SFT-17 AUSTRALIA

Successes and Failures in Telehealth

8th Annual Meeting of the Australasian Telehealth Society

30-31 OCTOBER 2017 | BRISBANE, AUSTRALIA

CONFERENCE HANDBOOK

AN INITIATIVE OF

The University Of Queensland AUSTRALIA | CENTRE FOR ONLINE HEALTH

Australasian TELEHEALTH Society

SUPPORTED BY

AMERICAN TELEMEDICINE ASSOCIATION

Centre of Research Excellence in Telehealth

ISfTeH

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CENTRE FOR ONLINE HEALTH

The University of Queensland's Centre for Online Health (COH) is recognised internationally for its role in research, teaching, consultancy and service delivery in clinical telehealth.

Research success through the COH and its collaborators was recognised in 2013 with the award of the prestigious Centre of Research Excellence in Telehealth by the National Health and Medical Research Council.

www.uq.edu.au/coh

The COH team comprises a broad skill mix which brings together clinicians, academic researchers, educators, technicians, engineers and administrators. It provides a supportive environment for research, and is staffed by experts across a wide range of disciplines, such as paediatric, geriatric and rural health care delivered from a distance. The centre offers expertise based on practical experience gained since the centre opened its doors in 1999.

TELEHEALTH CONSULTANCY

Telehealth is a rapidly growing sector. An increasing number of organisations and health service providers recognise the benefits of implementing telehealth to supplement their existing way of delivering health services. However, identifying where to start, how to lead the change, and effectively manage telehealth services can be a complex and overwhelming task.

Let us help you with this!

The COH has more than 15 years' experience in establishing and delivering clinical telehealth services. Our team of experts offers telehealth consultancy services, ranging from raising awareness through talks and keynotes; educating and training through interactive workshops and CPD-recognised professional development courses; through to customised advice regarding all aspects of telehealth including planning, implementation, and evaluation.

https://coh.centre.uq.edu.au/consultancy

CENTRE FOR ONLINE HEALTH
CRICOS provider number: 00025B

Centre of Research Excellence in Telehealth

THE UNIVERSITY OF QUEENSLAND AUSTRALIA

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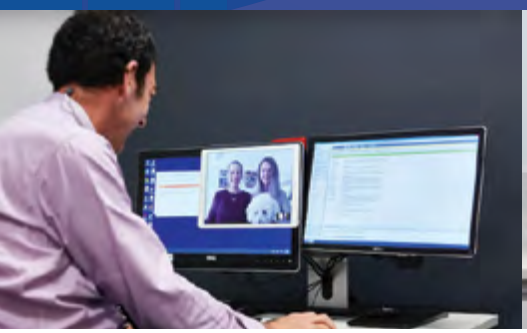
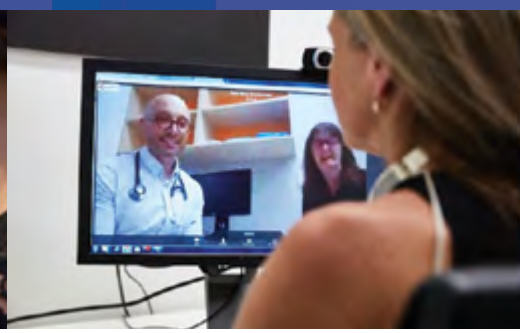
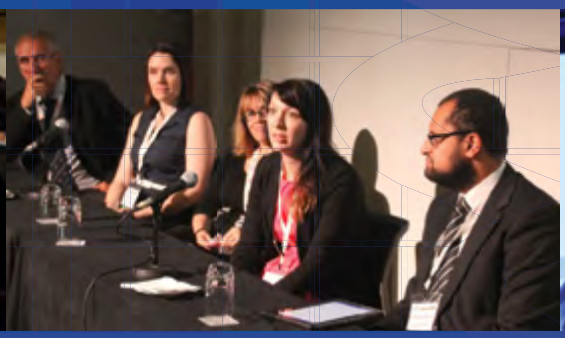




The Australasian Telehealth Society (ATHS) was formed in 2008 to educate, support and simplify access to useful resources and information for the planning and delivery of telehealth services.

Australasian TELEHEALTH Society

Our society has a membership representing all states and territories in Australia and cities throughout New Zealand. Our vision is to deliver a united 'voice' for telehealth advancement covering a broad range of domains including the health delivery sector, academic institutions, government and industry partners. We are the only organisation specifically addressing the needs of the telehealth community in our part of the world.




