagement with intervention goals and behaviour change. Perski et al. [2] added the subjective experience, i.e., attention, interest and affect, to the definition. Factors known to increase engagement include both DBCI features, such as regularly updating content, gamification, and usability, and external factors, such as the setting in which the intervention is delivered and the availability of human support.

Methods: Engagement in two large-scale trials testing DBCIs over 12 months will be presented. The DBCIs are a web-based toolkit for weight loss maintenance and a web app for type 2 diabetes prevention.

Results: In both trials, use decreased over time [3,4]. The weight loss maintenance toolkit showed a rapid decline in use, especially after the end of the active intervention [3]. Use of a module addressing physical activity barriers was found to be associated with small but significant immediate increases in physical activity [5]. The users compared the app with commercial services and were unhappy with technical difficulties, lack of updates to the content, and the discontinuation of reminders after active intervention [3]. In the diabetes prevention trial, 99.5% of participants started using the app based on an SMS invitation, and over 50% of participants were retained as weekly users during the first 6 months of the trial [4]. Active use in the first month of the trial as well as positive early user experiences predicted long-term use of the app [6]. However, only very high overall use was associated with improvements in health risk factors [6].

Discussion and conclusion: Detailed data on DBCI use enables in-depth study of user engagement and determining effective engagement [1]. When combined with continuously monitored behavioural data, also engagement with lifestyle changes can be investigated. Furthermore, these data would enable early detection of waning engagement or even behavioural relapses, enabling adaptations to the intervention to retain users and support them optimally in different phases of the behaviour change process.

References:
[1] Yardley, L., et al., 2016. Understanding and promoting effective engagement with digital behavior change interventions. American journal of preventive medicine, 51(5), pp.833-842.
[2] Perski, O., et al., 2017. Conceptualising engagement with digital behaviour change interventions: a systematic review using principles from critical interpretive synthesis. Translational behavioral medicine, 7(2), pp.254-267.
[3] Mattila, E., et al., 2022. Users' Experiences with the NoHoW Web-Based Toolkit With Weight and Activity Tracking in Weight Loss Maintenance: Long-term Randomized Controlled Trial. Journal of Medical Internet Research, 24(1), p.e29302.
[4] Harjumaa, M., et al., 2020. Internet-based lifestyle intervention to prevent type 2 diabetes through healthy habits: design and 6-month usage results of randomized controlled trial. JMIR diabetes, 5(3), p.e15219.
[5] Mattila, E., et al., 2022. Evaluation of the Immediate Effects of Web-Based Intervention Modules for Goals, Planning, and Coping Planning on Physical Activity: Secondary Analysis of a Randomized Controlled Trial on Weight Loss Maintenance. Journal of Medical Internet Research, 24(4), p.e35614.
[6] Lavikainen, P., et al., 2022. Digitally Supported Lifestyle Intervention to Prevent Type 2 Diabetes Through Healthy Habits: Secondary Analysis of Long-Term User Engagement Trajectories in a Randomized Controlled Trial. Journal of Medical Internet Research, 24(2), p.e31530.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Case: Self-Care in Diabetes, an Ecosystem of Many Apps and Devices

Mikael Rinnetmäki, Founder

Sensotrend Ltd, Finland

Biography Mikael Rinnetmäki

Mikael Rinnetmäki searches for sustainable business models for digital therapeutics as the founder of healthtech startup Sensotrend, advances interoperability between healthcare IT systems as the FHIR ambassador of HL7 Finland, advocates for patients' access to high quality treatment as the chairman of the Regional Network of Diabetes Associations in Pirkanmaa, and seeks to advance the adoption of new technologies for diabetes treatment as the vice chairman of the Diabetes Unit of Sailab – MedTech Finland. He lives with type 1 diabetes and holds a M.Sc. in computer science.

There are many people living with diabetes, each one with their own life situation, values, and goals. It is practically impossible to create a remote monitoring or telehealth solution that would address all these needs. Rather, we need an ecosystem of apps and devices. Examples of diabetes apps include MySugr, building on the idea of taming a monster, Glucostratus with automated data transfer to healthcare, Sensotrend with actionable insights for people utilizing wellness trackers, and the dozens of innovative solutions from the open-source development community Nightscout. Each of these apps addresses a need for a particular subgroup of people living with diabetes. None of them is ideal for all. We need an ecosystem of many apps where people living with diabetes can choose the solutions that best support them in reaching their current goals.

For healthcare professionals, though, having to both access and interpret data from many different apps may be less ideal. They appreciate a solution that combines data from all sources. An ideal solution would be one where patients can choose from many apps the ones that suit them best. And all those apps make their data available for a centralized solution.
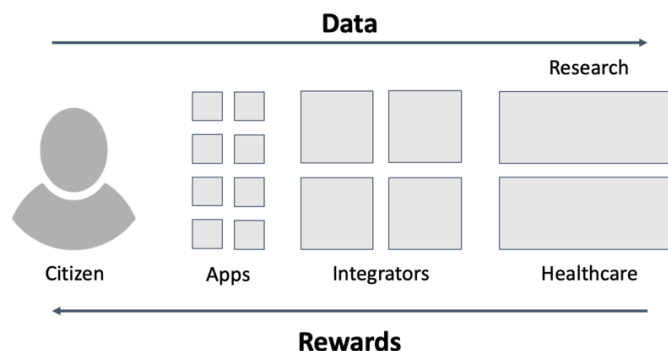
Figure 1. Proposed ecosystem with a data-based business model

The rise of the HL7 FHIR data format and the international consensus over the Ambulatory Glucose Profile add to the feasibility of this approach. Building on experiences from past attempts like Google Health, Microsoft HealthVault and Taltioni, and addressing the challenges concurrent solutions like Apple Health and the Finnish PHR face in providing value to the healthcare system, the focus should be in establishing viable business models for apps and in ensuring integrations to electronic health record systems.

References
[1] https://www.mysugr.com/
[2] https://glucostratus.com/
[3] https://www.sensotrend.com/
[4] http://www.nightscout.info/
[5] https://hl7.org/fhir/
[6] http://www.agpreport.org/
[7] https://googleblog.blogspot.com/2011/06/update-on-google-health-and-google.html
[8] https://www.mobihealthnews.com/content/microsoft-will-officially-shut-down-healthvault-later-year
[9] https://tietosuoja.fi/-/taltioni-terveystili-ja-digitaaliset-sisallot
[10] https://www.apple.com/ios/health/
[11] https://kanta.fi/phr

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-6: Older Person's Motivations to Participate in the Use of Mobile Smartphone App Monitoring of Hypertension in Uganda.

Juliet Nakazibwe Kiwanuka[2,3], MPH, Ddumba Isaac[1,2], MSc, PhD
[1]*Victoria University*
[2]*African Research Center 4 Ageing & Dementia;*
[3]*Makerere University College of Health Science*

Introduction: Cardiovascular Disease (CVD) risk factors such as hypertension and diabetes are more prevalent among the older persons. The CVD risk factors contribute to over 60% of NCD related deaths in later years. Therefore, urgent need for strategies to optimally monitor and control CVD risk factors is paramount in averting morbidity and mortality among older persons. A mobile smart phone App focusing on monitoring of hypertension could be an innovative tool to encourage. The study aimed at exploring older persons motivates for participating in eHealth monitoring of blood pressure.

Material and Methods: A cross-sectional research using a qualitative approach (HTN SmartApp Study) Setting and Participants: It's a nested study from the prospective study of "Testing the use of Smartphone App in control of CVD risk factors among older persons in Uganda". A total of 45 interview guides and 4 focus group discussions were conducted. The study included older persons with Smart phone, diagnosed with hypertension and he/she is on treatment. We employed semi-structured questionnaires for data collection

Results: Eager to know about their Blood pressure numbers, benefits from other CVD risk reduction strategies, reminder to take medications, being functionally independent, daily check up their BP numbers, presence of individual at home and being the first cohort to participate in this trial, were some of the prominent motivators to participate in this trial. Although the design of the study could have influence the reasons to participate in the trial, physical navigating of Mobile SmartApp independently could have been a great motivator

Discussion: Individual benefits and social networks motivated seniors to participate in this trial; such features should be put into consideration while conducting recruitment for older persons for future trials. Additionally, maintenance of level of independence and optimal control of hypertension emerged as a great concern among older person living alone.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-7: Remote Measurement of Glucose in Home Care

Kati Honkanen[1], Lic.Adm.Sci, Jukka Grip[1], BA (Hons), RN, Piritta Mattila[1], M. Health Care

[1]*Päijät-Häme Joint Authority of Health and Welfare*

Introduction: Päijät-Häme Joint Authority for Health and Wellbeing together with LAB University of Applied Science is conducting project KOHTI which is part of the national Technology supporting smart ageing and care at home programme (KATI) [1]. KOHTI included several different pilot projects for testing different technological and digital solutions. One of the pilots focused on testing a glucose meter that remotely sends the measurement results and data to a SaaS cloud interface and from there to Gillie.io cloud platform using Restful API. The idea was to enable nurses to see the information measured by customers remotely using the Gillie.io platform. The hypothesis was the new process would potentially reduce the number of home care visits and also provide more accurate glucose readings.

Material and Methods: Participators in the pilot were initially customers of the remote care unit SEVERI (10 customers). Testing later expanded to other care units with physical care visits. Altogether 21 devices were tested, but the pilot evaluation focused on SEVERI customers. SEVERI´s employees were interviewed to find out experiences of testings. Two group interviews were conducted: the first in the beginning of the pilot and the second in the end of the pilot. 10 SEVERI team members participated in each group. The interviews were semi-structured with a list of structured questions done through Teams Polls, complemented with open-ended questions. The questions through Teams Polls were answered anonymously, and the aggregated results were discussed afterwards as a group. The interviews were facilitated and analyzed by project partner VALOR Partners Oy.

Results: Participants agreed that the meter was suitable for use in home care, and they would wish the use of the device to continue. The use of the cloud platforms remained occasional but was found useful. The process itself did not experience significant changes. Also, the time spent on the visits or around them was not decreased as the readings still needed to be documented to a different system. Though, the quality of measurement was noticed; with the remote device nurses could check the right readings from a certain time while also finding out if customers were giving false readings.

Discussion: he results from the group interviews indicated a good suitability of the measurement device in the home care setting. All participants agreed the device improved the reliability of the readings remarkably or at least slightly. The results thus indicate a potential improvement in care quality and safety. Additionally, the nurses had received mainly positive feedback from the customers using the device. The results will be further analyzed in relation to the pilot costs and potential future indications on time and resource use. The final results will be documented as part of the project report June 2022.

References:
[1] Päijät-Sote: KOHTI-hanke. 2022. https://innokyla.fi/fi/kokonaisuus/paijat-sote-kohti-hanke

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-8: Older Adults' Perception of ICT's Role in Alleviating Social Isolation During the Covid-19 Pandemic

Piia Silvennoinen[1], PhD, Principal lecturer, Sari Heikkinen[1], PhD, Research programme director, sustainable and versatile social and health care
[1]Laurea University of Applied Sciences, Vantaa, Finland

Introduction: The technological advances and increasing life expectancy of people create a situation in which technology becomes embedded in older adults' lives in various ways. In March 2020, stay-at-home orders were put into place in Finland to reduce transmission of the SARS-CoV2-19 virus. The physical distancing recommendations were especially targeted to older adults over 70 years old with the recommendations to avoid social contacts outside the family. The social isolation caused by the restrictions, increased the use of technology among older adults, for example as a venue to maintain contacts to other people.

Material and Methods: Based on in-depth telephone interviews [1] of 10 Finnish older adults gathered during spring 2021, we explored what kind of role ICT had in maintaining their personal networks and social activity during the pandemic. The interviewees were aged between 65-83 years old, seven of them were women and three were men. They all lived independently in their homes either alone or with a spouse. The interviews were analyzed by using inductive content analysis.

Results: The results show that ICT mitigated the experience of social isolation in multiple ways. Technological devices were used in communication where it replaced face-to-face interaction. The interviewees employed different kind of devices for entertainment purposes. In addition, they participated to different kind of courses online. Moreover, they became active in social media, producing blogs and online materials for their children and grandchildren.

Discussion: The results highlight the importance of ICT in alleviating social isolation of older people in the time pandemic. As the pandemic restricted normal everyday life, it also provided the solitude to dwell in digital world and to learn to use it to maintain the daily routines. Moreover, due to pandemic the interviewees' digital skills improved and expanded. The study highlights the importance of technology in promoting health, well-being and active ageing among older adults.

References:

[1] The research is part of SHAPES project funded by EU's Horizon2020 research and innovation programme [grant number 857 159] and Towards socially inclusive digital society: transforming service culture project (DigiIN), [grant number 327169/327145], funded by the Strategic Research Council at the Academy of Finland.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-9: How Well Does the eHealth Tool Recognize the Health Challenges in Comparison to a Nurse among the Long-Term Unemployed?

Tuomas Koskela[1,2] MD, PhD, Venla Raussi[1] BM, Iiris Hörhammer[3] PhD, Sari Kujala[3] PhD

[1]*Tampere University*
[2]*Center of General Practice, Tampere University Hospital*
[3]*Aalto University*

Introduction:
Lifestyle choices and socioeconomic status have a significant impact on the expected onset of diseases, age of death, and risk factors concerning long-term illnesses and morbidity. STAR® is an online health examination tool, which gives users a report that includes an evaluation of their life expectancy and lists the most important health challenges based on questions about health, characteristics, lifestyle and well-being.

Method:
49 unemployed participants attending a health check for unemployed were recruited from two Finnish primary health care centers. At first, the participants used STAR® and attended a nurse's health check after that. The health challenges provided by STAR® were compared with the three most important health challenges provided by a nurse. The health challenges were categorized and the percentages of agreement between STAR® and nurse and the confidence intervals of the percentages were calculated. The health challenges not recognized by STAR were recognized.

Results:
STAR® identified 365 health challenges in 49 individuals. For 47 cases the assessment by both a nurse and STAR was obtained. Health challenges were categorized in 17 different groups. In 63 % of cases, STAR identified all categorized health challenges identified by nurses, 95% CI [47.5, 76.8]. In 70 % of cases, STAR identified at least 2/3 of the categorized health challenges identified by the nurse, 95% CI [54.2, 82.3]. 32 health challenges identified by the nurse could't be categorized into the 17 different categories in the STAR report.

Conclusions:
STAR® identified most of the health challenges identified by nurse but missed some essential ones. The personal health counseling provided by the eHealth tool depends on the questions of the tool and data entered into the tool. The reasons for the differences between the eHealth tool's assessment and the nurse's assessment will be discussed in presentation.

References:

[1] Härkänen T, Kuulasmaa K, Sares-Jäske L, Jousilahti P, Peltonen M, Borodulin K, et al. Estimating expected life-years and risk factor associations with mortality in Finland: cohort study. BMJ Open 2020 Mar 08;10(3):e033741

[2] Kuhlberg H, Kujala S, Hörhammer I, Koskela T. STAR Duodecim eHealth Tool to Recognize Chronic Disease Risk Factors and Change Unhealthy Lifestyle Choices Among the Long-Term Unemployed: Protocol for a Mixed Methods Validation Study, JMIR Res Protoc 2021;10(6):e27668

[3] Duodecim STAR. URL: https://star3.duodecim.fi/marketing/en

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Sessio 3B: Eri näkökulmat digin toteutukseen, "koodi 774C" Paneelikeskustelu

Puheenjohtaja: Hallituksen jäsen Jari Numminen,
Suomen telelääketieteen ja eHealth seura

Keskiviikko 28.9.2022

17:30 – 19:00

3B-1   Ensihoito
Dimitry Lisitsyn ja Mikko Aaltonen
EKSOTE

3B-2   Muistiongelmat ja ammattilaisten digiosaaminen
Heli Kekäläinen, Tki-asiantuntija
Savonia-ammattikorkeakoulu, Pohjois-Savon Muisti ry

3B-3   Yhdenvertaisuus digipalveluissa
Tarja Heponiemi, Tutkimusprofessori
Terveyden ja hyvinvoinnin laitos (THL)

3B-4   Sosiaalityö
Tuukka Pajuniemi, projektisuunnittelija
Hämeenlinnan kaupunki

Scientific rapid presentations

O-10   Remote Patient Monitoring in Support of Multi-Service Customer and Case Management: Systematic Literature Review Results
Anna Lahti, Master of Healthcare, RN, PhD student
LUT University, Finland

O-11   Well-Being and Health Technology and Digital Service Management as a Future Competence Requirement in Social and Health Care
Merja Männistö, PhD
Oulu University of Applied Sciences; Finland

O-12   Radiological Image Reconstruction and Computer-Assisted Diagnosis on the Edge
Erkki Harjula, DSc, MSc
Centre for Wireless Communications – Networks and Systems, University of Oulu, Oulu, Finland

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Ensihoito
Dimitry Lisitsyn, ensihoitaja ja Mikko Aaltonen, ensihoitaja
EKSOTE

Biography Dimitry Lisitsyn

Dimitri Lisitsyn works as an advance care paramedic at the Southern Karelia social and health care district (EKSOTE). Eksote emergency medical services (EMS) has been a pioneer in its safe patient assessment at home by combining electronic patient health care records and modern diagnostical tools. Lisitsyn has built his career by exploring 20 different EMS services worldwide. On top of his ambulance work, Lisitsyn is active in Finnish prehospital care by working as an educator and writing articles for the Finnish-based emergency care magazine.

Biography Mikko Aaltonen

Mikko Aaltonen works as a situation centre (SOTETIKE) at the Southern Karelia social and health care district (EKSOTE). Mikko has 15 years of experience as a paramedic and has a BSc nursing degree. The situational centre handles non-urgent EMS calls and coordinates hospital-at-home services and their cooperation with different prehospital authorities. In major incident scenarios, the situational centre can coordinate and transmit situational awareness throughout the health care district. Aaltonen has been involved with developing EKSOTE hospital at-home services and major incident protocols and planning the communication protocols for major incidents.

EKSOTE paramedics Aaltonen and Lisitsyn will paint a picture of how they use evolving technology and services to provide better health care treatment outside the hospital.

SOTETIKE assesses patients through a phone call using the patient's electronic health care records in to support their decision-making. With these systems, SOTETIKE can consult the available doctor about the patient's treatment and adjust their medication without physical contact with the patient. Patients can be redirected to further examinations and treatment without a doctor's appointment.

SOTETIKE and EMS both the use same electronic patient health records and EMS field management systems. EMS uteliase daily electronic scribing, patient current health care information, broad examination capability as well as multi-authority cooperation in conducting an extensive assessment of the patient's need for treatment.

With these services, an individual patient can receive highly programmed help without the need to physically go to the local GP or a hospital. These actions promote a person's ability to stay at home and have contributed to the progress of services that can be taken to the patient home.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Muistiongelmat ja ammattilaisten digiosaaminen
Heli Kekäläinen, Tki-asiantuntija
Savonia-ammattikorkeakoulu, Pohjois-Savon Muisti ry

Biography Heli Kekäläinen

I work as an RDI Advisor and gerontology teacher (part-time) at Savonia University of Applied Sciences. I graduated as a nurse in 2006 and have worked in various positions, especially in the field of the elderly and rehabilitation. I have also graduated on Master's Degree in Development and Management program 2013. I completed my pedagogical studies in 2020. In the last years, I did various supervisory positions, e.g. in elderly services in the public sector and I also participated in various working life development projects in working life. Since 2018, I have worked at Savonia University of Applied Sciences in various development projects in the field of social and health care. I have been able to orient and deepen my knowledge of the technology of the elderly and the social and health care sector in various development projects. As a volunteer, I also chair the board of Pohjois-Savon Muisti Ry

Memory disorders and the digital skills of professionals

Memory disorders and diseases in the elderly are increasing at an increasing rate. The deteriorating general condition of an elderly person with a memory condition must always be clarified, as there is usually a situation that requires treatment. Impaired general condition is often challenging to identify and there is no systematic treatment protocol that adds to the challenge of treatment. Could digital solutions facilitate diagnostics and treatment-related decision-making, so that the client also receives better quality care?

In the Weltech project (2018-2020), e.g., the digital competence and attitudes of home care personnel towards technology and the use of technologies in home care in the Northern Savonia region. The nursing staff described their own digital skills at a good level, even though the technology was not yet very actively used at work or in guiding the customer. Attitudes towards technology and the use of technology were positive. Staff need support and training in digital literacy and technology adoption. The field needs appropriate and easy-to-use solutions that make it easier for either the caregiver to work or the client's daily life. Designing workable solutions requires multidisciplinary collaboration involving professionals and customers as well as their relatives.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Yhdenvertaisuus digipalveluissa
Tarja Heponiemi, Tutkimusprofessori
Terveyden ja hyvinvoinnin laitos (THL)

Biography Tarja Heponiemi

Tarja Heponiemi (PhD) is a Research Professor from Finnish Institute for Health and Welfare (THL) with special focus on health and social care services research. Her research focus has been on health informatics, healthcare employees' workload, attitudes, work roles and turnover as well as consequences of digitalization to health professionals. Specifically, she is interested in the increased digitalization of services and its effect on clients and professionals. She has a long experience in leading scientific projects, for example, as a consortium leader of the on-going DigiIN-project (Towards socially inclusive digital society: Transforming the service culture) and deputy consortium leader of the finished COPE-project (Competent workforce for the future) funded by the Strategic Research Council at the Academy of Finland.

Equality in Digital Services

Tarja Heponiemi[1], PhD
[1]Finnish Institute for Health and Welfare, Finland

The results from DigiIN project show that the increase of digital services may reinforce the inequalities in the society. Those who are disadvantaged economically, have poor health or have marginally social contacts are in danger of dropping out from important services that they would urgently need. Especially vulnerable groups who are in danger of digital exclusion are, for example, older adults, those with health problems, those with low income, unemployed, migrants, socially isolated and those with low education. However, these groups are heterogenic: some may use digital services very fluently, whereas some may need support in use or may not be able to use even when supported.

To ensure the equitability of digital services DigiIN project has suggested 9 critical measures to help in taking vulnerable people into account in digital society. One important point is to warrant that the digital services are equitable accessible. Equitable accessibility can be improved by providing real-time local support and instructions for service use. The content and operation of the services need to be developed understandable for everyone. Moreover, information on services and available support need to be disseminated through various channels.

The security of digital services could be improved, for example, by providing instructions and information on the security of different service platforms in easy language. The security could be improved by availability of private spaces and lendable secure end devices in public facilities such as libraries. If we wish that all people could use digital services equally, services should be of high-quality and patient-centered. Video connections need to be provided more broadly to improve interaction. In addition, personnel need to be educated to work digitally with clients. Clear instructions need to be implemented to identify clients suitable for digital services. Most importantly, the provision of local services needs to continue for those whom digital services are not an option. It is important that services are guaranteed also to those who are not able to use digital services even when supported.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Sosiaalityö
Tuukka Pajuniemi, projektisuunnittelija
Hämeenlinnan kaupunki

Biografia Tuukka Pajuniemi

Tuukka Pajuniemi Project Coordinator, MSc (Admin) in Health and Social Management, Bachelor of Social Services, toimii alueellisena projektisuunnittelijana tulevaisuuden sosiaali- ja terveyskeskus - hankkeessa Kanta-Hämeessä, Hämeenlinnan seudulla. Pajuniemen viime vuosien työtehtävät ovat liittyneet hyvinvointialueen sähköisen ohjauksen ja neuvonnan suunnitteluun ja kehittämiseen sekä kansallisten digipalveluiden käytön jalkauttamiseen. Työtä on ohjannut usko utopiaan, jossa julkisen palveluorganisaation on mahdollista tuottaa vähemmän hukkaa, muun muassa sähköisten palveluiden avulla. Pajuniemi opiskelee tällä hetkellä 'Monialainen osaaminen sosiaali- ja terveydenhuollon digitalisaation kehittämisessä' -erikoistumiskoulutuksessa.

Digitalization and Social Services – Re-Imaging Our Service System
Tuukka Pajuniemi[1], MSc (Admin) in Health and Social Management, Bachelor of Social Services,
[1]Project Coordinator, City of Hämeenlinna

Introduction Finland's health and social services have been under reconstruction for numerous years. In the meantime, the Ministry of Social Affairs and Health has been encouraging the use of e-services and diversifying their features and offering in social services. Commonly, resources in development have focused more on systematic data management, as opposed to creating new, more digital organizational culture in social services. Scientific foundations of social work have been claimed to be insufficient, especially when compared to healthcare, and that could be one of the reasons for prolonged development in this case. Social work needs to establish a relationship with digitality, in order to re-imagine its rather analogic present. Going digital also provides new possibilities for better co-operation within the system.

National implementations – path to a transdisciplinary success? It is new for our service system to recognize service users and their needs as a whole. Over the years, these same service users have familiarized themselves with the ways our system functions. Meaning, discussing physical health with a social worker might seem unusual to them, as certain questions are commonly asked only by a doctor or a nurse. And vice versa: themes such as family's financial difficulties or challenges in everyday life can be regarded as irrelevant by our healthcare system, even if they're not. And this can cause additional emotional stress for the individual in question. Sometimes healthcare and social services operate heavily in conflict with their paradigms, and this doesn't go unrecognized by service users either. But digitalization might provide the means for them to reach a common ground. We should be aiming for not only multidisciplinary, but transdisciplinary working culture where authentic integration is possible, which eventually positively reflects back to the service users.

DigiFinland is an essential, national partner for all the social and healthcare professionals working on our new system and its details. Some of their current products and the ones that are yet to be released, are offering professionals a real advantage in creating new common understanding of human's wellbeing. These products might also be able to deliver better accuracy and better personalisation, provided they are being implemented into the system by the people who are part of it, of course. Adopting new functionalities concerns employees, meaning involving them in every step of the way is crucial for successful outcome.

Future A more customer-oriented approach demands considerable effort from our reformed system. Thorough studying of both, quality and quantity, will help us creating digital solutions which help with workload management in social services. Using a quantitative approach to assess elements in human encounters might be difficult and a rather foreign idea for social work, but in order to understand our customers better, we need to collect more data. This data creates understanding, value, if interpreted properly. Use of data driven solutions might result in the decline in failure demand, which is claimed to be very common, yet very little studied phenomenon causing additional strain on our service system.

One of the primary objectives of Finland's health and social services reform is increased holistic care. Multidisciplinary, digital applications might be the future, but they require further studying as our current knowledge of multidisciplinary methods and their effectiveness is limited. What we do know is that systemic practices, currently more commonly recognized by social work, might help us through plenty: failure demand, various wicked problems but also our inability to recognize root causes, which may silently affect one's wellbeing. As long as these root causes go unrecognized, holistic care remains just a vision. While identifying them can be challenging, it is imperative that they are addressed for the betterment of our system.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-10: Remote Patient Monitoring in Support of Multi-Service Customer and Case Management: Systematic Literature Review Results

Anna Lahti, Master of Healthcare, RN, PhD student

LUT University, Finland

Introduction: As the population ages multi-morbidity increase and the need for services grows. Although the number of people in need of multi-services is relatively small, it is known that this amount consumes most social and health resources. The coordinated management (case management) for multi-service customers is one of the actions that can hinder the cost increase and improve the customer's service experience. The systematic use of remote monitoring in the treatment of a multi-service client has been studied and there is evidence of the benefits it brings. Remote healthcare is seen as an emerging field of research as healthcare sector moves fast toward remote technology-, and real-time and rapid detection of disease. [1,2]

Material and Methods: This paper describes the impact of remote patient monitoring in the coordination of care for multi-service customers. As a result of the literature review, research findings of relevance to scientific research are highlighted. The PICo method was used to frame the topic and formulate the research questions. [3] The databases used included EBSCO, PubMed, and Scopus. Search terms used were "remote patient monitoring", "case manager", "multi-service customer", "quality of life".

In this literature review, the research questions were:
1. How remote monitoring has been used in the care of multi-service customer?
2. What role does remote monitoring play in coordinating the care of multi-service customer (case manager clients)?
3. What is the impact of remote monitoring on the quality of life experienced by the multi-service customer?

Results: The preliminary results support the notion of the impact of remote monitoring on perceived quality of life. The value of electronic services varied depending on perceived morbidity. The more complex the disease was perceived, the more the benefits of electronic healthcare services were recognized. [4]. In addition to an remote monitoring can be used to provide information about a patient's blood pressure and weight. Remote patient monitoring is beneficial because it is dynamic and allows monitoring of treatment immediately after discharge from the hospital, with the aim of avoiding returning to the hospital.[5]

Discussion: Although multi-service customer care is coordinated, technological solutions are not yet sufficiently utilized in the management of multi-service customers' care. Information from remote patient monitoring and its utilization affects both strategic planning of services and the ability of the immediate manager to motivate staff in adopting and consolidating new technological solutions. The hypothesis of the study is that the need for services will be reduced in those client groups where remote monitoring can be used to support self-care. From this perspective, supporting self-care also improves health, and the cost effect can be demonstrated by looking at the number of visits to specialist care for multi-service clients.

References:
[1] Zulman, D.M. Et al. 2015. How Can eHealth Technology Address Challenges Related to Multimorbidity? Perspectives from Patients with Multiple Chronic Conditions.
[2] Kuipers, S.J. Et al. 2019. The importance of patient-centered care and co-creation of care for satisfaction with care and physical and social well-being of patients with multi-morbidity in the primary care setting.
[3] Salminen, A. 2011."Mikä kirjallisuuskatsaus? Johdatus kirjallisuuskatsauksen tyyppeihin ja hallintotieteellisiin sovelluksiin.
[4] Runz-Jørgensen, S.M. Et al. 2017. Perceived value of eHealth among people living with multimorbidity: a qualitative study.
[5] Pearl, R. & Madvik, P. 2020. Managing the most expensive patients.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-11: Well-being and Health Technology and Digital Service Management as a Future Competence Requirement in Social and Health Care

Merja Männistö[1], PhD, Karoliina Paalimäki-Paakki[1], MSc, Jukka Jauhiainen[1], PhD
[1]Oulu University of Applied Sciences; Finland

Introduction: In the course of Health and well-being technology and service management in digital environment [1] the Master-students became extensively acquainted with digital services and applications. Students' competences were strengthened in various ways from perspective of service's integration, management and digitalisation. The aim was the student is able to use and utilize possibilities of applications in client's service processes and to counsel use of applications as support for self-care. Following entities were built into the content, which students considered in their collaborative learning assignments: Service management, wireless sensors, wearable and fixed sensors, E- and Mhealth, self-monitoring and care, remote monitoring, electronic archives and services and health portal.

Material and Methods: Students were given task to study at least two e-service or application used in social or health care, one of which had to focus on client work and the other on targeting staff. Importantly, e-service and application were also considered from perspective of development of services. Students innovate use of e-service or application they have chosen for different user groups, while considering related client-oriented service management. The e-service or application were evaluated using Digi HTA evaluation. Digital competence was strengthened in task by considering sensor technology of application, describing sensor implementation in as much detail as possible. Students did innovative tasks in interprofessional small groups by digital collaborative learning. Self-directed learning was discussed in personal blog-based learning diaries.

Results: The interprofessional groups were seen as meaningful and extended competence across sectoral boundaries. Groups produced peer-reviewed reports and presentations for final seminar. Service paths and entities had been visualized with merit. Students found it meaningful that in addition to services and applications chosen by their own group, they were able to get acquainted with solutions chosen by others. Many of services or applications selected for review were unknown in advance. In innovating use of selected digital services or applications for different user groups, students had envisioned very good, creative and usable solutions.

Discussion: The course significantly strengthened students' digital competence. In blog-based learning diaries students described how much they had learned including customer segmentation, service integration, management and path definition, sensor technology, technology utilization in service paths, various classifications and assessments. Digi HTA Assessment Tool [2] and WHO Classification of Digital Health Interventions [3] were required to use in assignments. Purpose of those is to promote use of evidence-based methods and increase effectiveness of healthcare. Course demonstrates value of expertise. Substantial added value can be gained when combined creative engineering skills and involving healthcare interprofessional expertise.

References:
[1] Degree Programme in Well-being Digital Solutions. Curricula, Oulu University of Applied Sciences (2022). [accessed 20.5.2022]
[2] Haverinen, J., Keränen, N., Falkenbach, P., Maijala, A., Kolehmainen, T., Reponen, J. (2019). Digi-HTA: Health technology assessment framework for digital healthcare services. Finnish Journal of eHealth and eWelfare (FinJeHeW), 11(4), 326-341. [accessed 20.5.2022]
[3] World Health Organization (2018). Classification of digital health interventions v1.0: a shared language to describe the uses of digital technology for health. World Health Organization. [accessed 20.5.2022]

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-12: Radiological Image Reconstruction and Computer-Assisted Diagnosis on the Edge

Erkki Harjula[1], DSc, MSc, Antti Isosalo[2], MSc, Johirul Islam[1], MSc, Ella Räinä[2], BSc, Henrik Mustonen[2], MSc, Tanesh Kumar[1], DSc, MSc, Mikael Juntunen[2, 3], PhD, MSc, Satu I. Inkinen[2], PhD, MSc, Jarmo Reponen[2], PhD, MD, Miika T. Nieminen[2,3], PhD, MSc

[1]*Centre for Wireless Communications – Networks and Systems, University of Oulu, Oulu, Finland*
[2]*Research Unit of Medical Imaging, Physics and Technology, University of Oulu, Oulu, Finland*
[3]*Department of Diagnostic Radiology, Oulu University Hospital, Oulu, Finland*

Introduction: Diagnostic imaging produces more data than ever for clinical decision-making, while related artificial intelligence (AI) solutions impose high demands for computational platforms [1]. These challenges do not only concern diagnostic imaging, but also the healthcare digitalization in general. Cloud computing, a prominent technology to deal with the growing computational demand, comes with new challenges like a high burden on networks and sensitivity to network problems. Edge computing, pushing cloud computing tasks closer to data sources [2], is a viable solution for this challenge. In this study, we evaluate the feasibility of our earlier developed distributed edge computing framework [3] for dealing with increasing data and computational requirements of diagnostic imaging.

Material and Methods: We utilize edge computing for two computationally demanding phases in clinical imaging chain: 1) image reconstruction in volumetric cone-beam computed tomography, and 2) AI-assisted breast cancer evaluation. In the first task, converting X-ray projections into slices sets high demands for computation, but also communication if the reconstruction is made in a remote cloud data center. Hence, we study the suitability of edge computing for image reconstruction, focusing on computation time, memory consumption, and data transfer volumes, in comparison to local and cloud approaches. In the second task, high-resolution mammography images pose a computational challenge in terms of GPU memory capacity. We leverage edge computing for deep learning-based radiological image analysis and study the computational resource and time consumption.

Results: We implemented the image reconstruction and breast cancer evaluation algorithms, utilizing [4] and [5], as virtualized Docker-based nanoservices [3] that can be arbitrarily deployed on a scalable swarm of local edge nodes. Our results indicate that the processing time of an image reconstruction algorithm run as a nanoservice deployed on a single Nvidia Jetson Xavier NX edge node roughly equals to using a high-end reconstruction computer. In breast cancer evaluation, a Xavier node was not able to compete with high-end workstation with initializations requiring significant runtime, but was however considered sufficient for the purpose.

Discussion: Based on our results, processing diagnostic imaging data on the edge near its generation reduces both the network burden, compared to centralized cloud approach, and computational needs for individual imaging units. Further, the scalability through resource virtualization and integration with higher tiers of the edge-cloud architecture is superior compared to standalone solution. Local computing capacity can be easily scaled up by adding more pocket-sized edge nodes to the local swarm, enabling, e.g., more complex algorithms on mobile imaging. The future work includes, e.g., scalability study to provide better support for breast cancer evaluation by adding more powerful edge nodes, such as Jetson AGX Xaviers, to the swarm.

References:
[1] S. Mandal, et al., Imaging Intelligence: AI Is Transforming Medical Imaging Across the Imaging Spectrum (IEEE Pulse 9:5, 2018).
[2] Z. Zhou, et al., Edge Intelligence: Paving the Last Mile of Artificial Intelligence with Edge Computing (Proceedings of the IEEE 107:8, 2019).
[3] J. Islam, et al., Resource-aware Dynamic Service Deployment for Local IoT Edge Computing: Healthcare Use Case (IEEE Access 9, 2021).
[4] W. van Aarle, et al., The ASTRA Toolbox: A platform for advanced algorithm development in electron tomography (Ultramicroscopy 157, 2015).
[5] Y. Shen, et al. An Interpretable Classifier for High-Resolution Breast Cancer Screening Images Utilizing Weakly Supervised Localization. (Medical Image Analysis 68, 2021).

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Session 4: Site visits at Stocholm

Coordinator: Vesa Jormanainen, Finnish Society of Telemedicine and eHealth

Thursday 29th September 2022

10:00 – 13:45

Site Visits

4-1 Business Finland / Embassy of Finland and Swedish e-Health companies

eHealth companies' growth stories - Housted by The Embassy of Finland and Business Finland. Business Finland is the Finnish government organization for innovation funding and trade, travel and investment promotion. Business Finland's 600 experts work in 40 offices globally and in 16 regional offices around Finland. Business Finland is part of the Team Finland network. The Embassy of Finland and Business Finland want to promote cooperation between Finnish and Swedish companies in the area of digital health services. During the visit, you can hear the growth story of three companies and discuss their perspectives on social and healthcare solutions.

Krim Talia, CEO. Mindler, will talk about his company's operations; Mindler is Sweden's largest digital psychology clinic. Their vision is to break the stigma of mental illness and make the most effective mental health care available to all. Mindler made recently a strategic acquisition of Medified Solutions Oy, a medtech-startup based in Tampere, Finland to enable an even more date driven approach.

Malin Söderlund, CCO. Carecom's mission is to enable healthcare professionals and patients around the world, to work together to share knowledge in an efficient and secure manner to improve health. CareCom is built on a strong Danish heritage with close ties to the Nordic and American markets. For over 20 years their focus is providing international healthcare organizations with terminology solutions that enable greater healthcare services.

Joakim Söderberg, Founder of Health Solutions AB. Health Solutions, as a part of Finnish company BCB Medical, is the Nordic market leader in gathering and analyzing clinical data. BCB Medical Oy and Health Solutions AB joined forces in May 2021 and today they can offer even more services and new opportunities for customers and partners to utilize the collected data. Together, they can build a bridge between Healthcare and Life Science, to realize the value that is today Hidden in health data. Anna-Karin Edstedt Bonamy, CEO as specialist doctor in pediatrics and an associate professor at The Karolinska Institute. Doctrin was founded with the mission to radically improve healthcare. Since 2016, they have offered digital solutions to strengthen and expand the healthcare system's capacity through increased efficiency, improved medical quality and more satisfied healthcare staff and patients. The company has over 90 employees, of which about one-fifth have a background in healthcare. Their main office is located in Stockholm and we are also active in Norway, the Czech Republic, Poland and the UK & Ireland.

Nima Jokilaakso Business Finland and Janne Jokinen Embassy of Finland will be hosting the event.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

4-2   Karolinska Institutet - The hospital's operational development through digitalization. Innovation in information-driven and location-independent healthcare

IT and digitalization in Karolinska: The smart hospital that will become even smarter

Karolinska's IT organization has built up an organization that, in addition to management and operations, can conduct new development with greater in-house ability. Agile working methods and skills enhancement with developers and informaticians are key components. In parallel with this, the management and operation of the hospital's hundreds of different IT systems has been improved and cost-effective.

In June 2021, Karolinska University Hospital was ranked by Newsweek magazine as the world's 8th smartest hospital, and number 1 in Europe. Part of the motivation was the hospital's use of data-driven governance during the pandemic.

The future of healthcare and research is data-driven. Good decisions in healthcare require that all employees, decision-makers and our patients have access to the right data. We need to be able to handle new types, and very large amounts, of data, including streaming data from medical devices in the hospital or in patients' homes. For example, the development of precision medicine is based on the fact that we can analyse the entire genome, which generates very large amounts of data. Karolinska sees the need to be able to store up to 50 PB of data.

The hospital has launched, as the first hospital in Sweden, a database for clinical studies. The database is a working tool in the research project, and also provides an overview of all studies. The database was developed by the IT organization at Karolinska in close collaboration with the R&D staff. In addition to being easy to use, it sets a standard for all clinical studies in the hospital. It ensures that both legal requirements and internal guidelines are complied with, which in the long run will increase safety for our patients.

Together with the increased capacity for storage, we will be able to make available all the clinical data needed to create clinical decision support and to support quality follow-up and research in strategic areas such as precision medicine, location-independent care and industry collaboration based on the needs of healthcare.

One example of this is the EU project, Nightingale funded by European Commission pre-commercial procurement arrangements that challenged industry to innovate and develop wireless wearable sensor systems and smart analytics to allow remote patient monitoring that provides early warning of clinical deterioration.

In another example, Karolinska is leading a new region-wide project where, among other things, heart failure patients are followed after discharge to report data on their health status from home. Impairments should be detected earlier and the risk of acute relapses reduced. Blood pressure, heart rhythm, body weight and an estimate of symptoms via a symptom scale are sent to healthcare every day. Algorithms will be developed to help with interpretation in data analysis over time.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

4-3   Siemens Healthineers

Welcome to Siemens Healthineers

Our portfolio of products, services and solutions is at the center of clinical decision-making and treatment pathways. Patient-centered innovation has been and always will be at the core of our company. We aspire to create better outcomes and experiences for patients no matter where they live or what they are facing.

We pioneer breakthroughs in healthcare. For everyone. Everywhere.

With 60+ AI supported product offerings, 1,3bn+ curated clinical data sets, 800+ AI-related patent families and 3100 software developers and data scientists Siemens Healthineers is a strong partner for digitalization.

Our ambition addresses the increased need for smart imaging solutions and eHealth solutions that connects healthcare.

During your visit we will talk about relevant product innovations and present customer cases with smart digital solutions.

AI powered Healthcare:
Whenever analyses are too difficult, time-consuming, or inefficient to perform alone, artificial intelligence (AI) provides valuable assistance to clinical professionals, allowing them to stay focused on their patients and better use their own expertise. AI-enabled tools identify meaningful relationships in raw data, extract relevant insights, and apply those lessons to new patient cases. By helping physicians make more informed clinical decisions, AI is an indispensable tool in all fields of healthcare, including drug development, patient care, and operational decisions.

Connecting Healthcare:
Presentation of the new Remote Patient Management project in Region Skåne and an Innovation project at the New Karolinska Solna (NKS), with the ambition to create a Remote Patient Management system adapted for severe ill chronic patients. We will also put Remote Patient Management systems in the context of data sharing and structuring of data.

Remote clinical solutions & Robotics:
Benefits of remote MR scanning procedures. A case report from Region Norrland.
While they may not always look like us, they've long been extensions of ourselves - Why robotic systems can open the door to new levels of precision and care in medicine.

Welcome!

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

4-4   Cambio

Cambio was founded in 1993 and is now the leading Scandinavian supplier of e-health solutions, with a comprehensive offering for the entire health and care chain. The goal is to offer the most innovative and cohesive solutions for regions and municipalities. Cambio's e-health solutions support health care professionals in their daily work and offer patients safer and more easily accessible care. We currently have over 800 employees in several countries.

Cambion's Vision: We want to make a difference for healthcare and for society. We contribute to transforming the way healthcare is delivered. We constantly raise the bar, consider tomorrow's challenges and utilize the very latest technology to enable our customers to deliver tomorrow's healthcare.

Enabling tomorrow's health- and social care today!

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

4-5   eHälsomyndigheten - The eHealth vision of 2025 in Sweden

The Swedish eHealth Agency is responsible for the government's initiatives on digital health and for all infrastructure regarding e-prescriptions as well as being responsible for issuing the Swedish EU Covid certificates.

One of the government's initiatives is the agreement with the regions and the local municipalities on the vision for eHealth 2025. The vision states that in 2025 Sweden will be best in the world at using the opportunities offered by digitisation and eHealth to make it easier for people to achieve good and equal health and welfare, and to develop and strengthen their own resources for increased independence and participation in the life of society. During the visit you will hear about the work that is being done to reach the goal of the visions.

Another responsibility is managing all registries necessary for exchanging e-prescription information Last year a new legislation was introduced which resulted in a shift from a e-prescription repository to a national medication list which will have a big impact on Swedish health- and social care.

The topics on the agenda for the visit to the agency is:
- Overview of Swedish national infrastructure on eHealth
- National Medication list
- Joint Use of Medical Records

At the visit you will meet Max Herulf, Gustaf Hedström, Bessam Saleh and Maria Hassel.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Session 5A: Digital Therapeutics and Digital Medicine

Chair: CEO Annette Kainu, Medzilla Ltd

Thursday 29th September 2022

14:30 – 15:40

5A-1   Promise of Digital Therapeutics for Finland and Europe
Johannes Ahlqvist, Specialist
Finnish innovation fund Sitra, Finland

5A-2   How is Finland Related to European Development?
Jari Haverinen, Senior Planning Officer
Finnish Coordinating Center for Health Technology Assessment (FinCCHTA), Finland

5A-3   Case: More Stamina, an Evidence-based App for Citizens with Multiple Sclerosis
Guido Giunti, Adjunct Professor of Digital Health Design and Development
University of Oulu, Finland

Scientific Rapid Presentations

O-13   The Impact of EU Digital Services Act and Digital Markets Act on Health Information Systems
Alpo Värri, Dr.Tech.
Faculty of Medicine and Health Technology, Tampere University, Finland

O-14   Nurse-Led Telehealth Research 2021, 2022: Evidence for Practice
Claudia C Bartz, PhD, RN
International Society for Telemedicine & eHealth

O-15   Pathways to Wellbeing for People with Diabetes
Tuulikki Salminen, Planner, Pathways to Wellbeing for People with Diabetes Project
Finnish Diabetes Association, Finland

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Promise of Digital Therapeutics for Finland and Europe
Johannes Ahlqvist, Specialist
Finnish innovation fund Sitra, Finland

Biography Johannes Ahlqvist

Johannes works to advance Finnish competitiveness through health data. At the moment he especially focuses on digital therapeutics and decentralized clinical trials. He is also on the lookout for relevant themes to focus on. Previously he has worked as a consultant in healthcare and IT.