While the society is still relatively young, we have already established an impressive track record by drafting several telehealth strategy documents, hosting the inaugural Global Telehealth conference in Perth during 2010, co-hosting the Success and Failures in Telehealth Conference in Brisbane 2011, 2013, 2015 and in Adelaide 2014; and the Global Telehealth Conference in Sydney 2012. In 2016 we partnered with the HINZ conference in New Zealand.

ATHS is the National Member for Australia and New Zealand of the International Society for Telemedicine and eHealth (ISfTeH), and hosted the ISfTeH International Conference in 2010.

The success of the ATHS is a reflection of its membership. The ATHS is an evolving group with a motivated executive team and valued membership of over 500 individuals and industry partners. The time is right to combine efforts and work through the challenges we face in sustaining telehealth services in the healthcare industry. We strongly encourage you to participate in the events held by the ATHS and always welcome your feedback.

Please join ATHS and visit our website at aths.org.au

facebook.com/austelehealth

@Aus_Telehealth

SFT-17 CONFERENCE COMMITTEE

Conference Chairs:

Professor Len Gray, SFT-17 General Co-Chair; Director, Centre for Health Services Research, The University of Queensland, Australia

Ms Jackie Plunkett, SFT-17 General Co-Chair; President, Australasian Telehealth Society

Scientific Program Committee:

Associate Professor Anthony Smith, SFT-17 Scientific Program Chair, Acting Director, Centre for Online Health, The University of Queensland, Australia

Dr Liam Caffery, The University of Queensland, Australia

Ms Jackie Plunkett, Loddon Mallee Rural Health Alliance, Australia

Sponsorship/Exhibition Coordinator:

Kath McIntyre, Australasian Telehealth Society, Australia

Scientific Review Committee:

Dr Nigel Armfield, The University of Queensland, Australia

Dr Dominique Bird, The University of Queensland, Australia

Dr Natalie Bradford, Queensland Health, Australia

Mr Andrew Bryett, Queensland Health, Australia

Dr Liam Caffery, The University of Queensland, Australia

Professor Colin Carati, Flinders University, Australia

Professor Mark Coulthard, Queensland Health, Australia

Dr Trevor Cradduck, Canadian Health Information Association, Canada

Dr Sisira Edirippulige, The University of Queensland, Australia

Dr Farhad Fatehi, The University of Queensland, Australia

Ms Lisa Garner, The University of Queensland, Australia

Dr Andrew Georgiou, University of New South Wales, Australia

Mr Simon Hayden, Vivid Solutions, New Zealand

Ms Denise Irvine, E3 Health Ltd, New Zealand

Professor Malina Jordanova, Bulgarian Academy of Sciences, Bulgaria

Ms Susan Jury, The Royal Children's Hospital (Melbourne), Australia

Ms Pat Kerr, Patricia Kerr and Associates / Telehealth NZ Ltd, New Zealand

Ms Karen Lucas, Princess Alexandra Hospital, Australia

Ms Michelle McGuirk, Northern Territory Government

Professor James Marcin, University of California, USA

Professor Maurice Mars, University of KwaZulu-Natal, South Africa

Dr Melinda Martin-Khan, The University of Queensland, Australia

Dr John Menzies, JTA International, Australia

Dr Maike Neuhaus, The University of Queensland, Australia

Ms Jackie Plunkett, SFT-17 General Co-Chair & President, Australasian Telehealth Society

Professor Trevor Russell, The University of Queensland, Australia

Dr Shuji Shimizu, Kyushu University Hospital, Japan

Associate Professor Anthony Smith, The University of Queensland, Australia

Mr Alan Taylor, Flinders University, Australia

Ms Monica Taylor, The University of Queensland, Australia

Professor Deborah Theodoros, The University of Queensland, Australia

Ms Penelope Watson, Department of Health, Victorian Government, Australia

Dr Sumudu Wickramasinghe, The University of Queensland, Australia

Dr Laurie Wilson, CSIRO, Australia

WELCOME TO SFT-17

On behalf of The University of Queensland's Centre for Online Health (COH) and the Australasian Telehealth Society (ATHS), welcome to the 2017 International Conference on Successes and Failures in Telehealth (SFT-17). SFT-17 also serves as the 8th Annual Meeting of the ATHS, an organisation formed in 2008 to promote the growth of telehealth in all aspects, throughout Australia and New Zealand. Your participation at one of the largest academic telehealth conferences in the southern hemisphere is highly valued, and we thank you in advance for your contribution to this important event.