Digital therapeutics (DTx) are evidence-based and clinically evaluated digital medical interventions delivered directly to patients. They are used to treat, manage, and prevent a wide variety of diseases and disorders ranging from mental health to rehabilitation. It is an emerging field worth over 4 billion dollars globally. Being clinically proven medical treatments, they are scrutinized thoroughly and different national approaches to them are employed. These approaches vary and there is no single approach that would solve all our challenges.

The aim of the whole digital therapeutics project is to boost the uptake of DTx, build a national model to generate more companies in the field and to promote awareness of DTx in Finland

This presentation will go through the concept and promise of digital therapeutics, its relevance to better patients care, current state of national approaches in major European markets and ways to build a better system for digital therapeutics in Finland and Europe.

We have built a proposal for national framework to assess and reimburse DTx in Finland and we are funding 6 pilot projects in Finland. We will continue to push forward for national framework and continue sharing learning from our pilot projects.

How is Finland Related to European Development?

Jari Haverinen[1,2], MSc, MHSc

[1]Finnish Coordinating Center for Health Technology Assessment, Oulu University Hospital, Oulu, Finland;
[2]FinnTelemedicum, Research Unit of Medical Imaging, Physics and Technology, Faculty of Medicine, University of Oulu, Oulu, Finland

Biography Jari Haverinen

Mr. Jari Haverinen, received his M.Sc. in Electrical Engineering (1999) and M.H.Sc. (2018) degrees from the University of Oulu, Finland. He has 18 years background in the telecoms industry before his career in digital health field. His current job role is Senior Planning Officer in the Finnish Coordinating Center for Health Technology Assessment (FinCCHTA). He's main responsibility in FinCCHTA is the development and implementation of the new Digi-HTA assessment method. Digi-HTA has been developed to perform health technology assessments (HTA) for novel digital healthcare technologies such as mobile apps, AI and robotics in Finland. He also works as a Doctoral researcher at the Faculty of Medicine of the University of Oulu. His research area is the development of new HTA methods for digital health solutions as well as eHealth research.

Background: Healthcare can be improved through digital health technologies (DHTs) [1–6]. Among these DHTs, digital therapeutic (DTx) products are expected to provide better and more personalized care and to make the healthcare service system more efficient [3]. Internationally, efforts have been made to promote the introduction of DTx products through health technology assessment (HTA) methods for DHTs to identify the most effective solutions [1–4]. However, the HTA methods are only one step toward the introduction of DTx products [2,3]. There is a need for the integration of assessments into the decision-making process, as well as reimbursement models that promote the introduction of DTx products [2,3]. The country furthest along in the integration of DTx products into healthcare is Germany, which has introduced assessment and reimbursement models called DiGA [2,3]. Other EU countries have also started developing their own assessment and reimbursement procedures for DTx [2,3].

Main content of the presentation: In Finland, the Digi-HTA assessment method and process was introduced to support HTA activities for DHTs [1,2,5]. It has been a part of the daily HTA activities of the Finnish Coordinating Center for Health Technology Assessment (FinCCHTA) since 2020 [2,5]. The goal of the Digi-HTA process is to cover all new DHTs, such as mHealth, DTx, artificial intelligence, and robotics solutions, as well as combinations of different DHTs [1,2,5]. That way, the HTA method can better support the introduction of new and innovative DHTs in healthcare [1,2,5]. The Digi-HTA aspects include effectiveness, safety, and cost as well as patient and organizational considerations, but this assessment method does not cover ethical, social, and legal issues [1,2,5]. It does cover the technical characteristics of DHTs, such as interoperability, data security, and protection as well as usability and accessibility [1,2,5]. Finland currently has no reimbursement process for DHTs [2]. The Digi-HTA process provides informative HTA recommendations for healthcare decision-makers, and currently, they can freely utilize those in their decision-making process [2]. According to healthcare professionals, although the Digi-HTA recommendations include clear and beneficial information, their integration into the healthcare decision-making processes should be improved [2]. In a 2021 roundtable seminar, the relevant Finnish stakeholders gave the following official statement: "A clear operating model needs to be established for the assessment, recommendation and reimbursement of health and well-being applications and digital services" [6]. This statement highlights that there is willingness to implement DTx products among the other DHTs in Finnish healthcare, but they should be introduced systematically.

Conclusion: In Finland, the HTA method and process are available for all kinds of DTHs, including DTx products. However, work is still needed so that HTA assessments become part of healthcare decision-making and reimbursement processes. To ensure that the most effective DTx products and the best practices of available HTA methods will be implemented in Finnish healthcare, international cooperation is required.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

References:

1. Haverinen J, Keränen N, Falkenbach P, Maijala A, Kolehmainen T, Reponen J (2019) Digi-HTA: Health technology assessment framework for digital healthcare services. Finnish Journal of eHealth and eWelfare, 11(4), 326–341. https://doi.org/10.23996/fjhw.82538
2. Haverinen, J., Turpeinen, M., Falkenbach, P., Reponen, J. (2022). Implementation of a New Digi-HTA Process for Digital Health Technologies in Finland. International Journal of Technology Assessment in Health Care , 38(1), E68. https://www.doi.org/10.1017/S0266462322000502
3. Ahlqvist J, Kalliola M (2021) How can digital therapeutics help Europe? Sitra. Available from: https://www.sitra.fi/en/publications/how-can-digital-therapeutics-help-europe/ [accessed 16.8.2022].
4. Essén, A., Stern, A.D., Haase, C.B. et al. Health app policy: international comparison of nine countries' approaches. npj Digit. Med. 5, 31 (2022). https://doi.org/10.1038/s41746-022-00573-1
5. Jääskelä, J., Haverinen, J., Kaksonen, R., Reponen, J., Halunen, K., Tokola, T., & Röning, J. (2022). Digi-HTA, assessment framework for digital healthcare services: information security and data protection in health technology – initial experiences. Finnish Journal of EHealth and EWelfare, 14(1), 19–30. https://doi.org/10.23996/fjhw.111776
6. Terveyden ja hyvinvoinnin laitos. (2021) Julkilausuma: Sote-ammattilaiset voisivat suositella hyvinvointisovelluksia asiakkaille, mutta arviointiin tarvitaan ensin kansallinen malli. Available from: https://thl.fi/fi/web/sote-uudistus/-/julkilausuma-sote-ammattilaiset-voisivat-suositella-hyvinvointisovelluksia-asiakkaille-mutta-arviointiin-tarvitaan-ensin-kansallinen-malli-?redirect=%2Ffi%2Fweb%2Fsote-uudistus%2Fajankohtaista%2Fuutinen

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Case: More Stamina, an Evidence-based App for Citizens with Multiple Sclerosis

Guido Giunti[1,2], MD, PhD, Adjunct professor of Digital Health Design and Development
[1]*Faculty of Medicine, University of Oulu, Finland;*
[2]*Faculty of Information Technology and Electrical Engineering, University of Oulu, Finland*

Biography Guido Giunti

Dr. Guido Giunti is a medical doctor specialized in mHealth solutions for patients with chronic conditions. Dr. Giunti's work has received numerous awards and merits, including a Marie Skłodowska Curie grant in 2015, a Best Doctoral Dissertation award in 2019, and in 2021, he was selected as one of the Ten Outstanding Young Persons of the year by the Junior Chamber International of Buenos Aires. Guido also co-founded TEDxUBA, which under his guidance grew to be an event with over 1500 attendees; and designed the educational tower-defense videogame called "Immune Defense". Further, he has been featured in media around the world and has been listed among Finland's top healthcare innovators by Mediuutiset. Dr. Giunti is an Adjunct Professor of Digital Health Design and Development at the University of Oulu, and frequently collaborates with many SMEs and healthcare institutions around the globe.

Background: Digital therapeutics (DTx) are evidence-based digital treatments that provide better care and lower costs, empower patients and ease the burden on healthcare systems. However, the journey towards becoming a digital therapeutic is uncertain and complex. There are many obstacles along the way that may prove fatal to digital health solutions: challenges in adoption; disconnected health services; unproven technological solutions; unclear reimbursement models; and lack of patients and public involvement are only some examples. The potential DTx hold for chronic conditions is great, yet the integration of these technologies into healthcare pathways remains an ongoing challenge.

Multiple sclerosis (MS) is one of the world's most common neurologic disorders in young adults. It affects more than 12,000 Finns and almost 3 million people worldwide. The course of MS is varied and unpredictable, often leaving people with MS with a growing number of disabilities. Throughout their life, people with MS suffer a wide range of symptoms like fatigue, altered sensations, cognitive and mental health problems, and even physical mobility issues. Fatigue, however, is the most common, frustrating, overwhelming, and often disabling symptom for people with MS.

Main content: More Stamina is a self-management tool designed to help people with MS manage their energy. The mHealth app uses wearable sensors and contextual information to generate personalized recommendations, so that people with MS can learn how to better manage and have a better quality of life. The anonymized data it collects is also used to explore hidden patterns and characteristics of living with MS, so that new ways of helping patients can be developed.

The case for More Stamina provides an interesting and evolving view on the life cycle of DTx. From need discovery to idea, design, development and evaluation, all have been evidence-driven; producing scientific publications at each step of the way. Since the project start, a multidisciplinary team composed of clinicians, psychologists, designers, engineers and business developers has been working together to understand the patient's journey through the healthcare system, develop a solution that meets the changing of the condition, and map out how the can interact with different healthcare professionals over time. More Stamina is an ongoing action that explores how digital health solutions can survive beyond "laboratory" conditions, outside of grant-funding and into successful entrepreneurship.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-13: The impact of EU Digital Services Act and Digital Markets Act on Health Information Systems

Alpo Värri[1], Dr.Tech.
[1]*Faculty of Medicine and Health Technology, Tampere University, Finland*

Introduction: In addition to the existing General Data Protection Regulation [1], the European Union (EU) is preparing also other regulations which apply to information systems. The background for the EU-wide regulations is usually that they make the cross-border trade of products and services among the member countries easier because the companies don't have to modify their offerings to many different national regulations. The newest information society regulations, approved on July the 5th, 2022 are the Digital Services Act [2] and the Digital Markets Act [3]. The purpose of this study was to investigate, what consequences these acts may have for the production, the sale and the use of health information systems.

Material and Methods: The regulation texts were downloaded from the EU web site after they had been approved in the European Parliament. The texts were examined bearing in mind the nature, scale, users, and manufacturers of the health information systems. Notes were taken about requirements which might have relevance to health information systems. The most important findings are explained in the following section.

Results: The Digital Services Act covers "intermediary services". The services should not nudge the users to decisions which are harmful to them. Illegal content must be removed. Advertising should be clearly indicated. Only those health information systems where patients can exchange information with their peers or systems that recommend health services or products are within the scope.

The Digital Markets Act is intended to control the major "gatekeeper" companies which have platforms which have more than 45 million consumer users. As health information systems are rarely if ever such gatekeepers, they are not the targets of this act.

Discussion: The definition of the intermediary services is so vague in the Digital Services Act that it is not obvious to the average reader what services are covered. Most health-related services which are within the scope of this regulation are so small that the most difficult requirements of the act do not apply to them. Normal fair business practices are often sufficient to comply, but it is necessary to study the act, particularly the reporting requirements.

Although the Digital Markets Act does not apply to health information systems, it has an indirect effect on them. If the large gatekeeper companies comply with this act, their services will be a better and fairer playing field also to health information service companies.

References:
[1] Consolidated text: Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation), [accessed 29.7.2022].
[2] Digital Services Act (2022), European Parliament, https://www.europarl.europa.eu/doceo/document/TA-9-2022-0269_EN.html, [accessed 29.7.2022].
[3] Digital Markets Act (2022), European Parliament, https://www.europarl.europa.eu/doceo/document/TA-9-2022-0270_EN.html, [accessed 29.7.2022].

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-14: Nurse-Led Telehealth Research 2021, 2022: Evidence for Practice
Claudia C Bartz, PhD, RN

International Society for Telemedicine & eHealth

Introduction: Quality of care in clinical settings, homes and communities depends on evidence for practice from nurse-led telehealth research. Science-based evidence also advances the knowledge and competence of nurses as they integrate digital health applications with care delivery.

Materials and Methods: A medical librarian's iterative reviews of nursing, medicine and healthcare in English language journals provided the author with telehealth papers. Nurse-led publications were identified and sorted into research, systematic reviews with or without meta-analyses, and all other (e.g., descriptive, qualitative, quality improvement).

Results: Numbers of papers, nurse-led papers and nurse-led research or systematic review papers were 1040, 92, and 29 in calendar year 2021 and 284, 28 and 9 to 30 June in 2022. Examples. Evidence for practice was found with a smoking cessation program where the intervention group received WhatsApp text messages 3 days a week compared with a control group. 60% of pregnant women in the intervention group quit smoking compared with 36% in the control group. [1] A systematic review found significant effects on blood pressure control among people with hypertension receiving telehealth interventions (e.g., phones, texts). [2]

Discussion: Evidence from nurse-led research that applied telehealth methods is relevant for nursing practice. Fewer telehealth and nurse-led papers in 2022 may have been due to the impact of COVID on the healthcare environment. Nurses worked extraordinarily hard in clinical settings during the worst of the pandemic. Limitations were English language only and lack of authors' specialty in some journals.

References

[1] Balmumcu A, Atan UA. Smoking cessation programs for pregnant women. Journal of Addictions Nursing, 2021, 32(3), 188-196.
[2] Avci YD, Gözüm S, Karadağ E. Effect of telehealth interventions on blood pressure control. A meta-analysis. 2022, 40(6), 402-410.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-15: Pathways to Wellbeing for People with Diabetes
Tuulikki Salminen, Planner, Pathways to Wellbeing for People with Diabetes Project

Finnish Diabetes Association, Finland

Introduction: In August 2021 Finnish Diabetes Association started a three-year project called Pathways to wellbeing for people with diabetes. The project is funded by the Funding Centre for Social Welfare and Health organizations (STEA). The aim of the project is to broaden the possibilities to find multi-channel support for diabetes self-management of persons with diabetes and of those in risk for developing type 2 diabetes. In the project we develop open and ease-to-use pathways to wellbeing. The pathways consist of digital materials developed by Finnish Diabetes association as well as by public and private sector health care organizations and by other third sector associations as well. This is a cooperation project with Finnish Diabetes Association and 12 wellbeing services counties.

Material and Methods: In spring 2021 we did a survey for the basis of pathways. The survey was about how people with diabetes think about digital health services and what experiences they have about those. We also wanted to find out what kind of digital health services people with diabetes would like to use in the future and what is the preferred content of the services. 4 635 people answered to our survey. After the survey we performed group interviews for 29 people divided into 6 different target-groups.

Results: Based on the survey and interviews we started to build the pathways. The first was opened on 3rd June 2022 and it is for people at high risk for developing type 2 diabetes. Later in 2022 we are opening three more pathways; one for people with type 1 diabetes, one for people with type 2 diabetes and one for par-ents to a child with diabetes. The pathways are also suitable for use of the loved ones of people with diabe-tes as well as for the health care professionals. Once pathways are opened, we develop them further by collecting feedback from the users and from the health care professionals of the wellbeing services counties.

Discussion: Based on our work, we can conclude that people with diabetes need a multi-channel support for self-management of diabetes or prevention of type 2 diabetes. They feel that the support can mainly be organized also digitally. The multi-channel support that patient associations can offer, complements the support that public health sector offers. When developing digital services, we must take into consideration the target groups unequal abilities to use digital services and offer enough support also for the digital part. We also need to invest in the digital skills of the health care professionals.

References:
[1] Koski, S. Diabetesbarometri 2021. Suomen Diabetesliitto ry (2021)
www.diabetes.fi/files/21805/Diabetesbarometri_2021.pdf
[2] Kulmala, T. Digipalveluraportti 2021. Suomen Diabetesliitto ry (2022)
www.diabetes.fi/files/21956/Digipalveluraportti_2022_web.pdf

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Sessio 5B: Etävastaanoton erilaiset esimerkit

Puheenjohtaja: Pirkko Kouri, Suomen Telelääketieteen ja eHealth seura,
International Society for Telemedicine and eHealth

Torstai 29.9.2022

14:30 – 16:00

5B-1 Laadukas vuorovaikutus etävastaanotoilla
Elisa Snicker, Lehtori
Savonia-ammattikorkeakoulu

5B-2 Mitä pitää oppia ennen kuin etävastaanotolle?
Aleksi Schrey, Digitaalisten palveluiden ylilääkäri
Ylioppilaiden terveydenhoitosäätiö (YTHS)

5B-3 Käytännön kokemuksia suunterveyden etäpalveluista Vantaan kaupungin
suun terveydenhuollossa
Anu Ramberg, kehittämispäällikkö
Vantaan kaupunki

Scientific Rapid Presentations

O-16 The Usability of iPana Maternity Supports Partially the Work of a Midwife
Elisa Snicker, Lehtori
Savonia University of Applied Sciences, Finland

O-17 Exoskeletons in providing support to professionals in home care
Honkanen Kati, Licentiate of Administrative Sciences, Project manager
Päijät-Häme Joint Authority for Health and Wellbeing, Finland

O-18 SHAPES Ethical framework and the need for user support when using digital
care services
Sari Sarlio-Siintola, MSc (Econ), MSc (Social Ethics)
Laurea University of Applied Sciences, Finland

O-19 Virtual appointments – Value co-creation and challenges with accessibility
Arja-Tuulikki Malin, D.Sc. (Admin.), Lic.Sc (Ed.), M.Soc.Sc
LAB University of Applied sciences, Finland

O-20 The Meaning of Telepresence in Contact Between the Elderly and Family
Members
Sari Heikkinen, PhD, Research Programme Director, Sustainable and Versatile Social and
Health Care
Laurea University of Applied Sciences, Finland

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Laadukas vuorovaikutus etävastaanotoilla
Elisa Snicker, Lehtori
Savonia-ammattikorkeakoulu

Biography Elisa Snicker

Elisa has master's degrees in Health Sciences and Economic Sciences. She is also a Certified Business Coach - which helps to understand the importance of communication in working life and customer service. She works as a lecturer in master's degree Savonia Applied Sciences teaching future Digital Health Masters. Elisa has experience to do hands-on work developing digital solutions and applications for the social and healthcare sector designed to improve processes and increase work performance. She has witnessed and been involved in both successful and unsuccessful implementations of different kinds of digitalized processes and applications, for example remote consultation in outpatient care.

Digital Communication in Remote Appointments
Elisa Snicker[1] (M.Sc.), Liisa Klemola[1] (PHD), Bryn Lane[1] (MBA)
[1]*Savonia University of Applied Sciences*

Remote appointments in Finnish social and health care are gradually increasing and gaining a place of their own alongside traditional physical appointments. In 2021, outpatient visits for primary health care were up to 42,4 million. Of these visits, 27 % were remote, or approximately 11 million. [1] These numbers are only primary health care public appointments– private sector appointments are not included in these numbers. In Finland, the private sector has been using remote appointments for a longer time than public services. For example, one of the biggest private social and healthcare providers in Finland estimates that about 3.500-4.000 visits per day are served through "digital clinics".

Remote appointments create unique communication challenges between clients and health care professionals. Whether the appointment is via chat or video call, the professional must have unique skills to guide the process smoothly. Effectively assessing clients' physical and emotional needs through digital communication is a skill that must be taught and learned. The basics of communication of course matter either way, remotely or in a physical appointment. Assessing the need for treatment is the primary goal. Health care professionals must be able to listen and often make these assessments "between the lines". But without physical proximity, the emotive cues that facilitate this are often lacking or not available at all, so more carefully calibrated and specific questions need to be asked. [2,3]

Remote health care services can be distressing for clients and for inexperienced health care professionals. It is important that health care professionals have safe, preliminary practice to gain confidence to handle digital communication situations. Ongoing training based on other professionals' experience and client input also makes sense. Technical skills and well-functioning information systems are a key part of this process. It is the professional's task as well as their IT support to create a trustworthy and safe virtual environment for the client's appointment. This can be done by documenting actions during the virtual appointment, for example when the professional is retrieving information from patient files or making notes. But these important tasks should not distract from attention to the client. It is important to look straight at the camera when speaking and to make eye contact with the client. This engenders trust and confidence and should not be neglected when communicating digitally. At the end of the appointment, the health care professional must make it clear to the client that their virtual appointment has ended to avoid confusion. [2]

Clients and healthcare professionals are generally satisfied using remote systems [4]. Remote health care consultations and other solutions fulfill important social needs, and they are increasing. But there is room for improvement. This requires continuous development of information systems and ongoing training of health care professionals in the use of these systems, as well training in the unique communication skills pertaining to digital communication. [3]

References:
[1] Mölläri Kaisa, Marttila Tiina & Hauhio Nora. 2022. Perusterveydenhuollon ja suun terveydenhuollon avohoitokäynnit 2021. Tilastoraportti 14/2022. THL. https://urn.fi/URN:NBN:fi-fe2022042731012
[2] Metsäniemi Päivi. 2020. Digitaaliset vastaanotot, chatit ja botit. Yleislääketieteen perusteet. Duodecim.
[3] Honkanen Antti, Kautto Mervi, Metsäniemi Päivi, Tikkanen Jani & Tulonen-Tapio Johanna. 2022. Etävastaanotto. Duodecim. Verkkokurssi. https://www.oppiportti.fi/op/dvk00223
[4] Kaskinen Anu, Ayeboa-Sallah Benjamin, Teivaanmäki Tiina, Wärnhjelm Elina, Korhonen Liisa & Helve Otto. 2018. Pediatric Web-Based Chat Services for Caregivers of Children: Descriptive Study. J Med Internet Res. 2018 Dec 14;20(12): e10165. doi: 10.2196/10165.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Mitä pitää oppia ennen kuin etävastaanotolle?
Aleksi Schrey, Digitaalisten palveluiden ylilääkäri
Ylioppilainen terveydenhuoltosäätiö (YTHS)

Biography Aleksi Schrey

My background is a clinician (ENT) in a university hospital for almost two decades. Due to my interest towards digitalization in healthcare, I got an opportunity to enhance my expertise in that field as the CCIO of the hospital district of Southwest Finland from 2019. My goal was to try to bring forth the clinical perspective to the ICT development as well as to act as the interpreter between clinicians and the ICT-department. Finnish Student Health Service (FSHS) has actively developed digital services since 2000. Since my nomination as the chief medical officer of digital affairs at FSHS, my goal is to contribute to optimal and fluent usability and accessibility of digital services for those studying for a Bachelor's or Master's degree at a university or other institution of higher education. All healthcare-services cannot be efficiently provided digitally, thus the local services and physical appointments for students are still necessary in various situations. However, digital solutions for students are welcomed and increasingly desired. Seamless co-operation between professionals is also essential in providing services of high quality. I am a board member of Finnish Society of Telemedicine and eHealth.

Aspects to consider prior and during remote appointments

Aleksi Schrey[1] MD, PhD
[1]*Finnish Student Health Service (FSHS), Finland*

Finnish Student Health Service (FSHS) has a nationwide patient data system integrated with national systems, established operating structures and multidisciplinary collaboration networks to promote health in student communities. Digital solutions have been developed and introduced in recent years based on students' wishes and needs. These solutions are cost-effective and can be scaled up to serve the growing number of students from diverse backgrounds. Digital services in FSHS carry a major role in providing these needs nationally.