Awareness and adoption of telehealth in the health sector is gaining traction. Although examples of telehealth extend beyond many decades, the integration of telehealth within mainstream clinical practice has always been a challenge. The SFT conferences were introduced in 2001 with a clear purpose: to create an open forum where real lessons (both positive and negative) in telehealth can be easily shared.

This year's conference offers around 60 oral presentations, 25 posters and Q&A sessions, which promote engagement amongst the speakers and delegates.

The SFT-17 conference program is focused on telehealth experience in the health service environment. A balanced collection of clinical case studies and formal research updates from telehealth experts will suit all interests. Poster presentations will be on display for the full duration of the conference. Don't miss our line up of keynote speakers.

This year we are very pleased to introduce four keynote speakers – all of whom will share their experience and outlook on telehealth:

- **PROFESSOR PETER YELLOWLEES** (Founding Director of the COH) is the current President of the American Telemedicine Association, based in California, USA. Peter has a number of research interests and is presently working on the development and validation of asynchronous telepsychiatry, automated translation and clinical interpreting systems, Internet e-mail and video consultation services, and assessment and treatment protocols to improve physician health and wellness.
- **PROFESSOR JANE CLEMENSEN** is the Head of Clinical Research at the Centre of Innovative Medical Technology in Denmark. Jane has more than a decade of telehealth experience and her area of expertise is in participatory design research methods. Jane will give useful insight into the role of patients in the planning of telehealth services and guidance about how best to achieve this.
- The Australian Digital Health Agency (ADHA) has been established by the governments of Australia with a remit to evolve digital health capability through innovation, collaboration and leadership to facilitate digital health integration in the health system. With the establishment of the Australian Digital Health Agency (ADHA) to facilitate digital health integration in the health system, we welcome **DR KIM WEBBER** - General Manager of Strategy to provide an overview of the digital strategy and its potential influence on the uptake of telehealth.

- **MELISSA VERNON** is the Chief Operating Officer – Strategy and Reform for the Western Australian (WA) Country Health Service. Melissa has an extensive background in health-related leadership and executive positions in WA and will highlight examples of successful telehealth initiatives within the WA health service.

This year we received more than 120 abstracts for presentation at SFT-17. All abstracts included in this handbook were peer-reviewed by an international panel (see page 5). Approximately 76% of all abstracts were accepted and offered a presentation at the conference. A small selection of abstracts were also written up as full papers for publication in the November issue of the Journal of Telemedicine and Telecare.

Our conference is supported by the International Society for Telemedicine and eHealth (ISfTeH), the American Telemedicine Association (ATA) and the NHMRC Centre of Research Excellence in Telehealth. We would like to thank our industry partners and various organisations for their support of the conference. Endorsement of the event by numerous professional societies and promotion of it to their membership was also very much appreciated.

On behalf of the University of Queensland's Centre for Online Health and the Australasian Telehealth Society, we look forward to meeting you at SFT and trust that this conference provides you with plenty of inspiration and the opportunity to share your ideas with others in the industry.

Professor Len Gray
Director, Centre for Health Services Research
The University of Queensland
SFT-17 General Co-Chair

Jackie Plunkett
President, Australasian Telehealth Society
SFT-17 General Co-Chair

Associate Professor Anthony Smith
A/Director, Centre for Online Health
The University of Queensland
SFT-17 Scientific Program Chair

USEFUL INFORMATION

Conference Venue

Brisbane Convention & Exhibition Centre
Boulevard Level
Cnr Merivale and Glenelg Streets
South Bank, Queensland 4101 Australia

Wi-Fi

The Brisbane Convention and Exhibition Centre provides complimentary wireless internet throughout the venue. To connect, search for the network 'BCEC Link'. A password is not required.

Registration Desk

The registration desk will be located in the foyer area on the Boulevard Level of the conference venue, Brisbane Convention & Exhibition Centre. It will be staffed by the conference organisers, Iceberg Events.

Registration Desk & Exhibition Operating Hours

Monday, 30 October 2017: 7.30am – 5.00pm

Tuesday, 31 October 2017: 8.00am – 5.00pm

Exhibition Area

The exhibition area and catering will be located in the foyer space on the Boulevard Level of the Brisbane Convention & Exhibition Centre.

Session Locations

Plenary Sessions:
Boulevard Auditorium, Boulevard Level, BCEC

Concurrent Stream 1:
Boulevard Room 1, Boulevard Level, BCEC

Concurrent Stream 2:
Boulevard Room 2, Boulevard Level, BCEC

Concurrent Stream 3:
Boulevard Room 3, Boulevard Level, BCEC

Please refer to the Conference Program on page 10.

Posters

Posters will be located in the Exhibition Area and will be on display for the duration of the conference. Poster authors are reminded that it is their responsibility to place and remove their poster and the conference organisers will not be responsible for posters left behind at the conclusion of the conference.

CONFERENCE DINNER

Date: Monday, 30 October 2017

Time: 6.30pm arrival for
strict 7.00pm boat departure
Boat will return to dock at 10.00pm

Where: Kookaburra Queen River Cruise
1 Eagle Street, Brisbane CBD (Eagle St Pier)

Dress: Smart Casual

A ticket to the conference dinner is included in all full registrations. A ticket to the conference dinner can be found in the back of your name badge. Please present this to the Conference Organisers when boarding the boat.

Getting to the Conference Dinner

Board the Kookaburra Queen from Eagle Street Pier.

Depart Rydges Hotel South Bank or Brisbane Convention and Exhibition Centre and walk up Grey Street, cross Victoria Bridge and turn right onto William Street.

Turn left onto Elizabeth Street and follow down to Eagle Street.

Turn right and make your way to Eagle Street Pier.

Alternatively, if you are catching a taxi or Uber, it is approximately a 10-20min drive.

DAY ONE: MONDAY 30 OCTOBER 2017

7.30am	**Registration Open** Boulevard Level, BCEC		
Plenary Sessions will be held in the Boulevard Auditorium, BCEC			
8.15am	**Conference Opening**		
8.20am	**Welcome to Country, Songwoman Maroochy**		
8.30am	**Conference Overview and Housekeeping** Prof Len Gray, Ms Jackie Plunkett and A/Prof Anthony Smith		
8.45am - 9.15am	**Keynote Address: The Value and Future of Telemedicine** Professor Peter Yellowlees, University of California Davis and American Telemedicine Association, United States		
9.15am - 9.25am	Q&A Session with Professor Peter Yellowlees		
9.25am - 9.55am	**Keynote Address: Change through Collaboration** Professor Jane Clemensen, Odense University Hospital, University of Southern Denmark, Odense, Denmark		
9.55am - 10.05am	Q&A Session with Professor Jane Clemensen		
10.05am - 10.30am	**Industry Engagement Session** • Inline Medical & Dental • Centre of Research Excellence in Telehealth • Tunstall Health • Australasian Telehealth Society		
10.30am	Morning Tea, Exhibition & Poster Viewing		
	Room B1	**Room B2**	**Room B3**
11.00am - 12.30am	**Concurrent Session 1** **Mental Health**	**Concurrent Session 2** **Allied Health Services**	**Concurrent Session 3** **Telehealth Challenges**
11.00am	**eCYMHS: Innovation and expansion in paediatric telepsychiatry** Jennylee Wood, Queensland Health, Australia	**Dental Health Services Victoria's Tele-dentistry Pilot Program: Implementation and the way forward** Diane Collins, Nicole Heaphy & Hanlie Engelbrecht, Dental Health Services Victoria, Australia	**Ten Years of Telehealth: Telepractice Principles and Lessons Learned from RIDBC** Cassandra Schubert, RIDBC, New South Wales, Australia
11.15am	**Improving early detection and service delivery in Child Psychiatry** Kirsi Bykachev, University of Eastern Finland, Pohjois-Savo, Finland	**A MultiDisciplinary Renal Telehealth Service: Lessons Learnt** Karen Lucas, Metro South Health, Queensland, Australia	**Challenges and opportunities in delivering school-based allied health care via telehealth** Danette Langbecker & Lisa Garner, The University of Queensland, Australia
11.30am	**Internet Psychotherapy with net-step: a Therapist delivered IPT for Depression an Anxiety Disorders in Primary Care Patients** Ulrich Sprick, St. Alexius/St. Josef Clinic, Neuss, Germany	**Ipswich Hospital Telepharmacy Service – an innovation in inpatient clinical pharmacy activities** Katherine Nunn & Cal Winckel, Ipswich General Hospital, Queensland, Australia	**Lessons learned from a randomized controlled trial of a web-based stepped collaborative care intervention** Jennifer Steel, University of Pittsburgh, United States
11.45am	**Developing video conferencing for remote child psychiatric consultations in Pohjois-Savo, Finland** Kirsi Bykachev, University of Eastern Finland, Pohjois-Savo, Finland	**Outreach Rehabilitation Services** Shane Delves, Murrumbidgee Local Health District, New South Wales, Australia	**Barriers and facilitators to adopting telehealth within early hearing support services: A qualitative study using the COM-B model of behaviour change** Mansoureh Nickbakht, The University of Queensland, Australia
12.00pm	**Establishing and evaluating an online mental health peer support group – lessons learnt during the first 12 months** Monica Taylor, The University of Queensland, Australia & Julie Ling, Grow, Queensland, Australia	**Evaluation of the initial 30 days of a telenursing system for patients with CHF, DM, and COPD** Takuya Kanamori, St. Luke's International University, Tokyo, Japan	**The Challenge in Establishing Teleaudiology for the Mater Cochlear Implant Clinic** Janeen Jardine, Mater Health Services, Queensland, Australia
12.15pm	Q&A with speakers	Q&A with speakers	Q&A with speakers
12.30pm - 1.15pm	Lunch, Exhibition & Poster Viewing		