The student health care provided by the FSHS is presented from the digital aspect with a special focus on the organizational reform since the beginning of 2021, when the number of our customers as well as our employees more than doubled. The challenges and possibilities of digital health care are discussed.

Although digital solutions for students are welcomed and increasingly desired, all healthcare-services cannot be efficiently provided digitally, thus the local services and physical appointments for students are still necessary in various situations. Seamless co-operation between professionals as well as familiarization and continuous education to different are essential in providing services of high quality.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Käytännön kokemuksia suunterveyden etäpalveluista Vantaan kaupungin suun terveydenhuollossa

Anu Ramberg, kehittämispäällikkö

Vantaan kaupunki

Biography Anu Ramberg

Anu Ramberg works as Development Manager at Oral Health Corporation, City of Vantaa. She has been developing remote services in oral health care over the past few years. Digital services and other alternative service methods through service design are objects of interest to her. She has a Master of Health Care Degree in Development and Leadership and a teacher's Pedagogical Qualification. She has previously worked as a Head Nurse at Student Health Services and as a dental hygienist at a municipal health center and at a private dental clinic in the metropolitan area

Practical experiences of oral health telemedicine services at the City of Vantaa Oral Health Care

Introduction: Digitalization of the society has enabled new ways of providing health services. One new, but already established, service method consists of various remote services. Remote services utilize some distance technologies such as cell phones, computers, various sensor devices (such as smart watches), combinations of them, or applications built on these technologies for goal-oriented cooperation between customers and professionals. One example of remote services is remote consultation a by video link.

Oral health care mostly entails measures, and traditionally people think that all encounters with patients take place by means of physical contacts at dental clinics. Nevertheless, oral health care remote services may offer new possibilities of quicker access to treatment, better tools for self-care and prevention, and committing the patient as an active player to maintaining their own health. Vantaa offers its residents an e-Transacting channel for general issues and health care, online assessment of symptoms, as well as video appointments. All of the above require strong identification.

Service by remote access, video appointments: The first Vantaa oral health appointments by remote access took place in spring 2020. A varying number of oral health professionals have been included in the videoconferencing team. As a general rule, the majority of professionals involved in video appointments consist of dental hygienists and nurses. They have treated patients of all ages through a video link. An equal number of men and women have participated in the service, and also the elderly have used it.

Video appointments are offered for health checks for 1-year-olds, for assessment of the need for oral health care, for counseling of families expecting their first child, as well as for counseling about oral self-care. In addition, concerns or questions about wisdom teeth can be taken care of by remote access.

A video appointment will be made for a patient either through the oral health appointment service, or an oral health professional makes the appointment for the patient, while online appointment is also a possibility. The customer opens the video link on their computer, tablet computer, or smartphone with a camera and microphone.

Different service points aim to flexibly make video appointments, which are not dependent on premises and minimize the employees' having to move from one place to another. Saved time is important for the customer: there is no need for the customer to leave their home to go to the appointment. Both customers and employees have had positive experiences of the service.

Remote services are here to stay: Remote services do not only entail new technologies; at issue is a bigger change in operating procedures and ways of thinking. One can say that remote services have established their place among the traditional appointment services. In the future, remote services will, hopefully, also better reach the customers that are afraid of dental care or that otherwise have a high threshold of coming to an appointment. Remote services may lower the threshold of first contact between a patient and a health care professional. The aim is to offer preventive, easy-to-access oral health care irrespective of time and place.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-16: The usability of iPana Maternity supports partially the work of a midwife

Anna-Leena Karvonen[1], certified midwife, Liisa Klemola[2] PHD, Elisa Snicker[2] M.Sc
[1]Kuopio University Hospital, Finland
[2]Savonia University of Applied Sciences, Finland

Introduction: Health care professionals work in a changing environment [3]. The patient´s role has changed to an active data provider and participant in treatment [3]. The information systems´ usability are being critically evaluated in Finland [4]. The Ministry of Social Affairs and Health's digitalization policy for 2025 considers the usability of information systems used by professionals [2]. This study concentrated on the iPana EHR´s integrated system, iPana Maternity PHP. The objective was to assess midwives´ perceptions of its usability. The purpose was to find out how midwives evaluate its usability, which functions support their work, and improvements needed. Usability was examined through Jakob Nielsen's [1] usability goals.

Material and Methods: The quantitative query was done autumn 2021 in the Pirkanmaa Hospital District, Tampere University Hospital. An electronic questionnaire was sent to the delivery unit, pregnancy emergency, obstetric ward, and maternity policlinic midwives. The questionnaire included 36 questions or claims. Claims were based on Nielsen's [1] definition of usability, and they cover the five areas of usability (easy to learn, efficiency, easy to remember, few errors, and satisfaction). The Likert scale was used in with half-structured questions. The questionnaire included an open-ended question for development proposals.

Results: The questionnaire was sent to 100 midwives. The answer percentage was 37. According to these results, the most supportive usability features of the iPana´s digital solutions were system learnability and memorability. Efficiency supported usability to a limited extent. Finding information from iPana and terminology of the solution supported midwives' work. Improvement needed were in performing routine tasks, integration, noticing abnormal blood sugar and pressure values, and the self-monitoring section´s double documenting challenges.

Discussion: This thesis provided an overview of the professional users' perceptions of usability. These results can be used in the system´s development work. However, further research is needed to address usability challenges in greater depth. Generally, continuous development and usability assessment of EHRs is important years after implementation.

References:
[1] Nielsen, J. 1993. Usability Engineering. Academic Press. San Diego, CA.
[2] The Ministry of Social Affairs and Health 2016. Sosiaali- ja terveysministeriön digitalisaatiolinjaukset 2025. http://urn.fi/URN:ISBN:978-952-00-3782-6. Accessed 27.8.2021.
[3] The Ministry of Social Affairs and Health 2020. Information to Support Well-being and Service Renewal. eHealth and eSocial Strategy 2020. http://urn.fi/URN:ISBN:978-952-00-3575-4. Accessed 1.8.2021.
[4] Vehko, T., Hyppönen, H., Ryhänen, M. & Heponiemi, T. 2017. Sairaanhoitajien kokemuksia tietojärjestelmistä ja työhyvinvoinnista – Kyselytutkimus 2017. Tutkimuksesta tiiviisti 38, marraskuu 2017. Terveyden ja hyvinvoinnin laitos, Helsinki. https://urn.fi/URN:ISBN:978-952-302-985-9. Accessed 1.8.2021.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

O-17: Exoskeletons in Providing Support to Professionals in Home Care

Piritta Mattila[1] M. Health care, Kati Honkanen[1] Lic.Adm.Sci
[1]*Päijät-Häme Joint Authority of Health and Welfare, Finland*

Introduction: Päijät-Häme Joint Authority for Health and Wellbeing together with LAB University of Applied Sciences are conducting project KOHTI which is part of the national Technology supporting smart ageing and care at home programme (KATI) [1]. KOHTI included several different pilot projects for testing different technological and digital solutions in the home care environment. One of the pilots focused on testing Exoskeleton models in home care to support employees' ergonomy at work. The hypotheses for the pilot were: 1) the users would find new technologies useful 2) the users' physical load would be reduced and their well-being at work is increased and 3) that it would be possible to identify employees, tasks and situations where the use of Exoskeletons was best suited.

Material and Methods: In the pilot, exoskeletons were tested in 11 different home care units between September 2021 and January 2022. Home care employees used two different models of Exoskeleton: Auxivo Lift and Laevo. Participation to the pilot was voluntary to the employees. The methodology was to use a Webropol-questionnaire to evaluate the users' experiences on the exoskeletons. The questionnaire included questions on the employees' status with possible musculoskeletal disorder, and their experiences on e.g. how useful and easy to use the technology was and whether they would recommend or continue using it. The questionnaire also included open-ended questions. Altogether 13 users from different home care units answered the questionnaire. The analysis was carried out by project partner VALOR Partners Oy.

Results: The distribution between testers using the two different exoskeleton models was even. When examined as a whole, the results did not indicate a strong suitability of the devices in home care setting or a strong preference of wanting to continue the use of exoskeletons. Nevertheless, around half of the participants noticed a decrease in their physical load. Comparatively, results supported the hypothesis more with people who had had diagnosed issues or symptoms within the past five years, compared with people who had none or who only were currently experiencing some sort of back, neck or shoulder pain.

Discussion: The 13 home care employees who tested the use of exoskeletons in their work and answered the questionnaire represented a diverse set of employees with different backgrounds and status regarding musculoskeletal disorders. The results will be further analyzed and documented as part of the project report June 2022.

References:
[1] Päijät-Sote: KOHTI-hanke. 2022. https://innokyla.fi/fi/kokonaisuus/paijat-sote-kohti-hanke

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-18: SHAPES Ethical Framework and the Need for User Support When Using Digital Care Services

Sari Sarlio-Siintola[1], MSc (Econ), MSc (Social Ethics), Kristiina Helminen[1], RN, PhD (Health Sciences)

[1]*Laurea University of Applied Sciences, Finland*

Introduction: Digital services are changing the moral division of labor in the welfare sector between service users and their providers. Many caring and everyday processes are automated: for example, self-care is supported by collecting information about well-being with various sensors and robots help with everyday tasks. Therefore, the provision of digital services to older people requires different support processes. In addition, people are not sure they can trust digital services or the use of artificial intelligence. They do not know enough, or they know too much about the risks associated with using digital services. Smart and Healthy Ageing through People Engaging in supportive Systems (SHAPES) EU Horizon 2020 project dresses the ethical aspects of digital care services [1].

Material and Methods: This paper discusses relevance and necessity of various support services as part of the digital well-being service provision for older people The research question was: What kind of support do users of SHAPES digital services need at different stages of their use and why? SHAPES Ethical Framework materials and relevant recent literature were integrated using content analysis. In the SHAPES Ethical Framework, the relevant values, rights and ethical guidelines have first been defined for the SHAPES integrated care platform. Based on those texts, the ethical requirements for the technology, for the user support, and for the business and governance model have then been defined. The focus of our analysis was on the ethical requirements related to the user support.

Results: The importance of informed consent and supported decision making for the choice of services must be highlighted. Regular assessment of the suitability of services is essential, regarding the principles of the UN Convention on the Rights of Persons with Disabilities. GDPR and trust on digital services impose several requirements on support services. In addition to the information on data protection, it is also necessary to build support services for the realization of the data subject's rights. Finally, the needs of support services for care providers should also be taken into account since their working processes are changing.

Discussion: This study showed that different support services are needed for end users but also for care providers. In order to develop the digital support provision on a user-oriented basis, one must understand the different needs of people who require different support. Safe user experiences must be accessible for all users regardless of their IT skills. [2,3]. The concept of responsibility is related to liability. In conclusion, the key issue for creating adequate support services is the participation and empowerment of both end users and caregivers in the design of new digital service models on an equal footing with other stakeholders.

References:
[1] SHAPES (2021) Ethical Framework Smart and Healthy Ageing through People Engaging in supporting Systems D8.4. Deliverables – SHAPES H2020 (shapes2020.eu) [accessed 18.5.2022].
[2] Kaihlanen A-M, Virtanen L, Buchert U, Safarov N, Valkonen P, Hietapakka L, Hörhammer I, Kujala S, Kouvonen A & Heponiemi T (2022) Towards digital health equity - a qualitative study of the challenges experienced by vulnerable groups in using digital health services in the COVID-19 era. BMC Health Services Research 22: 188.
[3] Coco K, Kangasniemi M & Rantanen T (2018) Care Personnel's Attitudes and Fears Toward Care Robots in Elderly Care: A Comparison of Data from the Care Personnel in Finland and Japan. Journal of nursing scholarship 50(6), 634-644.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-19: Virtual appointments – Value Co-Creation and Challenges with Accessibility

Arja-Tuulikki Malin[1], D.Sc. (Admin.), Lic.Sc (Ed.), M.Soc.Sc
[1]*LAB University of Applied sciences, Finland*

Background: Due to the COVID-19 pandemic, new digital services were introduced quickly in health and social services [1]. Previous studies have focused attention on the advantage of digital services in value co-creation [2] and the challenge of availability related to the unequal access of citizens to e-services [3].

Aim the project: In this descriptive literature review was analyzed research articles of virtual appointments during the COVID-19 pandemic. Two research questions were set: 1. What kind of successes and challenges were identified in studies of virtual appointments during the COVID-19 pandemic? 2. What were the challenges of inequality among citizens in the use of services? Based on the application and exclusion criterion, 12 peer-reviewed (English) articles were selected and analyzed.

Results: The results suggest that virtual appointments can support the value co-creation. The increased use of virtual appointments seems to be hindered by the attitudes of staff and patients related to the use of technology, as well as factors related to the socio-economic background of patients and the area of residence. Among demographic factors, the female gender was identified as being linked to the use of virtual receptions, with men using more traditional means, phone-calls, and face-to-face appointments. On the other hand, age did not appear to be an unambiguous factor reducing the use of virtual appointments.

Discussion: The results shed light on the challenges of large-scale utilization of virtual appointments, from the point of view of system-level resilience [4] and social sustainable development goals [5]. Further study on the social- and healthcare system level resilience governance and strategic management [6] will provide new in-depth results.

References:
[1] Parkinson, A., Drew, J., Hall Dykgraaf, S., Fanning, V., Chisholm, K., Elisha, M., Lueck, C., Phillips, C., & Desborough, J. (2021). "They"re getting a taste of our world': A qualitative study of people with multiple sclerosis' experiences of accessing health care during the COVID-19 pandemic in the Australian Capital Territory. Health Expectations: an International Journal of Public Participation in Health Care and Health Policy, 24(5), 1607–1617. https://doi.org/10.1111/hex.13284
[2] Bianchi. C. (2021). Exploring how internet services can enhance elderly well-being. The Journal of Services Marketing, 35(5), 585–603. https://doi.org/10.1108/JSM-05-2020-0177
[3] Bastani, P., Mohammadpour, M., Samadbeik, M., Bastani, M., Rossi-Fedele, G., & Balasubramanian, M. (2021). Factors influencing access and utilization of health services among older people during the COVID − 19 pandemic: a scoping review. Archives of Public Health, 79(1), 1–190. https://doi.org/10.1186/s13690-021-00719-9
[4] Bhamra, R., Dani, S. & Burnard, K. (2011). Resilience: the concept, a literature review and future directions. *International Journal of Production Research*, 49(18), 5375–5393. https://doi.org/10.1080/00207543.2011.563826
[5] UN. 2022. The Sustainable Development Goals. Reference 25.8.2022. Available https://www.un.org/sustainabledevelopment/
[6] Malin, A-T. (2022). Muutoksen hallinta ja resilienssin monet tulkinnat johtamisen näkökulmasta. Hyväksytty abstrakti. Työelämän tutkimuspäivät 2022, Tampere.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

O-20: The Meaning of Telepresence in Contact Between the Elderly and Family Members

Sari Heikkinen [1] PhD, Research Programme Director, Sustainable and Versatile Social and Health Care, Teppo Leppälahti [1], MSc (Marketing), Senior Lecturer
[1]*Laurea University of Applied Sciences, Finland*

Introduction: It is believed that robots have unique potential to assist older adults. Several discussions aim to create and promote a variety of technologies so that older people can age at home. Telepresence robots, such as Double 3, are communication devices for business use, but they can be used at home too. Several other same type of telepresence robots with rather same capabilities have been introduced to the market in the past ten to fifteen years and there has been a growing interest in the use and usability of these devices for elderly care. Although considerable research has been devoted to various issues within the area, rather less attention has been paid to distinguishing features and meaning of telepresence for interpersonal contact.

Material and Methods: This study focused on the use of telepresence and user experiences in cases when Double 3 had been implemented in the authentic living environments of older adults, in their homes. The study based on interview data and data that was gathered by the Double Fleet Management administration tool. The Double 3 was in elderly care home for four month-trial during the summer of 2020 and in private home for three month-trial during the autumn in 2020. Interviews [1] of Finnish older adults (2), close relatives (4), both before and after the trials, were made during the year 2020. The perspectives of older adults and their close relatives as users of telepresence robot, how they were able to adopt and utilize robots in their contacts, were studied. The interviews were analyzed by using thematic content analysis.

Results: The study focused on the quantity and quality of contacts between family members through Double 3. It appeared that Double 3 was used in communication where it supplemented and even replaced face-to-face interaction. The interviewees agreed that technology could play an important role by improving communications, enabling social contact, and connecting from the distance. The interviewees learned to use Double 3 easily. They described Double 3 as a device for stronger feeling of presence when compared to the phone or to the laptop. The older people also emphasized the increased feeling of safety.

Discussion: Findings of the study indicate intensive use and high satisfaction with telepresence robot among elderly persons and his or her closest family members. It appears that the telepresence robot may enable contact with better and stronger presence, which in turn may link with more intense connection. The threshold to routine use for both the remote user and for the recipient elderly person is low technically. Further research is needed to properly assess links between the use of the robot, presence, and interpersonal connection, but nevertheless, the telepresence robot may offer potential for improving quality of well-being of elderly at home.

References:
[1] The research is part of Towards socially inclusive digital society: transforming service culture Project (DigiIN), [grant number 327169/327145], funded by the Strategic Research Council at the Academy of Finland.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Session 6: Promoting Sustainable Wellbeing

Chair: President Michele Y. Griffith,
International Society for Telemedicine and eHealth (ISfTeH)

Thursday 29th September 2022

17:00 – 18:30

6-1 Using a Network of Ecosystems to Help Promoting Sustainable Wellbeing
Andy Bleaden, Communities Director
European Connected Health Alliance, Ireland

6-2 My Health and My Food - Biotics in Personalized Nutrition for Better Preventive Wellbeing
Seppo Salminen, Professor
University of Turku, Finland

6-3 Sustainable Weight as Your Wellbeing Asset
André Heikius, Chief Medical Officer
Obesmart Ltd, Finland

6-4 Digital transformation in public health
Sari Palojoki, Principal Expert
EU European Centre for Disease Prevention and Control (ECDC)

Scientific rapid presentation

O-21 The Stimulation of Polymodal Sensory Perception by Skarżyński (SPPS-S): Comparison of Stationary and Remote Therapy Results
Piotr Henryk Skarżynski
Department of Teleaudiology and Screening, World Hearing Center, Institute of Physiology and Pathology of Hearing, Kajetany, Poland

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Using a Network of Ecosystems to Help Promoting Sustainable Wellbeing

Andy Bleaden, Communities Director

European Connected Health Alliance, Ireland

Biography Andy Bleaden

Andy Bleaden works for ECHAlliance as the Communities Director where he has developed and built a large network of over 70+ Global Digital Health Ecosystems, 12 thematic innovation ecosystems and grown a Membership Community of over 900 Health organisations. He has had a long career in both health and social care as well as funding going back over 30 years starting in the mental health field working with mentally disordered offenders, homeless young people, regeneration and economic development and then later in the field of social care, dementia and robotics. Alongside this Andy has been an External Expert for the European Commission since 2013 assessing proposals and reviewing projects. He has worked for the European Institute of Innovation & Technology (EIT) on both Health and Manufacturing programmes. He has assessed proposals and reviewed projects for other funds such as Urban Innovation Actions, Urbact and Innovative Medicines Initiative

In this session Andy Bleaden from the ECHAlliance - the Global Health Connector will discuss how we can use a global network of over 70 Digital Health ecosystems in different geographic locations and 12 thematic innovation ecosystems to bring together both need and solution harnessing best practice from cross border collaboration. He will also talk about the creation by ECHAlliance of the Global Health Connector Partnership to achieve actual impact and scale on a global level on sustainable wellbeing. The Global Health Connector Partnership (GHCP) is a movement launched by the ECHAlliance in partnership with leading digital health organisations across the globe including such as HLTH (USA), American Telemedicine Association (USA), Health Parliament (India), the Commonwealth Centre for Digital Health (global), the Africa Health Business (Africa). Its aim is to bring together federate all public and private organisations across the world to tackle the challenges that health systems are facing, to support the digital transformation of healthcare and to build resilient and future-proof systems, professionals, tools and organisations to ensure a better health and wellbeing for humanity.

The GHCP has a number of large flagship international events and workshops across 5 continents in order to create the discussion spaces for bold and inspired health experts, patients' groups, health professionals, scientists, policymakers, companies, start-ups, etc. It also facilitates knowledge creation, and it promotes the innovation with experts working groups (WG) around specific themes such Disparities Globally, Digital Skills Workforce and Data and Digital Services and will be launching a new WG titled "Green Health".

Healthcare systems' climate footprint is equivalent to 4,4% of global net emissions, according to the report published by the organisations "Healthcare without harm" and ARUP. These emissions represent 514 coal-fired power plants, and if the healthcare sector was a country, it would be the 5th largest emitter on the planet. In some countries, the healthcare systems can even account for 8% to 9% of the national CO_2 emissions, such as in France or in USA.

He will argue - "For Healthcare - as the 5th largest emitter there is no get out clause just because it is health".

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

My Health and My Food - Biotics in Personalized Nutrition for Better Preventive Wellbeing

Seppo Salminen, Professor

Functional Foods Forum, Faculty of Medicine, University of Turku, Finland

Biography Seppo Salminen

Seppo Salminen is professor at the faculty of Medicine and director of Functional Foods Forum, University of Turku, Turku, Finland. He has extensive experience gut microbiota studies and work on probiotics, Prebiotics and functional foods and health. He has found 500 peer reviewed scientific articles and he has Keenan editor or coedeitor of several university text books. He has also received several international awards including the Institute Pasteur-IDF Metchnikoff Price and the Swiss Price on Modern Nutrition'

Gut microbiota influences health and impacts our metabolism in part by interacting with our dietary components and converting them into metabolic products. Microbiota-targeted dietary components include the `biotic` family, probiotics, prebiotics, synbiotics and postbiotics as well as fermented foods. The first gut microbiota modulating substances may have been fermented foods. Fermented foods may theoretically encompass all these substances, as they supply us with microbes at various stages along the live-dead continuum, predigested nutrients, and bacterial metabolites, all of which may affect human gut microbiota and offer targets for personalized nutrition.

Biotic components are defined by the Nature journals: Biotic components are the living organisms present in an ecosystem, such as bacteria, fungi, plants and animals, and elements produced by them. (https://www.nature.com/subjects/biotic)

Over the past 8 years, ISAPP (www.ISAPPscience.org) has advanced consensus definitions of probiotics, prebiotics synbiotics and postbiotics. Each definition requires existing evidence of health promoting effects. Consensus definitions are useful for these developing fields, so that scientists, clinical trialists, industry, regulators, and consumers have common ground for future activity in the area of biotics. A generally accepted definition for each member of the biotic family will hopefully help in creating regulatory clarity and promote innovation and the development of new microbiota modulating products. The definitions and their background have been published in Nature Reviews in Gastroenterology as open access publications. These components offer great perspectives for future personalized nutrition.

ISAPP definitions for fermented food, probiotic, prebiotic, synbiotic and postbiotic.