	Room B1	Room B2	
1.15pm - 2.45pm	**Concurrent Session 4** **Diabetes Management**	**Concurrent Session 5** **International Telehealth**	
1.15pm	**A Comparison of Characteristics of Patients Seen in a Tertiary Hospital Diabetes Telehealth Service versus Specialist Face-to-face Outpatients** Anish Menon, The University of Queensland, Australia	**A Review of Telemedicine and E-health in Iran as a Developing Country: Situation and Challenges** Alireza Atashi & Sina Marashi, Virtual School, Tehran University of Medical Sciences, Iran	
1.30pm	**Mobile applications for diabetes mellitus self-management: a systematic narrative analysis** Anthony Deacon, The University of Queensland, Australia	**The General Practitioner's Perspective on E-health and Lifestyle Change - a Qualitative Interview Study** Carl Brandt, University of Southern Denmark, Funen, Denmark	
1.45pm	**Effectiveness of mobile-based interventions on health behaviour change in people with diabetes: an overview of systematic reviews** Azam Aslani, Health Human Resources Research Center, Shiraz University of Medical Sciences, Fars, Iran	**The use of telemedicine for delivering healthcare in Japan: Systematic review of literature published in Japanese and English languages** Jun Ito, Hyogo University, Hyogo-Prefecture, Japan	
2.00pm	**A cost-minimization analysis of a telediabetes service to a remote Indigenous community in Western Queensland** Sumudu Wickramasinghe, The University of Queensland, Australia	**Trial of an Asynchronous Tele-Audiology Screening Service in a Rural School in South Africa** Maurice Mars, University of KwaZulu-Natal, Durban, South Africa	
2.15pm	**Diabetes Telehealth: Bridging gaps in diabetes services in rural Western Australia through innovative technology** Amanda Lee, Diabetes WA, Western Australia, Australia		
2.30pm	Q&A with speakers	Q&A with speakers	
2.45pm	Afternoon Tea, Exhibition & Poster Viewing		
	Room B1	Room B2	
3.15pm - 4.30pm	**Concurrent Session 6** **Rural and Remote Health**	**Concurrent Session 7** **Specialist Telehealth Services**	
3.15pm	**Evaluating the use of a multisite telehealth group model for persistent pain management for rural/remote patients** Elizabeth Ward, Queensland Health and The University of Queensland, Australia & Heather Scriven, South West Hospital & Health Service, Queensland, Australia	**Paediatric teledermatology in Queensland - a case series from a service combining store-and-forward and live consults for best results** Alexander Tedman, Lady Cilento Children's Hospital, Queensland, Australia	
3.30pm	**Telehealth is improving the lives of people in Northeast Victoria's Hume Region** Jane Kealey, Northeast Health Wangaratta, Victoria, Australia	**The evolution and workflow of the Princess Alexandra Hospital's Skin Emergency Teledermatology Service** Mariya Hamid, Princess Alexandra Hospital, Queensland, Australia	
3.45pm	**Stakeholder perceptions of telehealth for the delivery of allied health services to children in rural communities** Jessica Campbell, The University of Queensland, Australia	**A telehealth supported rural stroke unit pilot - Informing the future of stroke care in Australia** Matt Page, Queensland Health, Australia	