Fermented Foods	Foods made through desired microbial growth and enzymatic conversions of food components	Hill C et al Nat. Rev. Gastroenterol. Hepatol. 11, 506–514 (2014)
Probiotic	Live microorganisms that, when administered in adequate amounts, confer a health benefit on the host	Gibson G et al Nat. Rev. Gastroenterol. Hepatol. 14, 491–502 (2017)
Prebiotic	A substrate that is selectively utilized by host microorganisms conferring a health benefit	Swanson K et al Nat. Rev. Gastroenterol. Hepatol 17, 687–701 (2020)
Synbiotic	A mixture comprising live microorganisms and substrate(s) selectively utilized by host microorganisms that confers a health benefit on the host	Marco M et al Nat. Nat. Rev. Gastroenterol. Hepatol 18, 196-208 (2021)
Postbiotic	Preparation of inanimate microorganisms and/or their components that confers a health benefit on the host	Salminen, S. et al. Nat Rev Gastroenterol Hepatol, 18, 649-667 (2021)

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Sustainable Weight as Your Wellbeing Asset
André Heikius, Chief medical officer
Obesmart Ltd, Finland

Biography André Heikius

Dr André Heikius is an obesity strategist, healthcare leader and entrepreneur. He is the founder and medical director at Obesmart and Painoklinikka.fi. He is the medical director at Kårkulla Joint Authority, and executive manager at Finnish Association for Obesity Medicine. He is a senior medical advisor for global companies, and a key note speaker and author.

Obesity is a global health threat. Novel therapies include more efficient medication and digital self-care pathways, but equally important will be sufficient resources for treating obesity, an end to the stigmatization of patients with overweight and establishing a holistic care approach to weight health.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Digital Transformation in Public Health
Sari Palojoki, Principal Expert
EU European Centre for Disease Prevention and Control (ECDC)

Biography Sari Palojoki
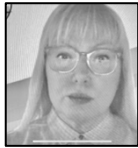
Dr. Sari Palojoki is the principal expert of European Centre for Disease Prevention and Control (ECDC), hired directly by EU (non-SNE). Before being named principal expert after an open EU-wide competition in January 2022, Sari was senior expert at the Ministry of Social Affairs and Health (currently on leave of absence) and was responsible, among others, for the MOH international affairs in digitalization and, led the project for the Finnish presidency of the EU council in digitalization. Sari has a long history in health care leadership and development work, having held position as head of patient safety of Helsinki University Central Hospital District Group Administration (HUS) for over 6 years, deputy head of unit/ head of unit for THL for several years and positions in pharma industry R&D and National Agency for Medicines. Sari has been awarded Knight (FWR K) of the Order of White Rose last year as well as several professional and research awards previously. She has PhD in health informatics and MSc in Health Care and is e.g., certified international auditor in quality and information systems.

Surveillance, a core function of public health practice, is defined as the ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of this information to those who need to know and act upon that information.

The experiences from the COVID-19 pandemic have stressed the need for a transformation from traditional indicator-based public health surveillance to an all-encompassing information system based on access to a comprehensive set of data sources. In this way, traditional public health surveillance systems can utilize the potential created by new situation-aware real-time signals coming from a variety of sources such as: clinical patient records, laboratory information systems, research datasets, prescriptions and pharmacy sales, geographic and locality-based data as well as other types of proxy measures e.g., environmental and weather data, travel records, social media, mobile/sensor networks, participatory surveillance systems.

Although the concept of interoperability has long been known in the field - first efforts go back to the 1980s - , the current planning and foreseen implementation poses some additional advantages related to the progresses, achievements and maturity of some of the relevant standards (such as the latest release of HL7 Fast Healthcare Interoperability Resources (FHIR), the first draft of FHIR was released in 2016), as well as on the experience of other organizations with similar interests and mission. Irrespective of the technical standard(s) chosen, it is likely that implementing an interoperable framework will provide multiple opportunities for public health surveillance, widely acknowledged in the field, such as cost reductions (when automated procedures are set up), increased data accuracy, real time data acquisition or fast data acquisition, broader data ranges, larger numbers of indicators and their prompter calculation, multiple reporting formats.

Integrated digital surveillance systems based on standards and technologies for health information exchange are for the benefit of patients in Europe. Implementing any interoperable system will need a good IT infrastructure and economic investments, among many different organizations from different Member States, with different short-term and long-term perspectives. It is important to recognise the variation between Member States in their practical ability to collect and deliver electronic disease surveillance data. Sharing best practices is essential if we are to move towards optimal standards for easier integration.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

O-21: The Stimulation of Polymodal Sensory Perception by Skarżyński (SPPS-S): Comparison of Stationary and Remote Therapy Results

Piotr Henryk Skarżynski[1,2,3,4], Prof., Natalia Czajka[1], PhD, Henryk Skarżyński[5], Prof

[1]*Department of Teleaudiology and Screening, World Hearing Center, Institute of Physiology and Pathology of Hearing, Kajetany, Poland*
[2]*Institute of Sensory Organs, Warsaw/Kajetany, Poland*
[3]*Heart Failure and Cardiac Rehabilitation Department of the Medical University of Warsaw, Poland*
[4]*Center of Hearing and Speech Medincus, Kajetany, Poland*
[5]*Institute of Physiology and Pathology of Hearing, World Hearing Center, Warsaw/ Kajetany, Poland*

Introduction: Disorders connected with hearing can have impact in a various forms and affect each area of life. Hearing disorders may concern peripheral auditory system as well as its parts responsible for central processing. It is estimated that central auditory processing disorders in its isolated form concern 2-3% of the population of school-age children, however, the problem co-occurring with other disorders may affect even several dozen percents of children [1-2]. The main aim of the study is to present the results of SPPS-S therapy dedicated to patients with central auditory processing disorders who have completed the remote version of the method in comparison with patients performing therapy in a rehabilitation center

Material and Methods: The Stimulation of Polymodal Sensory Perception by Skarżyński (original name in polish SPPS-S) is a treatment applicable for many different groups of disorders showing comorbidity with central auditory processing disorders. Solutions present in SPPS-S offer multifaceted therapy activating different perceptual modalities (hearing, vision and touch) at the same time, as well as their integration and coordination. Patient may receive the SPPS-S therapy either in the rehabilitation center or at home.
The material used to assess the effectiveness of SPPS-S-based therapy included the results of 100 patients who received remote SPPS-S therapy compared to the results of 100 patients who performed therapy at a specialized center.

Results: Statistical analysis of the results obtained, which showed that the therapy used resulted in a statistically significant improvement in all auditory functions studied. Results confirm the high effectiveness of The Stimulation of Polymodal Sensory Perception by Skarżyński, both in stationary and remotely implemented form. The quality of telerehabilitation interventions was maintained at the same level as in therapeutic work at the therapeutic center, which was confirmed by the results of patients. Remote SPPS-S therapy as an effective telerahabilitation method has become an effective form of supporting patients in their own homes.

Discussion: According to the available recommendations, there are three main therapeutic approaches in the treatment of patients with auditory processing disorders: transforming the school environment, teaching the child strategies how to compensate his or her difficulties or using hearing trainings focused on a specific deficit [3-4].

References:
[1] Skarzyński P. H, Włodarczyk A, Kochanek K, Piłka A, Jędrzejczak W.W, Olszewski Ł, Bruski Ł, Niedzielski A, Skarżyński H. (2015) Central auditory processing disorder (CAPD) tests in a school-age hearing screening programme – analysis of 76,429 children, Annals of Agricultural and Environmental Medicine, 22(1): 90–95.
[2] Brewer C, Zalewski Ch. (2016) Heritability of Non-Speech Auditory Processing Skills, 24(8): 1137-44.
[3] Bellis TJ. (2008) Anzalone AM. Intervention approaches for individuals with (Central) Auditory Processing Disorders. Contemp Issues Commun Sci Disord,35: 143–53.
[4] Skoczylas A.(2012) Diagnoza i terapia osób z centralnymi zaburzeniami przetwarzania słuchowego w Polsce, Nowa Audiofonologia, 1(3):51-55.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

POSTERS

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-1: Veterinary telemedicine and prescriptions in Finland
DVM, Special Competence in Healthcare Informatics
Eva Kaisti[1]

[1]*Veteva Oy*

Background: The commercial use of telemedicine without an attachment to an in-person visits at a veterinary clinic has been offered in Finland since 2018. In medicine the Supervisory Authority for Welfare and Health (Valvira) has never limited prescriptions based on a telemedicine visit and Finland has been a global forerunner in telemedicine of humans. In veterinary medicine it was until 28.1.22 due to the Finnish Food Authority's interpretation of laws and legislations prohibited to perform prescriptions after a vet visit, where the animal had not been examined physically by a vet. EU 2019/6 and the national Law on the treatment of animals changed this. Finland has taken a very modern step by supporting the freedom of professional practice and equality of all vet professionals, whereas prescriptions may be made without performing a clinical examination, such as in a telemedicine visit.

Aim of the project: Veteva Oy has practiced veterinary telemedicine since 2019. Veteva has generated guidelines for veterinary telemedicine, published on the homepage www.veteva.vet in Finnish. Following these very detailed guidelines Veteva's vets have been writing prescriptions since February 2022. In Finland there is no electronic prescription for animals so Veteva's vets did phone prescriptions. To be very specific on not performing prescriptions to un-known persons, Veteva requires all it's clients to performs a strong identification by for an example online banking credentials. In this poster we would like to show results of a half year period of being able to prescribe medications based on a telemedicine consultation.

Results: During the period 1.2-1.8.2022 a prescription medication was phoned to a pharmacy in 4.1% of patient cases.

A break-up of all patients treated with a prescription medication at Veteva's remote clinics:
1.63% non-steroidal anti-inflammatory (NSAID) painkillers
1.27% antiparasitic tick-prevention medications
0.34% specific antiparasitic nose-mite treatments
0.27% topical antibiotics such as skin ointments or eye drops
0.23% oral antibiotics
0.06% topical steroids for ear or skin infections
0.05% medications to relieve (motion) sickness
0.05% oral corticosteroids
0.05% behavioral medications for anxiety
0.04% hormonal medications to treat false pregnancy symptoms
0.02% local anti-fungal medications for ear or skin infections
0.02% gabapentine
0.01% esomeprazole
0.01% medications to treat chronic incontinence after spaying
0.01% medications to control atopic dermatitis, such as cyclosporine

Of the prescriptions 39.60% were NSAIDs and 39,28% antiparasitics. Antibiotics in some form made up 12,2% of the prescriptions, but only 0,5% of all televet visits.

Discussion: The usage of veterinary telemedicine has become normal in Finland. When it is done properly and medications are prescribed only in specific cases, it's is possible to treat ca. 70-75% of the patient material remotely.

Experienced veterinary telemedicine companies are accustomed to using self-help products as well as recommending specific over-the-counter medications officially labelled for human use but used also in veterinary medicine.

As seen in this study it is now possible to help pet owners and pets even more accurately without jeopardizing patient safety or the controlled usage of medications or more specifically controlled usage of antimicrobials.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-2: Escape Room Games Are an Inspiring Learning Environment in the Present-Day Universities

**Outi Ahonen, PhD, MHSc, Sini Häyrinen, MSc, Pia Lahtinen, MHSc, Lotta Tiikkainen, MHSc**

Laurea University of Applied Sciences, Finland

Background: The number of escape rooms in nursing education has increased enormously. [1] Part of it can be explained by scientific evidence on the benefits of game-based learning. [2] Escape rooms develop problem solving skills, ability to prioritize, critical thinking and teamwork skills. [3] They reinforce learning of the course materials. [4] Other benefits include self-management, communication, and systemic thinking. [5] In addition, escape rooms develop professional skills, critical thinking, and promote mutual trust. [6]

Aim the project: The aims of the Escape4Health project are to create room escape scenarios for multi-professional, experiential training, and education in healthcare. At Laurea University of Applied Sciences, we developed a digital room escape game, built on Seppo-platform. It can be played with mobile devices or web browsers. The escape room can be used both in classrooms and in remote sessions. In the room escape, players do not compete against each other. Instead, two teams co-operate and solve puzzles together in separate spaceships. Each team has only partial solutions, so they must communicate with each other to proceed in the game. Their aim is to help two alien patients recover their health. Main themes include teamwork, communication, and holistic approach to (acute) care work, and in addition players need some pre-learned theory knowledge of care work. In addition to Laurea University of Applied Sciences, the Escape4Health project has other partners building their own escape rooms scenarios: Polytechnic University of Valencia, Aristotle University of Thessaloniki, Association for Medical Education in Europe and Hovedstaden region.

Results: The results of our user tests show that the students were very engaged with the room escape, and they were motivated to see it through. They wished for more lessons like be like this. They also learned a lot about their own communication styles and teamwork skills, and how to improve them.

What is happening next: In the coming months we will conduct an evaluation of the impacts of the escape rooms. After that, the escape rooms are released, and they will be free to use.
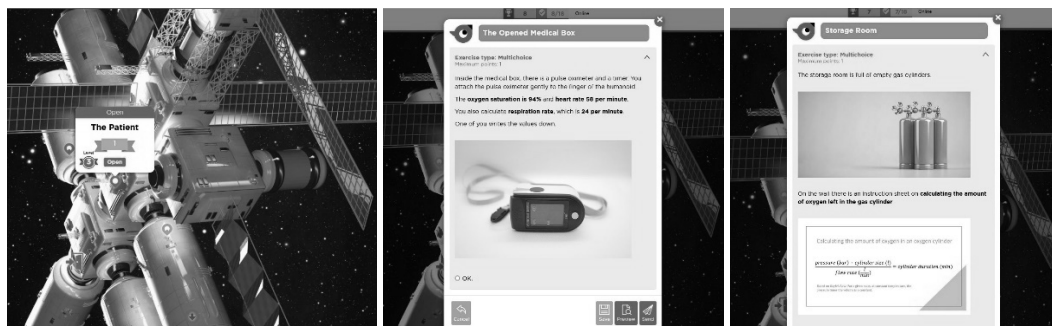
References:
[1] Guckian, Jonathan; Eveson, Leanne; May, Hannah. (2020). The great escape? The rise of the escape room in medical education. Future healthcare journal, 7(2), 112–115. https://doi.org/10.7861/fhj.2020-0032
[2] Reed, Janet; Ferdig, Richard. (2021). Gaming and anxiety in the nursing simulation lab: A pilot study of an escape room. Journal of Professional Nursing, 37(2), 298-305. https://doi.org/10.1016/j.profnurs.2021.01.006
[3] Kubin, Laura. (2020). Using an Escape Activity in the Classroom to Enhance Nursing Student Learning. Clinical Simulation in Nursing, 47, 52-56. https://doi.org/10.1016/j.ecns.2020.07.007
[4] Plakogiannisa, Roda; Stefanidisb, Abraham; Hernandezc, Nubriel; Nogid, Anna. (2020). A heart failure themed escape room approach to enhance pharmacy student learning. Currents in Pharmacy Teaching and Learning, 12(8), 940-944. https://doi.org/10.1016/j.cptl.2020.04.014
[5] Wu, Christine; Wagenschutz, Heather; Hein, Justine. (2018). Promoting leadership and teamwork development through Escape Rooms. Medical education, 52(5), 561–562. https://doi.org/10.1111/medu.13557
[6] Morrell, Briyana; Eukel, Heidi; Santurri, Laura. (2020). Soft skills and implications for future professional practice: Qualitative findings of a nursing education escape room. Nurse Education Today, 93. https://doi.org/10.1016/j.nedt.2020.104462

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-3: The Evolution of a Pediatric Telemedicine Program in Kenya
Riley Normandin, Director of International Growth

AMD Global Telemedicine, Inc.

Background: Gertrude's Children's Hospital is a not-for-profit children's hospital, providing care to children in Kenya as well as those referred from neighbouring countries. GCH operates a network of sixteen outpatient centres and the multi-specialty hospital in Muthaiga, Nairobi. GCH provides quality health services to children from less privileged families in rural and underserved areas in the country; as well as subsidizes highly specialized treatment, including cancer care and cardiac surgery, to children from needy families. GCH supports over 22,000 patients annually to receive care from the Gertrude's Children's Hospital outreach programs ranging from primary to tertiary care. Starting in 2013, GCH made their first attempt to utilize telemedicine as a way to provide Pediatric Specialist services for the more rural and remote outpatient centres.

Aim the project: As it stands in 2022, the current GCH telemedicine program can be used a model/reference for developing countries. GCH's path taken shows how to make best use of the limited resources available, and how to adapt the telemedicine technology to a workflow more conducive to the most valuable resource, doctors/specialists. This can all be done without sacrificing the quality of care provided. GCH's pivoted from an initial reliance on a technology that required high speed fiber connectivity, to a technology approach that allowed the program to scale throughout their network of facilities, many of which do not have access to fiber. With their initial video-centric technology, the Specialist relied on the interpretation of the local health worker for much of the data. The value of the solution was questioned from a clinical standpoint, as they were limited on the tools available beyond audio & video. In 2016, the program approach was re-evaluated and relaunched to better empower the Specialists to control the consultation and dictate the use of the full range of medical devices remotely.

Results: Faster, More Accurate Diagnosis and Treatment to Improve Community Health. They are providing specialist care to more than 100 patients per month in each county, up from the 2016 reported average of 25 per month. The direct benefits for the patients are also clear: Where patients once had to travel for days to see specialists (some of the implementation sites are about 400 kilometers away from the hospital in Nairobi), they can now avoid such barriers to healthcare and receive treatment in a matter of hours. Instead of becoming discouraged and putting off appointments, as the hospital saw with its previous referral program, patients can now connect with specialists right from their local clinics.

Discussion/what is happening next: Gertrude's Children's Hospital has plans to expand to 47 countries across Kenya, utilizing existing infrastructure and replicating what they have done in their existing sites. They have set their current goal to extend the total number of children served from 22,000 to 32,000 over the next 12 months. With regards to technology, as their program continues to evolve, they have identified additional areas of improvement: better utilizing the technology for data collection with the health record systems.

The references are available from the first author.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-4: Digital Transformation of Mental Health Care: Case Study of Virtual Mental Health Clinic in Croatia

Helena Blažinčić[1], MA, Liisa Klemola[2], PHD

[1]*Neuropsychiatric Hospital Dr. Ivan Barbot Popovača, Polyclinic for child and adolescent psychiatry with a day-hospital, Popovača, Croatia.* [1]*Lipik Community Service Center, Lipik, Croatia*
[2]*Savonia University of Applied Sciences, Kuopio, Finland*

Background: Statistics today are confirming that globally depression and anxiety disorders are among the top five causes of the overall disease burden, suicide is the leading cause of death among adolescents, and young disadvantaged people are particularly affected. Europe has also been struggling with the surge in mental health illness occurrence among children and adolescents in the past decade. This is why some regions started with initiatives that could offer widespread services for everyone in need for specialized mental care via digital tools. Given that the cost of mental health services by 2030 is assumed to be $6 trillion, implementation of digital technology comes in hand.

Aim of the project: The purpose of this research was to investigate potential of using telehealth as supportive treatment tool in mental health, the benefits of virtual health clinics in general, find which mental health care treatment procedures can be transferred online, find out the top needs set by patient, parent/caregiver, and healthcare provider (HCP) and determine feasibility and usability of such digital service. The aim of the study was to confirm the value of telehealth in the mental healthcare in the form of virtual mental health clinics; it has been assumed there is a large potential and applicability of transferring majority of institutional procedures online in the form of virtual mental health clinic, and that can be easily used within patient's safe environment – home.

Material and Method: Semi structured interviews were conducted among real underage patients, caregivers, and HCP's throughout week 43 in October 2021 at Neuropsychiatric hospital Dr. Ivan Barbot Popovača in Croatia. In total 10 patients, 5 caregivers and 6 HCPs (nurse, psychologist, psychiatrist) were interviewed in this study. The data in this research were analyzed, synthesized, and merged into the final report that served us as a baseline for suggestions.

Results: The results confirmed there is a huge need and opportunity to use digital tools (e.g., telehealth and supportive tools as trackers or reminders, educational components etc.) among respondents; especially when they live far from HCP or have weaker economic status.

Discussion/what is happening next: The recommendation is to investigate what type of experience and user interface individuals in need would benefit most in order to use virtual mental health clinic tools in their daily routine.

The references are available from the first author.

P-5: Digitalization in the Treatment of Asthma – Experiences and an Operational Model for PEF Remote Monitoring

Hanna Hovi[1], Master of Health Care, Oskari Koskimies[2], MSc
[1]*Social and Health Services in Kymenlaakso*
[2]*Orla DTx Oy*

Background PEF measurements, which measure how fast a patient can exhale after maximal inhalation, are widely used in asthma diagnosis in Finland. However, their usefulness is controversial because the measurements are done and recorded by the patient, and their reliability depends on the patient mastering the correct exhalation technique, adhering to the measurement schedule, and accurately recording the results. Despite patients receiving training beforehand, up to 25% of PEF monitoring periods are inadequately implemented due to these factors. Digitalization of the measurement process by using a PEF remote monitoring system is a promising approach because it solves these problems by 1) implementing quality control for the exhalation technique at the time of measurement, 2) providing a digital measurement schedule with reminders for the patient, and 3) automatically uploading measurement results to the cloud where they can be reviewed by healthcare professionals. This also allows healthcare providers to better meet the updated requirements of national asthma Current Care Guidelines, which both note the reliability problems stemming from incorrect exhalation technique and stress the importance of ensuring the quality of results used in diagnosis.

Aim the project: An operational model for implementing PEF remote monitoring in a healthcare organization was developed based on experiences from pilots in Kymsote and Hämeenlinna. The operational model defines a more efficient care pathway for asthma diagnosis and makes it easier to successfully implement PEF remote monitoring pilots. The purpose of the operational model is to accelerate digitalization of asthma care, enabling high-quality, versatile and equal treatment of patients over the entire area covered by the healthcare organization. The project started in 2021, and during the pilot 9 nurses were trained and over 100 patients treated.

Results The project was completed in 2022 and the operational model has been taken into use at the province level. The evaluation of the project highlighted the importance of considering the entire care pathway – thanks to the new operational model, time to diagnosis was shorter, treatment could begin faster, and less nurse time was required. In addition, the success factors behind the operational model have been studied in an efficiency study, by interviewing healthcare professionals, and by collecting customer feedback. The efficiency study showed 27-29% time savings for doctors and nurses, 20% cost savings for the healthcare organization, and a positive environmental impact. In interviews with healthcare professionals, critical success factors were identified, e.g., commitment from organization leadership and project stakeholders, allocation of sufficient time and support for implementation, usability of the remote monitoring system, and digital skills of customers. The interviews showed that healthcare professionals appreciated the real-time view to patient status and confirmed that PEF remote monitoring improved the reliability of measurement results, saved time, and reduced waste. User satisfaction with the service was very high (NPS 80% for customers and 85% for healthcare professionals).

Next The operational model has been published at Innokylä where healthcare organizations can access it or contact the author for more information. The operational model takes into account different organizational factors (digital platforms, usability, accessibility, customer segments, maintenance, etc.) and therefore can also be used as a basis for other remote monitoring processes, such as INR, blood glucose or blood pressure monitoring. In the future, the operational model and remote monitoring system can be evolved to encompass the entire asthma care pathway. This includes long-term asthma monitoring and systematically recognizing patients who would benefit from early intervention – treatments for asthma are improving but timely and personalized treatment of asthma remains a challenge.

References are available from the authors.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-6: Telefitting Auditory Implants in National Network of Teleaudiology in World Hearing Center in Kajetany, Poland

Prof. Piotr Henryk Skarzynski[1,2,3,4], MD, PhD, MSc, Prof. Henryk Skarzynski[5], Prof. Artur Lorens[6], Katarzyna Beata Cywka[5] PhD, Adam Walkowiak[6] PhD

[1]*Department of Teleaudiology and Screening, World Hearing Center, Institute of Physiology and Pathology of Hearing, 10 Mochnackiego Street, 02-042 Warsaw*
[2]*Heart Failure and Cardiac Rehabilitation Department, Faculty of Medicine, Medical University of Warsaw, 8 Kondratowicza Street, 03-242 Warsaw*
[3]*Institute of Sensory Organs, 7 Mokra Street, 05-830 Nadarzyn/Kajetany*
[4]*Centre of Hearing and Speech Medicnus, 1 Mokra Street, 05-830 Nadarzyn/Kajetany*
[5]*Department of Oto-Rhino-Laryngosurgery, World Hearing Center, Institute of Physiology and Pathology of Hearing, 10 Mochnackiego Street, 02-042 Warsaw*
[6]*Implants and Auditory Perception Department, World Hearing Center, Institute of Physiology and Pathology of Hearing, 10 Mochnackiego Street, 02-042 Warsaw*

Introduction: Treatment of hearing impairments nowadays makes use of the numerous state-of-the-art technologies, such as hearing aids and various auditory implants, allowing hard-of-hearing and deaf people functioning in the word of sounds and communicating with others. These modern treatment methods usually entail complicated set-up, regulation and adjustment procedures requiring frequent consultations with an experienced specialist with access to dedicated equipment, usually available in specialist centers and hospitals. The treatment results are to a high degree dependent on the good organization of the medical care and rehabilitation. Aim the project is obtain the best hearing benefits after auditory implantation, the speech processor must be optimally fitted.

Material and Methods: Patients' visits in the specialist center often entail long trips; they invest their time, sometimes take a full day leave from work, and cover the cost of travel, which for many families may be a problem. Additionally, patients, particularly children and persons with collateral mental disorders, after the long travel are tired, irritated and unwilling to cooperate with the specialist. To remedy these problems and improve the quality of patient care, the Institute of Physiology and Pathology of Hearing developed and implemented into the clinical practice the National Network of Teleaudiology, a specialized network allowing the use of the internet and modern IT tools to provide medical care, rehabilitation and technical support for patients visiting a subsidiary or one of the affiliated policlinics of the Institute.

Results: NNT allows the implementation of the telefitting procedure. This procedure, implemented in several centers throughout the country and aboard, solves the growing need for constant specialist care, check-ups and periodic reviews of speech processors. Clinical engineers, through teleconferencing links, can carry out the whole process of assessing and fitting the auditory implant assisted by auxiliary staff of the cooperating center. Each patient underwent a teleconsultation procedure. After telefitting the patient was presented with a questionnaire consisting of questions relating to the quality and time effectiveness of telefitting.

Discussion: The Nationwide Network of Teleaudiology proved to be a reliable platform for telefitting. The method and a proposed model of postoperative care for implanted patients using telemedicine seems to be a reliable alternative to standard model. It improves the quality of service provided to patients and saves substantial time and money.

References:
[1] Skarżyński P.H., Świerniak, W., Ludwikowski, M., & Bruski, Łukasz. (2019). Telefitting Between Kajetany and Odessa, Ukraine for Cochlear Implants. Journal of the International Society for Telemedicine and EHealth, 7, e17 (1-6).
[2] Skarżyński H., Olszewski Ł., Ratuszniak A., et al. (2019) Application of middle ear implants and bone-anchored implants in the treatment of hearing impairment. W: 1001 Cases in Otology. Warszawa, Instytut Fizjologii i Patologii Słuchu, 41-58. ISBN 83-89087-49-9
[3] Skarżyński, P. H., Świerniak, W., Bruski, Łukasz, Ludwikowski, M., & Skarżyński, H. (2018). Comprehensive approach to the National Network of Teleaudiology in World Hearing Center in Kajetany, Poland. Finnish Journal of EHealth and EWelfare, 10(4), 354–363.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-7: The Sensory Examination Capsule: Simultaneous Testing of Multiple Sensory Organs

Prof. Piotr Henryk Skarzynski[1,2,3,4], MD, PhD, MSc, Prof. Henryk Skarzynski[5], Justyna Kutyba[1], MSc, Natalia Czajka PhD[1]

[1]*Department of Teleaudiology and Screening, World Hearing Center, Institute of Physiology and Pathology of Hearing, 10 Mochnackiego Street, 02-042 Warsaw*
[2]*Heart Failure and Cardiac Rehabilitation Department, Faculty of Medicine, Medical University of Warsaw, 8 Kondratowicza Street, 03-242 Warsaw*
[3]*Institute of Sensory Organs, 7 Mokra Street, 05-830 Nadarzyn/Kajetany*
[4]*Centre of Hearing and Speech Medicnus, 1 Mokra Street, 05-830 Nadarzyn/Kajetany*
[5]*Department of Oto-Rhino-Laryngosurgery, World Hearing Center, Institute of Physiology and Pathology of Hearing, 10 Mochnackiego Street, 02-042 Warsaw*

Introduction: Screening programs are an important part of public health. Sensory disorders are one of the most common problems in modern society, affecting both communication and quality of life. Most of these disorders can be avoided by performing regular screening tests and minimising risk factors. Early diagnosis of disorders and initiation of treatment significantly reduces the costs associated with health care. To meet the demand for better and earlier medical diagnoses, the Sensory Examination Capsule was created. Sensory Examination Capsule is a new screening tool has the potential to significantly reduce the costs associated with health care by providing earlier and more accurate medical diagnoses.

Material and Methods: The Sensory Examination Capsule is a complete system of diagnostic and therapeutic devices all contained in one universal unit, enabling the simultaneous diagnosis of most of the senses (hearing, speech, sight, balance, smell, taste). The Capsule is intended to perform large-scale preventive examinations quickly and cheaply. This makes it possible to perform multiple tests during a single visit without the need to wait for several specialist appointments. In many medical facilities, there is a multitude of diagnostic systems and therapeutic devices for the senses, including peripheral disorders, but so far there has been no way of performing a set of universal sensory diagnostics. The full examination takes 40–45 minutes for a healthy participant, although the time is longer when the individual has disorders of the sensory organs.

Results: The unit allows problems to be quickly identified and referrals made for further treatment. Itis possible for a user to conduct a test on themselves using a 'patient portal'. All the results are automatically saved to the individual's account. The patient portal can save patient data and direct link to the IFPS system. Main task is early: detection of sensory disorder, capture of prognostic factors predicting the development of neurodegenerative diseases, implementation of mental and movement training, dissemination and improvement of access to preventive examinations of people with sense organs disorders and their rehabilitation.

Discussion: The Sensory Examination Capsule presents unique abilities: shortening the time taken to have a comprehensive diagnosis of sensory organs, thus providing earlier detection of disease.; lowering the overall cost of diagnosis and rehabilitation of diseases of the sensory organs in the growing number of people affected by these diseases in Poland and in Europe more generally; increasing access to comprehensive diagnosis of diseases that affect every fourth person in Europe and which are associated with significant cognitive and communication deficits; improving the way patients with hearing, sight, and speech disorders interact with the world around them, especially the elderly; provision of economical screening of populations

References:
[1] Skarżyński H., Krupa A., Kutyba J., Czajka N., Skarżyński P.H. (2021) The Sensory Examination Capsule: Simultaneous Testing Of Multiple Sensory Organs, JHS. 11(4): 11-16, DOI 10.17430/JHS.2021.11.4.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-8: 6G Enabling Sustainable Society

Sanna Tuomela[1], MSc, Johanna Uusimaa[1], MD, PhD, Ari Pouttu[2], Dr.Sc.(Tech.)
[1]*PEDEGO, University of Oulu, Finland*
[2]*Centre for Wireless Communication, University of Oulu, Finland*

6GESS research project background: The future society will be highly digitalized, hyper-connected and globally data driven. New digital services will be critically dependent on instant, virtually unlimited wireless connectivity. Considering that healthcare is always of prime importance to well-functioning societies, the needs to provide citizens appropriate and cost-efficient healthcare is of prime importance. Digitalization and connectivity will become an integral approach to sustainable healthcare. On the other hand, new types and ways to use remote connectivity and IoT development together massively increase the use of energy. To make this development sustainable, it is essential to use the possibilities of smart grids fueled by renewables, energy thrifty/harvesting and carbon neutral 6G technologies operating on renewables and at the same time create completely new solutions combining ICT, eHealth with Energy, e.g., for remote and developing areas.The 6G-enabled sustainable society (6GESS) programme capitalises on The Oulu University 6G Flagship's technological expertise to develop the scientific framework for a data-driven, hyper-connected future society in which digital eHealth and future energy systems are intertwined. 6GESS will look into new technologies to help make healthcare and energy systems more democratic and efficient in the future. It will also help healthcare and energy providers and citizens become more involved in developing and using data-driven and digitised solutions. 6GESS (2021-2026) is a collaborative endeavour of four faculties: Medicine, ITEE, Technology, and Oulu Business School. 6GESS works closely with the OuluHealth ecosystem, the Oulu University Hospital, and the Future Hospital 2030 project.

Aim the 6GESS project. In 6GESS we connect wireless expertise to two application areas, with a strong focus on timely issues related to eHealth and, hand-in-hand, development of sensors and energy systems that support eHealth application. In the five themes of 6GESS, Citizen-centered health data solutions (6GESS-1); Ubiquitous digital care pathways and service models in secure and intelligent environments (6GESS-2); a Future AI-tailored wireless hospital (6GESS-3); Sustainable energy systems empowering users with digital services (6GESS-4); and Energy efficiency of digitally enabled user-centric systems (6GESS-5) the research project will bring together research pertinent to eHealth and Future Energy Systems and benefit from the 6G Flagship.

6GESS responds to the needs for empowering users by building wireless solutions for healthcare systems and in making the supporting energy system resilient, sustainable and flexible especially in remote or developing areas. To address the volatile nature of renewable energy sources (RES), applicable to various needs such as eHealth, 6GESS develops a novel paradigm empowering P2P flexibility approaches that are able to optimise the usage of demand-response as well as RES and integrate them with the local power grid – a local virtual power plant. The 6G solutions to be developed provide the backbone for the information exchange required for maintaining such grids. In energy harvesting/thrifty devices 6GESS aims to be one of the top research institutes globally especially related to overall designing of kinetic energy harvesters and their facilitation to the industrial products. Moreover, it aims to maintain a leading position in the growing field of multi-harvesting with its unique material discoveries, elevate its emerging biomeasurements on world-known level and provide new paradigm shift in sustainability of electronics. With these key enablers and integral synergy between different groups/themes 6GESS will form a world class research cluster with a unique mixture of knowledge and know-how relevant for eHealth applications.

Results. Expected results of 6GESS health themes consist of novel digital intervention strategies and services based on both citizen-generated and clinical health and wellbeing data, and solutions for preventive healthcare. Furthermore, 6G test network and technologies are applied in the new Oulu university hospital environment for energy efficient, intelligent, fast and reliable eHealth solutions. Also, 6GESS energy themes will result in innovative 6G technologies enabling the fast and reliable information flows in the smart energy grid are developed e.g. for energy trading, grid control and demand response,

Ongoing and upcoming: 6GESS researchers are conducting research on topics such as: AI methods for medical applications, develop new sensing and analysis techniques for medical research, remote areas and connectivity problems affecting people's everyday lives behavior change support systems in the eHealth context, new portable diagnosis and monitoring solutions for future's wireless hospital and telemedicine, multi-antenna techniques and designs for THz communications together with energy efficiency aspects and sustainable development of 6G. 6GESS is building national, Nordic and international collaboration networks around 6G eHealth and energy research and education.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-9: Home Care Robot
Arto Toppinen[1], MSc, Chair of the Board
[1]Thinking Lifeline LTD (excused absence)

Background: The motivation to develope a Care Robot is to help older people to live in their homes as long as possible. The personal help will be drastically more expensive in near future. Using robots also raises the quality of older people living from existing level and they can participate in modern life better.

Aim the project: The aim of the project is to launch a older people living aid robot to enable staying at home. The robot will have helping services build in the robot, it has necessary communication method and devices for personal communication and for sensors. The robot is aware of the person location and with different sensors the wellness can be studies all the time.

It will be integrated to the third part services like Mumo company services. Integration will be also for Health Care clinics and hospitals and "Oma Kanta" services. It will have integration to house locking and HVAC systems. The Care Robot acts as a gateway to doctors, family and children for communication. Later the automatic cheap medicin doset will be developed. All functions of the robot can be controlled with voice commands and the robot is communication with voice.

Results: We will get a modern Care Robot which is unique in the market. The basic model has several services installed and engineering solutions makes them to work reliably. The robot is a platform where new services can be added later. The basic needs of living in an own house for older persons are enabled and living conditions may be even higher than before. The robot makes it possible to watch sensor information from home and persons and to make analysis of the sensor data at server side. With the help of communication channels it is possible to use services from third party providers.

Preliminary results are indoor navigation technology, speech and listening of voice, several models of robot and sensor applications. The integration of third party services are tested. The final version will be ready at the end 2023.

Discussion: The next steps are finalising the technology solutions, to arrange a test environment with real clients, and to tune the voice command user interface.
A very interesting possibility is to join to the Amazon application of vacuum cleaner. The Amazon vacuum cleaner is also moving around the house and is collecting data as our Care Robot. It is interesting to check possibilities to integrate to the Amazon product.

References
[1] The Care Robot indoor awareness technology:
https://drive.google.com/file/d/1AuUe0kMVyMXVUebtlIKVHzx4jRNFJHvX/view?usp=sharing
[2] Mumo Web pages: https://mumo.care/

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-10: Proshade - Reliable Knowledge for Health Care: Process and Practice of Shared Desion Making (www.Proshade.fi)

Hanna Kuusisto[1,2], Prof, Virpi Jylhä[1], MSc, PhD, Milla Roenlund[1] MHS, MSc., Tuuli Turja[3] MSc, PhD, Kaija Saranto[1], Prof
[1]*University of Eastern Finland*
[2]*Tanpere University Hospital, Finland*
[3]*Tampere Univerisity, Finland*

Background: The patient as an active participant in decision-making has become an important resource in health care. Shared decision-making (SDM) relies on the patient's easy access to reliable and evidence-based health care information as well as the availability of patient-generated data, such as values and preferences for the health care professional (HCP). Patient autonomy and centeredness are crucial components of high-quality health care services. SDM is a strategy to implement patient centeredness in clinical decision-making. It has been shown that patients prefer SDM, and patients involved in it experience better health outcomes and satisfaction. A successful SDM process relies on high quality health information as well as patient-generated data together with the experience of HCPs.

Aim the project: In PROSHADE we aim to improve the use of economical and effectiveness information, and information produced by the patient, in SDM. We investigate and evaluate the conventions of decision-making in health care organizations and patients care decisions. Furthermoore, our aim is to improve the use of economical and effectiveness information, and information produced by the patient in decision-making. In WP3 our objective is to create an information model and a scalable digital tool for supporting patient participation and shared decision-making in digital care pathways. This research is funded by the Strategic Research Council (SRC) established within the Academy of Finland. Funding no. 335288

Results: According to our preliminary findings in WP3, many people with multiple sclerosis seek information on the internet and especially on various conversation platforms before deciding on a suitable medication.

Discussion: We see patients and HPCs not only as users but also as providers of information. We focus on how the patient is able to identify and describe the necessary information for SDM in both digital and face-to-face consultation. We focus on how HCPs identify the need for patient-generated data and the use of that data. Patient-generated data is a key to integration his/hers preferences and values in SDM. We conclude that today, in an era of rapid digitalization of health care, HCPs and information technology specialists should work together to find ways of providing HCPs with patient generated data as well as patients with high-quality electronic information on care choices.

References:
[1] Kuusisto H, Apila S, Saranto K. Information Provision and Quality. A Pilot Study on Shared Decision-Making in Multiple Sclerosis. Stud Health Technol Inform. 2022 Jun 29;295:179-182. doi: 10.3233/SHTI220691
[2] Jylhä V, Rosenlund M, Kuusisto H, Saranto K Patient-generated data in epilepsy care decisions: a scoping review protocol. JBI Evid Synth. 2022 Mar 2. doi: 10.11124/JBIES-21-00195.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-11: Discrepancies among Hospital Physicians Regarding the Do Not Attempt Resuscitation Order and Its Interpretation

Tapani Keränen[1], MD, PhD, Hanna Kuusisto[1,2], MD, PhD
[1]*University of Eastern Finland;*
[2]*Department of Neurology, Tampere University Hospital, Finland*

Background: Insights on end-of-life care decisions, such as do not attempt resuscitation (DNAR), vary between institutions and individual health care professionals. There is variation in national and local policies of making a DNAR order in spite of the recent European guidelines. At the era of electronic patient records (EPR), the information of DNAR order may still be recorded in multiple locations making it difficult to find and interpret.

Aim the project: An invitation for voluntary participation in the study and a link to the web-based, multiple-choice questionnaire (Webropol) was sent by e-mail to all physicians and nurses working in the Tampere University Hospital special responsibility area covering a catchment area of 900,000 Finns. The questionnaire, developed by the authors, covered issues on DNAR order making, its meaning and documentation.

Results: In total 934 subjects responded, of which 727 (77%) were nurses and 219 (23%) physicians covering all specialties. We found substantial variation in DNAR order interpretation and documentation among all health care professionals. In addition, specialty related variation among hospital physicians was detected possibly leading to information breakdown and compromised end-of-life care.

Discussion/what is happening next: Information technology experts and health care professionals should collaborate in aiming to develop EPRs in a way that recording of critical information such as the DNAR order could be made only in a specific place and the information would be clearly visible.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-12: DigiHealth Oulu – Creating Better Health by Novel Digital Technologies

Tuire Salonurmi[1], PhD, Docent, Simo Saarakkala[1], Prof., Jarmo Reponen[1], Prof.
[1]*Research Unit of Medical Imaging, University of Oulu, Finland*

Background: Digital Health (DigiHealth) research programme is part of the University of Oulu's (UOULU) national research profiling actions with funding from the Academy of Finland (AoF) that started in 2019. The aim is to enhance world-class interdisciplinary research and strengthen nationally health care services, diagnostics and therapies in the new digital era. The program is built on collaboration between different faculties, researchers and stake holders providing transformative knowledge that strengthens also the health technology ecosystem of Oulu. UOULU hosts both Medicine and Engineering faculties, which has enabled the development of a unique collaboration environment for DigiHealth. Moreover, the Kontinkangas Health Campus is an exceptionally interactive and multidisciplinary environment with two faculties (Medicine & Biochemistry and Molecular Medicine), the University Hospital (Future Hospital -project), the Biobank Borealis and the Northern Finland Birth Cohort. This transdisciplinary environment makes it possible to combine basic and clinical research for the benefit of innovative digital health applications.

Aim of the project: The primary aim of DigiHealth is to develop and validate novel digital technologies for data-driven health applications, valorizing University of Oulu's strong expertise in medicine, wireless solutions, big data analytics and business. Novel technologies and technological solutions (e.g., artificial intelligence, internet of things, virtual/augmented/mixed reality, robotics, 5G/6G) are becoming more intelligent and ubiquitous to be utilized for data-driven health applications.

Results: There are four specific research areas of the DigiHealth where we have recruited tenure professors and postdocs in order to enforce those research topics:
1) Next-generation data for digital healthcare focusing on bioinformatics and novel biosensors (Tenure Assist. Prof. Jianan Huang, Assoc. Prof. Valerio Izzi), 2) Wireless system level architectures for future digital healthcare (Tenure Assist. Prof. Erkki Harjula), 3) AI-based solutions to support personalized clinical diagnostic or therapeutic decisions (Tenure Assoc. Prof. Mourad Oussalah), 4) Systematic impact creation (PhD Irina Atkova) and Health technology assessment (Adj.Prof. Miia Jansson)

Our Tenure Assist. Prof. Jianan Huang has recently received external AoF-funding (2022-2027) for his project to develop plasmonic two-nanopore technology for single-molecule protein sequencing. Additionally, DigiHealth-supported Prof. Caglar Elbuken has received ERC-funding this year for a project entitled "Particle distribution dynamics in nonlinear bifurcating networks". In total, the teams of our recruited tenures have currently eight PhD's and 15 PhD students. In order to start new, multidisciplinary research projects, we opened a call "New Research Initiatives" (NRI) project that supported five UOULU originated projects with 40 000 € for 12 months. We also opened a Visitor Program -call that has supported ten research visits, both incoming and outcoming, during 2022.

Next steps: Another visitor program call and NRI-call will be opened during 2022. We enhance the international collaboration by site visits, strengthening the Nordic collaboration in research and education.The number of DigiHealth projects at the UOULU is high but still increasing, partly due to collaboration with Future Hospital -project, and with Profi6-6GESS. Several international breakthroughs are expected within the DigiHealth to predict progression of diseases and offering personalized therapies in a cost-effective and patient-centric way.

Contact:

DigiHealth-Director	Vice Director	Coordinator
Prof. Simo Saarakkala	Prof. Jarmo Reponen	PhD Tuire Salonurmi
simo.saarakkala (at) oulu.fi	jarmo.reponen (at) oulu.fi	tuire.salonurmi (at) oulu.fi
Mobile: +358400354512	Mobile: +358405412718	Mobile: +358503098986

More about DigiHealth -Oulu, see video: https://www.youtube.com/watch?v=RrFcnzaWvlY
https://www.oulu.fi/en/research/creating-better-health-our-digital-health-knowhow

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-13: Cyber Transformation towards a Human-Centric Digital Municipality - Case City of Kuopio

Arto Holopainen[1], MSc (tech), Milla Porkka[1], Master of Social Services, Pauliina Ruotsalainen[1], BBA, MSc student (data), Paavo Maskulainen[2], MA

[1]*City of Kuopio. Finland*
[2]*Savonia University of Applied Sciences, Finland*

Background: City of Kuopio's Strategy 2030 [1] sets digitalisation as a crosscutting theme that is integrated in all levels of the strategy. Digitalisation is expected to enable improved access to services at home including streamline operations, generating new service innovations and business. However, the intended benefits do not arise spontaneously, but require a comprehensive review of the city's operations and the digitalisation competence potential of its personnel, as well as measures to reach the target state. The digital transformation of services also requires the gradual adoption of a new culture of work development and leadership in order to ensure the well-being of staff, the smooth running of work and productivity. City of Kuopio together with Savonia University of Applied Sciences launched a three-year (2020-2022) "Human-Centric Digital Municipality" -project with the aim to prepare city for future digitalisation developments by creating new, citizen- and user-oriented ways of delivering services through purposeful digitalisation, coaching and strategic experimentation, taking into account impact, well-being and productivity growth. The project also contributes to Kuopio's goals towards the maturity level of digitalisation, where the municipality is able to serve as a platform for services and development and as a catalyst for innovation to meet global demand.

Results: The project has been renewing management practices, enhancing work productivity, and creating meaningfulness for own work and securing well-being at work, as well as promoting understanding crosscutting entities and better anticipation of the future. The management, supervisors and staff, as well as customers and local residents have been consulted with participatory methods in planning the policy reforms.

The project pursued through the following objectives:
1. Creating and supporting situation picture to determine the need for support and to focus support e.g. existing digitalisation benchmarks and digitalisation maturity models. [2]
2. Coaching and communication, renewal and foresight of people involved in cross-service service experimentation and decision making. The coaching has progressed with the methods of service design.
3. In total 11 multi-sectoral experiments with a multidisciplinary, wide-ranging, customer-driven approach. E.g. artificial intelligence, participation platform and data-driven well-being information and knowledge management.
4. Mainstreaming the good practices and processes identified in the project to city structures, decision-making sites, strategic organisation points and guidelines

So far, 463 people have participated in the project´s activities including partnership with 48 different organisation. All together 1090 person coaching and training days have been organized, of which 818 (75 %) have been organized remotely using novel digital technologies due to the COVID19-pandemic [2].

Discussion: As a result of the project, the digital skills and readiness of the employees of the City of Kuopio and the organization will increase, thus enabling them to prepare for and to successfully reach for the future. The city of Kuopio's digitalization roadmap is being updated based on the findings and experiences.

References
[1] City of Kuopio's strategy 2030, https://www.kuopio.fi/en/strategia [accessed 19.8.2022]
[2] Competence required by digitalisation. The way the Finnish government looks at it. Ministry of Finance, Finland. Available at: https://www.valtiolla.fi/palvelut/digiosaaminen-julkisessa-hallinnossa/ [accessed 19.8.2022]
[3] Holopainen A., Porkka M., Ruotsalainen P., Maskulainen P., Miettinen J.(2022), The digital leap during COVID-19 pandemic in the City of Kuopio. WHO European Healthy Cities Annual Business Meeting and Technical Conference 8.-10. December 2020.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-14: Technology is Revolutionizing the Treatment of Adult Type 1 and Severe Type 2 diabetes in the Public Sector. Experience from the Vuosaari Diabetes Center

Cinzia Sarti[1], MD, PhD, Docent, and Heli Lanki[1], Diabetes nurse
[1]*Department of Welfare and Health Care, City of Helsinki, Finland*

Background: Helsinki is the biggest town in Finland, and serves a population of over 550.000 people. Health care services are produced by four general primary care clinics divide further in units, altogether 21. Type 2 diabetes and uncomplicated type 1 diabetes in the adult (DM, insulin treated) are treated at the local general primary care unit (PCU). The outpatient clinics of the two town hospitals (HC) treat more severe cases. Insulin pump treatment is concentrated at the outpatient clinic of the University Hospital. This is how diabetes treatment has been organized since decades. When continuous glucose monitoring (CGM) came into common use, it was decided to concentrate the follow-up in the HCs. However, manteinance of the status quo has become unmanageable: increasing incidence of diabetes, general aging of the population, shortage of specialized personnel, improved diabetes treatment with the spreading use of (CGM), insulin pumps and other diabetes technology have altogether caused unprecedented pressure on the HCs. A need to reorganize and harmonized diabetes treatment also was recognized.

The diabetes clinic of Vuosaari in East Helsinki was setup in september 2021 to test an integrated and modern approach to diabetes care, including remote glucose monitoring (also integrating different devices), communication and care via remote connection, supported by a flexible combination of remote follow-up platforms, electronic contacts, telephone contacts, and regular clinic visits. We offer CGM to alla our patients, and consultations services are available, with an endocrinologist and other specialists like internist, dietician, foot therapist. The treatment plan is discussed with the patient amnd adapted when necessary. Contacts are thus multiplied, when compared to the standard 1-4 visits/year at the PCUs or HCs.
In a second phase, follow-up of insulin pump users, now in HCs, will be moved to the DM centers.

The new patient information system has greatly increased the use of electronic communication, and facilitates treatment monitoring and interaction with the patient. Remote glucose monitoring allow for fast reactions and real time treatment remotely. A platform sends electronically fingertip blood sugar measurements, and allows for combining different glucose measuring methods, facilitating comparisons and treatment decisions.

Aim of the project: The purpose of the project is to establish whether treatment at territorial level is feasible, safe, and delivers treatment at a standard of care comparable, or possible better, to the treatment in the specialized clinics.
In addition, the new model should better respond to new challenges, be more efficient, and adaptable to future developments, compared to the care previously provided in general aóutpatient clinics, and possibly serve a model for similar developments iin the treatments of other diseases. But, above all, it should improve the treatment of type 1 and severe type 2 diabetes.

Results: The preliminary results show that the approach chosen is feasible, and manpower and time needed for patient treatment could be calculated. We are still steadily recruiting patients, and thus we have not yet results on the overall treatment, but we have preliminary data showing also improvement in the time in range (TIR) of patient treatment. There are indications that the new approach improves patient empowerment. The model involves patients in a dialogue with the professionals strengthen the treatment relationship and seems to be well apprecieted by the patients. We expect to have measurable data within the next year.

Discussion/what is happening next: There are indications that shifting treatment of DM from traditional clinic settings to a flexible combination of modern virtual platforms and electronic contacts combined with traditional clinic visits when needed is the key to provide better quality of care, compared to the previous standards. The diabetes clinics, by setting the example, will pave the way towards technological integration also in other areas of primary care

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-15: The Increased Use of Digital Care Pathways in Oulu University Hospital

Kirsi Tuomikoski, MSc, OT, Marja Ylilehto MSc, RN, Pia Liljamo, PhD, RN

Corporate Services, Oulu University Hospital, Northern Ostrobothnia Hospital District, Finland

Background: Health Village is a public online service produced by social and health care professionals that is within everyone's reach [1]. Oulu University Hospital (OUH) has been using Health Village's digital service channel My Path since October 2018 when digital care pathways (DCP) for hospital patients were introduced [2]. DCPs can be built for different patient groups and for different needs, such as DCPs for long-term patients to support self-care and replace and streamline reception visits, or short-term DCPs in preparation for a procedure or providing a training and therapy package allowing the treatment to be carried out completely over the network. A general DCP can be opened to implement remote consultations. Digital health services have been well accepted by citizens in Finland; for example, the usage rate of the national My Kanta Pages service is 64% [3].

Aim of the Stud: The aim of this study is to report the number of available DCPs in OUH and the number of patients connected to the DCPs and the number of patients logged in to the DCPs at checkpoints 1 July 2021 (A) and 1 July 2022 (B). The DCPs were classified into three categories: long-term DCPs, short-term DCPs, and other pathways. In the statistical analysis, only the categories long-term DCPs and short-term were compared, because the category other DCPs includes only pathways used for purposes such as research or remote consultations.

Results: At checkpoint A, a total of 25 DCPs were in use and a total of 6,267 patients (range 5–2,602) were connected to the DCPs. Of these patients, 56.6 % had logged in to the DCP at least once. At checkpoint B, a total of 37 DCPs were in use. A total of 9,159 (range 1–1,647) patients were connected to the DCPs. Of these patients, 65% had logged in to the DCP at least once. (Table 1.) The percentage of patients logged in to the DCP in the category long-term disease DCPs increased by 12.9 percentage points between the two checkpoints. Instead, in the category short-term preparing DCPs, the decrease was 7.7 percentage points, even though the number of patients connected to the DCP had more than doubled (55.6%) in the category.

Table 1. The numbers in different categories of digital care pathways (DCP) at the two checkpoints

Digital care pathway (DCP) category	Checkpoint A				Checkpoint B			
	N	Patients connected to the DCP n	Patients logged in the DCP n	Logging rate % mean (95% CI)	N	Patients connected to the DCP n	Patients logged in the DCP n	Logging rate % mean (95% CI)
Long-term DCPs	10	4923	2580	52.4 (39.9 - 64.9)	14	6040	3947	65.3 (46.1 - 84.6)
Short-term DCPs	12	1339	962	71.8 (58.4 - 85.3)	16	3013	1932	64.1 (53.9 - 74.3)
Other DCPs*	1	5	5	100 (0)	5	106	75	70.8 (55.2 - 86.3)
Total	23	6267	3547	56.6 (47.1 - 66.1)	35	9159	5954	65.0 (58.2 - 71.8)

*Statistics of two DCPs are excluded because the data is not available.

Discussion: The number of long-term disease and short-term preparing DCPs has increased during the follow-up period of one year. In relation to the DCPs in use, the number of patients connected to the short-term preparing DCPs has increased more than the number of patients connected to long-term disease DCPs. This is explained by differences between patient groups and the purpose of use of the DCPs, for example. The utilization rate of DCPs at OUH is at a good level. It should be noted that relatively, the My Path service in OUH is used as much as My Kanta Pages services on a national level [3]. The rate of use of DCPs is influenced by citizens' increased courage to use digital services and by a positive change in attitudes towards them [3]. DCPs have also been built for an increasing number of patient and customer groups. With the corona pandemic, digital service provision and the use of services have become an essential part of social and health care [3].

References
[1] What is Health Village (2022) [accessed 16.8.2022] https://www.terveyskyla.fi/en/information-about-health-village/what-is-health-village
[2] Liljamo, P., Wahlberg, J., Mikkonen, H., & Reponen, J. (2021). A Digital Care Pathway to Access Healthcare Without Time and Place Restrictions. Stud Health Technol Inform, 284, 163–165. https://doi.org/10.3233/SHTI210690
[3] Kyytsönen, M., Aalto, A-M., Vehko, T. (2021) Sosiaali- ja terveydenhuollon sähköinen asiointi 2020-2021: Väestön kokemukset. THL Raportti : 2021_007. https://urn.fi/URN:ISBN:978-952-343-680-0

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-16: Remote Diagnosis and Monitoring Using Microwave Technique – Possibility to Improve Healthcare in Rural Areas and in Exceptional Situations

Mariella Särestöniemi[1,2] Dr. (Tech), Jarmo Reponen[1,3] (MD, PhD). Teemu Myllylä[1] Dr. (Tech)

[1]*Research Unit of Medical Imaging, Physics and Technology, Faculty of Medicine, University of Oulu, Finland*
[2]*Centre for Wireless Communications, Faculty on Information Technology and Electrical Engineering, University of Oulu, Finland*
[3]*Medical Research Center Oulu (MRC Oulu), Oulu University Hospital and University of Oulu, Finland*

Introduction: Interest in wireless portable medical diagnosis and monitoring systems, which could be used outside the hospital e.g. during pandemic or catastrophic situations, has increased recently [1]. Additionally, portable monitoring and diagnosis could partially address widely recognized challenges related to aging population and equality in rural area health care. Our research focuses on studying how microwaves could be exploited in medical pre-diagnosis methods, such as early detection of cancers (e.g. brain, breast), stroke and in general blood clots [2-3]. Brain abnormalities could be detected with a helmet inside which multiple antennas are embedded. Breast cancer could be detected with a monitoring vest with embedded flexible antennas.

Material and Methods: Simulations are conducted using anatomically realistic voxel models. Figs. 1a-b present the examples of models used in the studies of a) breast cancer detection, b) brain cancer/stroke detection. For realistic emulations, we develop tissue mimicking phantoms whose dielectric properties (DP) correspond to those of real human tissues. Fig.1c presents 3D brain phantom used in emulations of brain tumor detection. This microwave technique is based on evaluating radio channel between on-body antennas in the presence and absence of abnormalities. The physical phenomenon behind this idea is that DP of the abnormalities (tumors, blood clot) differ from DP of surrounding tissues. Thus, abnormalities can be detected with intelligent radio channel analysis.[2]

Results: Figs.1d-e) present some examples of channel evaluations for detection of breast cancer (d) and brain cancer (e). The results show that even abnormalities size of 1cm deep inside the tissues may change the radio channel. For breast cancer detection, frequency range 6-8 GHz could be optimal to differentiate between tumor and glandular tissue. Besides, wavelength in tissues is smaller at higher frequencies which facilitates detection of smaller tumors. However, propagation loss in tissues increases with frequency and thus lower frequencies should be used where the propagation depth requirements are larger (e.g. brain monitoring). [2-3]

Discussion: Realistic evaluations show that even small abnormalities cause changes in signal propagation at detectable level. Microwave-based pre-diagnosis and monitoring applications could be realized with portable low-cost and low-power devices. These telemedicine's advanced applications could be utilized in smaller healthcare centres, ambulances or even at homes, which would improve healthcare in rural areas. Besides, they would alleviate healthcare challenges in exceptional situations, such as during pandemia when diagnosis in hospitals is limited. Portable, low-cost medical diagnosis devices would aid healthcare challenges also under catastrophic situations and in locations where the hospital infrastructure is limited.

References:
[1] A. Kiourti et al., "Next-Generation Healthcare: Enabling Technologies for Emerging Bioelectromagnetics Applications," in IEEE Open Journal of Antennas and Propagation, vol. 3, 2022.
[2] M. Särestöniemi, J. Reponen, M. Sonkki, S. Myllymäki, C. Pomalaza-Ráez, C., O. Tervonen, T. Myllylä, "Breast Cancer Detection Feasibility with UWB Flexible Antennas on Wearable Monitoring Vest," TELMED2022, March 2022, Italy
[3] M. Särestöniemi, C. Heredia, T. Myllylä, " Simulation and experimental setups for studying brain tumor detection with microwaves," SNOG-FiBTRA Multidisciplinary Neuro-Oncology symposium, May 2022, Finland.

P-17: The Inclusion Model for Decision Making in Technology Deployment

Kati Honkanen[1], Lic. (Adm.Sci.), Sauli Hyväri[2], M.H.Sc., Mikko Repka[2], M.Sc.
[1]*Päijät-Häme Joint Authority for Health and Wellbeing, Finland*
[2]*Nordic Healthcare Group*

Introduction: Päijät-Häme Joint Authority for Health and Wellbeing and LAB University of Applied Sciences conducted a KOHTI-project which was a part of 'Technology supporting smart ageing and care at home' -programme (KATI). As a part of this project, a service design approach was used to improve and enhance the deployment of technologies in home-based services. The inclusion model developed in the IkäOTe project served as the basis for this project [1]. The improved model was developed by Nordic Healthcare Group and KOHTI-project staff, in collaboration with various stakeholders. The stakeholders that were included in this project were: the customers and their next-of-kins, home care employees and their managers, the healthcare organisation, technology organisations and the 3rd sector.

The aim was to clarify the steps, roles and responsibilities related to the implementation and use of technologies. In the early stages of development, the need to consider the lifecycle of a technology beyond its mere deployment was identified: the scope of the model must range from the moment the need for a new technology is identified to the actions that follow when the use of the technology ends. The lifecycle of the health technologies consisted of the following five steps: pre-screening and piloting, planning of technology deployment, deploying the technology, using the technology and ending the use of technology. A key guiding factor in the development of the model has been customer focus and strong stakeholder involvement. In the context of a health and elderly care service, ethical considerations have been present from the very beginning. The issues that are particularly relevant relate to customer empowerment, the use of data collected by technologies and decision-making in general.

Material and Methods: The model was developed using design methodologies and through the involvement of key stakeholders. A large amount of information was gathered in workshops which, together with the business expertise and understanding of technology deployment of the project team members, formed the core content of the model. In addition, a web-based survey was sent to next-of-kins about the use of health technologies. Once the data was collected, it was used to create different service pathways and process descriptions from the perspective of different roles. These were developed further in the following workshops.

Results: The end result was the inclusion model, including playbooks for the stakeholders describing the key activities, challenges, roles and responsibilities. The inclusion model will also be presented in the iHAC-publication (https://integratedhealthandcare.com) in September as one of the Nordic model solutions for joint development within healthcare and care. In some cases, the home care client may not have the opportunity to make the choice themselves, and decisions about the use of technologies are sometimes made far away from the client. Therefore, it was identified that the ethical guidelines and customer involvement are critical in bringing the client's needs and wishes to the fore in assessment (evaluation and testing of technologies) and decision-making situations. The inclusion model tackles these issues by bringing structure and clarity to health technology deployment.

Discussion: The model allows to get to the details of the use of health technologies from different perspectives. When looking at a customer choice, the model can be used in figuring out the steps and decision points involved when choosing technologies. The first point of choosing occurs when a need is identified or a technology is offered to the region. The decision-maker often does not consult the customer at this stage, and the same can take place also in the following stages of the technology deployment. Tools such as the inclusion model presented here can be used in enhancing the stakeholder involvement.

References:
[1] Kauppila P, Kärnä E, Pihlainen K & Koskela T (2017) Teknologia ikäihmisen tukena – ketterän kokeilukulttuurin ytimessä. IkäOTe – ikääntyvien oppiminen ja hyvinvointiteknologiat -hanke. Grano Oy, Jyväskylä.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-18: Virtual 360-Degree and Virtual Reality Environments Increasing the Knowledge, Competence and Orientation of Home Care Workers

Kati Honkanen[1], Lic. (Adm.Sci), Eveliina Kelahaara[1], B.Eng., RN, Jukka Grip[1], BA (Hons), RN

[1]*Päijät-Häme Joint Authority for Health and Wellbeing, Finland*

Introduction: According to studies, immersive Virtual Reality (VR) technology is more effective learning method than other traditional learning environments [1]. Studies made with nursing students, VR make significant improvements on nurses' knowledge level [2]. Recent studies show that learning outcome through VR is related to field of study [1] and among nursing it is an effective way to learn new skills because experience can be quite similar in VR and in real world [2]. Learning outcome is significantly lower in field where task-based skills are needed more than learning cognitive skills. VR is more suitable learning environment for people with lower education than people with higher education. [1] The best length for VR simulation is max. 30 minutes and same simulation can be repeated multiple times [2]. VR enables learning real life simulations occurring more learning possibilities for different types of scenarios [1].

Päijät-Häme Joint Authority for Health and Wellbeing and LAB University of Applied Sciences are conducting KOHTI-project which is part of Technology supporting smart ageing and care at home programme (KATI) [3]. One of the pilots focused on creating VR environments. There are approximately 760 employees working in the home care services that were engaged to use the environments.

Material and Methods: Ten different narrative perspective and game-type immersive virtual environments were built, simulating real world. Aim was to rehearse home care workers' former skills, learn something new by playing and to activate players clinical reasoning through gamification. Depending on player´s skills, one game takes around 15-30 minutes to play. Games are meant to be played during the home care workers` workday. Every environment includes immersive interactions, theoretical part and different kind of tasks. All VR games take place in home care customers` home during the home care visit. There are ten different VR game environments: pain management theory and pain management practice; wound management theory and wound management practice; facing client at home care; death at home; general condition assessment theory and general condition assessment practice; fire safety in elderly home; technic clinic for nurses.

Results: VR environments were built for workers and supervisors` assessment needs according to questionnaire where workers had to choose ten topics of which they wanted more education or information. Based on the results, we designed and scripted topics that got most mentions. Several professionals have been creating these environments; home care workers and supervisors, nurses, teacher from Vocational School and teacher from University of Applied Sciences. More detailed evaluation will be released in fall 2022.

Discussion: The short length and repeatability of VR simulation offer nurses the possibility to educate during workday. The increasing number of non-native, Finnish-speaking care workers can develop their professional language through simulations.

References:
[1] M. Coban et al. 2022. The potential of immersive virtual reality to enchance learning: A meta-analysis. Educational Recearch Review 36 (2022) 100452 https://doi.org/10.1016/j.edurev.2022.100452
[2] A.P.N. Woon et al. 2021. Effectivenes of virtual reality training in improving knowledge among nursing students: A systematic review, meta analysis and meta-regression. Nurse Education Today 98 (2021) 104655 https://doi.org/10.1016/j.nedt.2020.104655
[3] Päijät-Sote: KOHTI-hanke. 2022. https://innokyla.fi/fi/kokonaisuus/paijat-sote-kohti-hanke

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-19: Machine Vision as Part of Tracking Wellbeing in Home Care, KOHTI -Project

Niko Bergman[1], Emma Järvinen[1]
[1]Smartbi Oy, Finland

Introduction: Päijät-Häme Joint Authority for Health and Wellbeing and LAB University of Applied Sciences are conducting KOHTI-project which is part of Technology supporting smart ageing and care at home programme (KATI). The project's goal is to find solutions to measure elderly wellbeing and help them in nutrition consumption at home as well as ease caretakers' workload by reporting measured data. These goals are fulfilled by using machine vision and data science to provide scalable measurements without violating the privacy of the individual.[1]

Material and Methods: Project is divided in to two phases; innovation and development. Innovation is produced in close collaboration with PHHYKY specialists. This part includes interviews with home care professionals, substance experts and administration level people. Through find outs from interviews and research the concept will be determined to start development during second half of 2022 where first version of the service will be provided to PHHYKY. During pilot there will be no patient data used and all testing is done through simulations and in test environments.

Results: The preliminary findings during innovation part have shown that overall reporting of customers eating habits and wellbeing is considered deficient. Based on pre-research there are variation in communication between different units and caretakers. As treatment time is limited and no consistency can be provided to home care specialists getting known to patients and their habits is seen difficult. Automated reports and continuous observation of customers wellbeing would help to provide the needed level of knowledge to home care specialists. Overall reporting would improve understanding of needs to scale treatment periods and used time.

Discussion: There are multiple vendors in market delivering systems that uses machine learning and machine vision as part of their product. All systems in development, piloting and in use should aim to a common goal to help and simplify day to day work for home care specialists and give elderly possibility to live at home independently. This should not take away need for a home care with real human interaction but open time for other important tasks as communication and observation.

References:
[1] KOHTI -hanke, web page: https://innokyla.fi/fi/kokonaisuus/kohti-hanke [accessed 27.4.2022]

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

P-20: Digital Tool HUB for Experts by Experience – Support for Professional Development and Wellbeing

Janika Lindström[1], MSSc, Karoliina Nikula[1], PhD, Birgitta Tetri[1], MSSc
[1]Laurea University of Applied Sciences, Finland

Background: The Ministry of Education and Culture granted Universities of Applied Sciences five million euros in discretionary state funding for RDI activities. Laurea UAS received funding for its "Empowering people towards inclusive society" project. Various sub-studies will be carried out within the project. One of the goals of the project is to build a hub, ie. workspace concept that would be a Tool Hub for Experts by Experience operating on a digital platform. The Hub activities are also important in positioning Experts by Experience know-how as part of RDI activities within universities of applied sciences. In addition, ethical recommendations are essential for all collaboration with experts by experience. Laurea UAS has been in the forefront developing education for Experts by Experience (HUS co-operation since 2017 and KEIJO-pedagogical model since 2018). [1]

Material and Methods: At present, there are not many codes of conducts in the field of experts by experience. We will study e.g., the question what the grounds of moral action within experiential expertise are. Based on those results we will also develop the code of conduct for the field. Special attention is paid to questions concerning accessibility (plain language, cognitive challenges) and digital stories library. Main point of the Hub is to gather relevant information into one place. We aim to develop a national repository of experiential knowledge. The Experts by Experience, professionals and stakeholders interested in the topic will be heard during the workshops and visits to the organizations.

Results: The Hub will strengthen the professionalism among Experts by Experience. One core perspective to professionalism is capability to act according to ethical standards Currently the support is scattered in different forums making it challenging to locate. Professionals who collaborate with Experts by Experience would also benefit from centralized information platform. The Hub will reinforce the status of experiential knowledge in vocational training and positioning it in societal functions. This multidisciplinary center integrates with Laurea UAS and education, supports LbD [2] pedagogy and provides innovative opportunities for a bidirectional citizen science.

Discussion: The Tool Hub will provide the experts by experience, professionals and those interested in the subject with the perspectives they need in relation to the field of experiential knowledge. Experts by Experience also take part in other activities than supporting their peers. They also assist in training professionals and participate in working groups. The variety of contexts requires emphasis on support in their work and well-being to unify the field of experiential knowledge.

References:
[1] Lindström, J. & Toikko, T. (2022) Survival stories as access to society. People with history of a crime as experts by experience, Nordic Journal of Criminology, 23(1), pp. 3-22. https://doi.org/10.1080/2578983X.2021.1918435
[2] Pirinen, R. I. (2009). Actualization of Learning by Developing (LbD): an Analysis. International Journal of Emerging Technologies in Learning (iJET), 4(7), pp. 46–58. https://doi.org/10.3991/ijet.v4i7.1103

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Finnish Special Competence for Healthcare Information Technology

Jarmo Reponen[1,2], Professor (PoP) for healthcare information systems

[1]*FinnTelemedicum, Research group for medical imaging, physics and technology, University of Oulu, Finland*
[2]*Chairman of the committee of the special competence for healthcare information technology*

Background: Healthcare information and communication technology has become an everyday tool for physicians, dentists and veterinarians. In Finland, the availability of electronic health record systems has been 100% since 2010 in public and private care. Telemedicine and eHealth solutions are the core of digital transformation. They extend from consultation services to mHealth and self-care solutions for citizens. (1) Digitalization has a key role in the Finnish social and health care strategy, and the expected outcomes depend on the success of digital services (2).

Therefore, in 2012 Finland was to our knowledge the first country in Europe to establish a special competence for healthcare information technology to physicians and extend that since 2015 to dentists and since 2018 to veterinarians. The vision is that medical doctors, dentists and veterinarians could use their clinical expertise in the development of novel eHealth and mHealth solutions (3). The experienced network of experts could then collaborate with enterprises, research institutes and other actors in the field. The formalized special competence provides a motivating professional career path to the individuals, too.

Methods: In order to qualify for the special competence program, one has to become first a medical specialist. However, for dentists and veterinarians, five years of experience in clinical work without specialization is adequate. The special competence requires then two years practical service and theoretical studies. The service in the information technology domain can consist of e.g., developmental, educational or research duties. One can also serve in an enterprise. The duties should be versatile, it is not enough to work with only one information system. The theoretical studies are collected from courses in universities and universities of applied sciences, from eHealth conferences and seminars. It is mandatory to participate in international eHealth events. (3)

There are no formal exams, but the applicants have to fill a competence portfolio under the supervision of their mentor. Two external reviewers then give their opinions. After reading those opinions, the special competence committee organized by the Finnish Society of Telemedicine and eHealth makes its recommendation and the final degree of special competence is given by the Finnish Medical Association or the Finnish Dental Association or The Finnish Veterinarians Association, respectively. (3)

Results: In September 2022 already 136 applicants have been enrolled to the program. There were 122 physicians, 13 dentists and 1 veterinarian among them. Of those enrolled, 83 physicians and 13 dentists and one veterinarian have achieved the competence. Those still in process have received guidance for their studies from the special competence committee. Those graduated have found positions as leading healthcare information technology experts or in administrative tasks in regional or national health information technology projects.

Conclusions: The special competence gives graduated doctors, dentists and veterinarians an ability to utilize their knowledge about healthcare processes for the benefit of the new eHealth and mHealth services. However, it is necessary to bring these skills in the future to basic medical education, too. University of Oulu has since 2016 had a specific eHealth course for medical students (4). Nationally, the MEDigi-project has created a listing of necessary eHealth teaching themes, to support the undergraduate teaching in all five medical schools in Finland (5).

References:
[1] Reponen J, Keränen N, Ruotanen R, Tuovinen T, Haverinen J. Kangas M, (2021). Use of information and communications Technology in Finnish health care in 2020. Current situation and trends. [In Finnish with English abstract.] Raportti 11/2021, Terveyden ja hyvinvoinnin laitos, Helsinki 2021. https://urn.fi/URN:ISBN:978-952-343-771-5.
[2] Ministry of Social Affairs and Health (2015) Information to support well-being and service renewal. eHealth and eSocial Strategy 2020. Edita Prima, Helsinki. http://urn.fi/URN:ISBN:978-952-00-3575-4.
[3] Reponen J (2017) Finnish special competence for healthcare information technology to physicians and dentists: aims, contents and initial experiences. Finnish Journal of EHealth and EWelfare, 9(1), 42-45. https://journal.fi/finjehew/article/view/61134.
[4] Honkanen Juha-Pekka (2017) Hands-on eHealth For Medical Students. HiMMS Europe Insights 5(4):42-43.
[5] Levy A, Reponen J. (eds.) (2021) Digital transformation of medical education: MEDigi project report. University of Oulu 2021. http://jultika.oulu.fi/Record/isbn978-952-62-3245-4.

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

The International Society for Telemedicine & eHealth (ISfTeH)

The International Society for Telemedicine & eHealth is THE international federation of national associations who represent their country's Telemedicine and eHealth stakeholders. The ISfTeH is also open to additional associations, institutions, companies and individuals with a keen interest in the subject of Telemedicine and eHealth, or with activities that are relevant to this field.

The ISfTeH fosters the sharing of knowledge and experiences across organizations and across borders and aims to promote the widespread use of ICT tools and solutions in health and social care in order to:
- improve access to healthcare services
- improve both prevention and quality of care
- reduce medical errors • integrate care pathways
- share and exchange information with citizens/patients
- reduce costs

Since 2008, the ISfTeH has been closely collaborating with the World Health Organization. Through its national member associations and through courses and conferences, the ISfTeH does participate in the establishment of eHealth training and implementation plans, and provides assistance and education where needed. The newest initiatives include robust educational programming and access to resources for organizational accreditation and individual training and certification under the Chair of Education.

Current Working Groups are as follows: Capacity Building, Collaborative Care Team in Open Source, Digital Health for Space and Extreme Environments, Digital Transformation Leadership, eHealth Economics, Francophonie, Healthcare Disparities and Digital Health, Iberian and Iberian-American, Medical & Bioinformatics, Standards and Accreditation for Telehealth Services, Tele-Audiology, Tele-Cardiology, Tele-Dermatology, Tele-Nursing, Tele-Pediatrics, Tele-Urology, Women (WoW).

With a footprint in over 100 countries and territories, the ISfTeH is your door to the global Telemedicine and eHealth community. Through its various activities and members, the ISfTeH can assist you in the promotion and dissemination of your research; help you to enhance your healthcare services with new ICT tools and technologies; provide ideas to broaden your educational programs and courses; and widen your international business network.

International Society for Telemedicine & eHealth (ISfTeH)
c/o ISfTeH Coordinating Office
Dufourstrasse 49
CH - 4052 Basel
Switzerland
e-mail: info@isfteh.org
website: www.isfteh.org

President	*Vice-President*	*Executive Director*
Dr. Michele Griffith	*Dr. Pirkko Kouri*	*Prof. Yunkap Kwankam*
USA	*Finland*	*Switzerland*

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

The ECHAlliance Group
is the Global Connector for Digital Health
connecting 78 Countries and 4.4 billion people

As a member organisation we're bringing our global community together using our network of ecosystems to match need and solution, break down silos, transform healthcare and create economic opportunities. Membership is available at a range of different levels including free for not-for-profits.

70+
Ecosystems across the globe

900+
Member Organisations

20,000
Experts

12
Thematic Innovation Ecosystems

Community
The largest worldwide network (20,000+ experts)

Knowledge
Expert groups & think-tanks

Innovation
Innovative projects promoting global health transformation

DHS enables multi-stakeholder dialogue on healthcare data policies and practices. As a legacy of the Estonian Presidency of the Council of the European Union in 2017, it was formed to promote the adoption of digital health and the use of health data.

GHCP connects global health communities targeting health inequalities, skills and data. The GHCP Council includes leading organisations from USA, Africa, Commonwealth, Australia, India and Europe. We launch high-level events on 4 themes: Disparities Globally, Digital Skills Workforce, Data & Digital Services and Green Health.

DHO is a collaborative and not-for-profit initiative, to facilitate and promote the transfer of knowledge, creating a community of knowledge in digital health open to all professionals of the health ecosystem from local to global. Our mission is to accelerate Digital Health Transformation.

International projects

Our Innovation Team delivers Research & Innovation projects in health and data sharing/governance, scouts funding opportunities for our community, builds consortia and designs project proposals involving our ecosystems and members.

As project partners we carry out policy and socio-economic studies, market analysis, exploitation and dissemination tasks and can lead on stakeholder engagement to ensure the project sustainability.

Brainteaser · DISH · EDEN - Embracing Dementia · EU_SHAFE Interreg Europe · GATE KEEPER · Digital Health Europe · Gravitate Health

ValueCare · smartwork · beamer · EUVECA · connectinghealth · Be Well · BIOMATDB

ECHAlliance.com andy@echalliance.com @ECHAlliance #ConnectingTheDots

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

eHealth2022 Committees

Organizing committee
- Outi Ahonen RN, PhD, Senior Lecturer, Laurea UAS, President, FSTeH (Chair)
- Jarmo Reponen, MD, PhD, Professor, University of Oulu, Vice-President, FSTeH
- Pirkko Kouri PhD, Secretary, FSTeH, Vice-President, ISfTeH
- Liisa Klemola, RN, PhD, Senior Lecturer, Savonia UAS, Treasurer, FSTeH
- Jari Numminen RN, BEng, Consultant, Simakka, Board Member, FSTeH
- Timo Tuovinen MD, University Instructor, University of Oulu, Oulu University Hospital, Board member, FSTeH
- Birgitta Tetri RN, MSSc, Project Specialist, Laurea UAS, Board member, FSTeH
- Vesa Jormanainen, MD, MSc, Research Fellow, Finnish Institute for Health and Welfare (THL), Senior Ministerial Advisor, Medical Affairs, Ministry of Social Affairs and Health, Board Member, FSTeH
- Aleksi Schrey MD, PhD, Chief Medical Officer (digital affairs), Finnish Student Health Service, Board Member, FSTeH

Scientific committee
- Pirkko Kouri PhD, Secretary, FSTeH, Vice-President, ISfTeH (Chair)
- Jarmo Reponen, MD, PhD, Professor, University of Oulu, Vice-President, FSTeH
- Liisa Klemola, RN, PhD, Senior Lecturer, Savonia UAS, Treasurer, FSTeH

Exhibition committee
- Birgitta Tetri RN, MSSc, Project Specialist, Laurea UAS, Board Member, FSTeH (chair)
- Aleksi Schrey MD, PhD, Chief Medical Officer (digital affairs), Finnish Stude nt Health Service, Board Members, FSTeH
- Vesa Jormanainen, MD, MSc, Research Fellow, Finnish Institute for Health and Welfare (THL), Senior Ministerial Advisor, Medical Affairs, Ministry of Social Affairs and Health, Board Member, FSTeH
- Jarmo Reponen, MD, PhD, Professor, University of Oulu, Vice-President, FSTeH
- Outi Ahonen RN, PhD, Senior Lecturer, Laurea UAS, President, FSTeH

Technical Coordination
- Jari Numminen RN, BEng, Consultant, Simakka, Board Member, FSTeH
- Timo Tuovinen MD, University Instructor, University of Oulu, Oulu University Hospital, Board Member, FSTeH

Assistant organising committee
- Outi Ahonen RN, PhD, Senior Lecturer, Laurea UAS, President, FSTeH (Chair)
- Pirkko Kouri PhD, Secretary, FSTeH, Vice-President, ISfTeH
- Birgitta Tetri RN, MSSc, Project Specialist, Laurea UAS, Board member, FSTeH
- Tuulikki Hakala, special education student, Laurea UAS,
- Mirjam Palo, special education student, Turku UAS
- Helena Sukanen, special education student, Laurea UAS
- Ninette Lindgren, special education student, Laurea UAS
- Zeynep Niiranen, special education student, Savonia UAS
- Sonia Kuutti, special education student, Diakonia UAS
- Minna Korkmaz, special education student, Metropolia UAS
- Leena Hinkkanen, senior lecturer, Metropolia UAS
- Reija Korhonen, senior lecturer, Laurea UAS

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Finnish Journal of eHealth and eWelfare

http://www.finjehew.fi

Finnish Journal of eHealth and eWelfare (FinJeHeW) is a scientific journal established by the Finnish Society of Telemedicine and eHealth (FSTeH) and the Finnish Social and Health Informatics Association (FinnSHIA), and it also serves as the official journal for the members of the establishers.

The Journal was established in 2009. The aim of the Journal is to promote scientific research, communication and education in the fields of information and communication technology relating to social and health care, telemedicine, eHealth and eWelbeing.

Financial assistance has been granted to the journal by the Federation of Finnish Learned Societies since 2010. FinJeHeW benefits the members of the associations further by functioning as an information channel, multidisciplinary publication forum, and supporter for the international network.

The Journal welcomes articles on information and communication technology of social and health care, telemedicine, eHealth, and eWelbeing. Instructions for authors can be found on the Journal website. FinJeHeW is mainly a Finnish language journal, but also includes articles, abstracts and other material in English. All submitted manuscripts are evaluated by the editor. Manuscripts that are considered suitable for publication in the Journal are sent to two referees for assessment. The contents of this journal will be available in an open access format starting from autumn 2017. The Journal is published in electronic form and includes four issues per year.

Journal ISSN index is 1798-0798.

Editorial board:
Research director, PhD Alpo Värri (University of Tampere) (Chair of the Editorial board); Professor, PhD Jarmo Reponen (University of Oulu); Professor, PhD Reima Suomi (University of Turku); Director Kalevi Virta (eWell Oy); Development expert Pirjo Hilama (Social Health Care Joint Authority of South-Savo); Principal lecturer, PhD Outi Ahonen (Laurea University of Applied Sciences); Professor, PhD Ulla-Mari Kinnunen (University of Eastern Finland).

Editor-in-Chief, PhD
Kristiina Häyrinen

Contact information:

Editor-in-Chief
Kristiina Häyrinen, kristiina.hayrinen@gmail.com
Tel + 358 40 708 2500
c/o Parontie 116
79600 Joroinen

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Integrating the Healthcare Enterprise (IHE) Finland

IHE (Integrating the Healthcare Enterprise) is an international non-profit organization that works to improve the way healthcare systems share information electronically. IHE encourages the use of established interoperability standards such as HL7 and DICOM and strives to solve specific integration problems faced by its members in the real world through Integration Profiles. IHE Finland is a member of IHE International and IHE Europe.

BENEFITS OF USING IHE

- Optimize clinical workflow and strengthen the information link between different departments
- Streamline the flow of clinical information, reduce errors and improve efficiency
- Simpler integration and implementation
- IHE profiles fill the gap between standards and systems integration
- Clear path toward acquiring integrated systems
- Common framework and better communication for vendors and purchasers
- Flexibility while ensuring that key integration needs are met
- Provides common workflow and reduces the need for tailoring
- International development and publication of IHE Technical Frameworks

WAYS OF WORKING

- **Integration Profile Specification**: technical specifications for implementing standards
- **Connectathon**: opportunity for vendors to test the interoperability of their products with peer vendors
- **Projectathon**: tests your project specific configurations (vocabulary, document types, workflows, etc) in the context of the IHE profiles working together
- Prefences for established, complete standards
- Forum for collecting integration requirements, developing profiles and testing, for both vendor and user organizations

ADDITIONAL INFORMATION

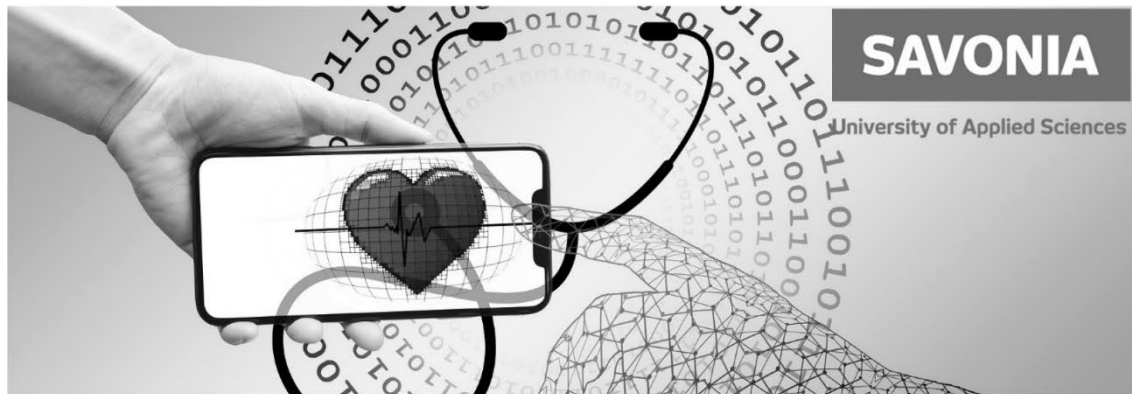Sanna Virkkunen, Solita Oy, sanna.virkkunen@solita.fi

JOIN US

- IHE activities directed to the needs of Finnish organizations
- Workshops organized to define focus points
- Support for concrete development projects
- IHE Finland workshops are open to IHE Finland members
- Attend training events organized by IHE Finland
- Profiles and reports are free for evaluation and use
- To follow and participate
  http://www.hl7.fi/hl7-finland-liity-yhdistykseen
  http://www.hl7.fi/sig-toiminta/ihe-sig/
- Join our mailing list and LinkedIn group!

Acquire unique insights into Digital Health to enhance healthcare outcomes and your career

Master's degree programme in Digital Health

Savonia's Master's degree programme in Digital Health provides graduates with skills needed for innovative development of digital social and health care services, service delivery, and professional organisational management.

The course of study identifies and explores multidisciplinary links between healthcare and digitization, and how these may create barriers or opportunity for synergy.

The curriculum prepares students for planning, implementing, and evaluating social welfare and health care reform in different operational environments.

This challenging and unique Master's programme is suitable for professionals working within the fields of social services, health care, engineering, or business administration.

All courses are taught online in English.

Next application period is **4-18 January 2023**

Read more
www.savonia.fi/digitalhealth

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27ᵗʰ Finnish National Conference on Telemedicine and eHealth

List of participants

Finnish Society of Telemedicine and eHealth board of directors in alphabetical order

Last name	First name	Organisation
Ahonen	Outi	Laurea University of Applied Sciences
Jormanainen	Vesa	Finnish Institute for Health and Welfare
Klemola	Liisa	Savonia University of Applied Sciences
Kouri	Pirkko	FSTeH, ISfTeH
Numminen	Jari	Simakka Oy
Reponen	Jarmo	University of Oulu
Schrey	Aleksi	Finnish Student Health Service (FSHS)
Tetri	Birgitta	Laurea University of Applied Sciences
Tuovinen	Timo	University of Oulu, Oulu University Hospital

Keynote speakers in alphabetical order

Last name	First name	Organisation
Aaltonen	Mikko	South Karelia Social and Health Care District
Ahlqvist	Johannes	Finnish innovation fund Sitra
Ahonen	Outi	Finnish Society of Telemedicine and eHealth
Bleaden	Andy	European Connected Health Alliance, Ireland
Faxvaag	Arild	University of Science and Technology (NTNU), Norway
Giunti	Guido	University of Oulu
Griffith	Michele	International Society for Telemedicine and eHealth
Hansson	Stefan	Lund University, Sweden
Hardardottir	Gudrun Audur	Directorate of Health, Iceland
Haverinen	Jari	Finnish Coordinating Center for Health Technology Assessment
Heikius	André	Obesmart Ltd
Heponiemi	Tarja	The Finnish Institute for Health and Welfare
Hyppönen	Konstantin	DG Health and Food Safety, EU commission
Jormanainen	Vesa	Finnish Society of Telemedicine and eHealth
Kalra	Dipak	Health Informatics at University College, London, UK
Kekäläinen	Heli	Savonia UAS
Korpelainen	Juha	Pohjois-Pohjanmaan sairaanhoitopiiri
Levasma	Jarkko	Ministry of Finance
Lisitsyn	Dimitri	South Karelia Social and Health Care District
Mattila	Elina	VTT Health Technologies
Moen	Anne	University of Oslo
Pajuniemi	Tuukka	Hämeenlinnan kaupunki
Palojoki	Sari	EU European Centre for Disease Prevention and Control
Porrasmaa	Jari	Keski-Suomen sairaanhoitopiiri
Ramberg	Anu	Vantaan kaupunki
Rinnetmäki	Mikael	Sensotrend Ltd
Salminen	Seppo	University of Turku
Schrey	Aleksi	Finnish Society of Telemedicine and eHealth
Snicker	Elisa	Savonia UAS
Ukkola	Timo	The Ministry of Social Affairs and Health
Vainio	Karri	the Association of Finnish Local and Regional Authorities
Vedel	Katrine	Healthcare Denmark
Ylä-Jarkko	Antti	Keski-Uudenmaan sote

In this conference the sum reserved for keynote speakers´s presents was donated to
MSF - Médecins Sans Frontières organization. We warmly thank all the speakers for their contribution!

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth

Organisations of participants in alphabetical order

BeeHealthy Oy

City of Oulu

Clalit Health Services

CLINIPOWER Finland oy

Esko Systems Oy

Forum Virium Helsinki Oy

Fysi Partners Finland Oy

Hamk Smart

Helsingin kaupunki

Hoivita Oy

HUS

Insel Gruppe AG

Itä-Suomen yliopisto/ Hammaslääketiede

Jyväskylän ammattikorkeakoulu

Karelia UAS

Kela

Kuopion kaupunki

KYMSOTE

LAB ammattikorkeakoulu

Laurea-ammattikorkeakoulu Oy

Lund University

Mediconsult

Medicubex Oy

Medixine

Metropolia Ammattikorkeakoulu Oy

Orla DTx Oy

Oulun ammattikorkeakoulu

Pihlajalinna

Pohjois-Pohjanmaan sairaanhoitopiirin kuntayhtymä

Päijät-Hämeen hyvinvointiyhtymä

Päijät-Sote

SeAMK

Sitra

Smartbi Oy

Somia Reality Oy

Suomen Diabetesliitto ry

Tampere University

TAU/MET

Tays

Terveystalo

Thinking Lifeline Oy

University of Oulu

Verso Vision Oy

Veteva Oy

YTHS (Ylioppilaiden terveydenhuoltosäätiö)

Finnish Society of Telemedicine and eHealth
eHealth2022 International Conference
The 27th Finnish National Conference on Telemedicine and eHealth