	Room B1	Room B2
4.00pm	**General Medicine Inpatient Telehealth Service in Far North Queensland Remote Hospitals: The Trends and Why** Queen Okereke, Cairns Hospital, Queensland, Australia	**Transition from a single-site pilot to a state-wide telehealth service: experience from the Victorian Stroke Telemedicine program** Kathleen Bagot, The Florey Institute of Neuroscience and Mental Health, Victoria, Australia
4.15pm	Q&A with speakers	Q&A with speakers
4.30pm	**Conference Close**	
4.30pm - 5.00pm	**ATHS Annual General Meeting**	
6.30pm - 10.00pm	**Conference Dinner: Kookaburra Queen River Cruise** 6.30pm arrival at 1 Eagle Street, Brisbane CBD (Eagle Street Pier) for a 7.00pm strict boat departure. Boat returns to Eagle Street Pier at 10.00pm. *Dress: Business Casual*	

This program is correct at time of printing. The organisers reserve the right to make necessary changes without prior notice.

Kookaburra Queen River Cruise, Eagle St Pier, Australia

DAY TWO: TUESDAY 31 OCTOBER 2017

8.00am	**Registration Open** Boulevard Level, BCEC		
Plenary Sessions will be held in the Boulevard Auditorium, Boulevard Level of BCEC			
9.00am	**Welcome Day Two**		
9.10am	**Keynote Address: My Health Record and the Digital Health Strategy for Australia** Dr Kim Webber, Australian Digital Health Agency, New South Wales, Australia		
9.40am - 9.50am	Q&A Session with Dr Kim Webber		
9.50am	**Oral Poster Session**		
9.50am	**Addressing primary care access challenges in regional and remote WA with after hours telehealth** Amandeep Hansra, Telstra Health, New South Wales, Australia		
9.55am	**Dermatologist remuneration expectations for store-and-forward teledermoscopy** Centaine L. Snoswell, The University of Queensland, Australia		
10.00am	**Does utilising an m-health platform enhance cardiac rehabilitation participation?** Marlien Varnfield, CSIRO, Queensland, Australia		
10.05am	**Engineering a mobile-based self-management system for tubercular patients: TBMed Development study** Sharareh R. Niakan Kalhori, Tehran University of Medical Sciences, Tehran, Iran		
10.10am	**Telehealth throughout the Cancer Journey** Michelle Judd, GV Health, Victoria, Australia		
10.15am	**Flying Doctor Telehealth: A collaborative effort and partnership approach to delivering Telehealth services in rural Victoria** Jocelyn Syme, Royal Flying Doctor Service Victoria, Victoria, Australia		
10.20am	**Usability Of A Personal Assistant And Health Coach Application To Support Telerehabilitation Post-Stroke** Maayken van den Berg, Flinders University, South Australia, Australia		
10.25am	**CRE in Telehealth Update** Professor Len Gray, The University of Queensland, Australia		
10.30am - 11.00am	Morning Tea, Exhibition & Poster Viewing		
	Room B1	Room B2	Room B3
11.00am - 12.30pm	**Concurrent Session 8** **Speech and Language Therapies**	**Concurrent Session 9** **Telehealth Technology**	**Concurrent Session 10** **Coordination and Human Factors**
11.00am	**Telehealth and autism: are telehealth language assessments feasible and well tolerated by students on the spectrum?** Rebecca Sutherland, Children's Hospital at Westmead, New South Wales, Australia	**TAKING IT TO THE STREET-Police ambulance early access to mental health assessment via tele health-PAEAMHATH** Jay Jones & Leanne Gow, Hunter New England Health, New South Wales, Australia	**Chaos to calm - Applying human centred design thinking to telehealth coordination** Karrie Long, Melbourne Health, Victoria, Australia
11.15am	**Evaluation of the implementation of telehealth dysphagia services within 5 health districts across Queensland Health** Clare Burns, Royal Brisbane & Women's Hospital, Queensland Health, Australia	**Telehealth Portal Benefits and Barriers in MNHHS** Linda Cuskelly & Elizabeth Davis, Metro North Hospital and Health Service, Queensland, Australia	**Road Deaths Relating to the Attendance of Medical Appointments in Queensland** Phillip Greenup, Queensland Health, Australia
11.30am	**Comparing the effect of service model for the delivery of intensive, preventative swallowing therapy to patients with head/neck cancer: A 3-arm RCT** Laurelie Wall, The University of Queensland, Australia	**The Mindfulness App Study For Weight Management, Weight related Behaviours, and Stress in University Students: A Randomized Controlled Trial** Lynnette Lyzwinski, The University of Queensland, Australia	**TeleCARE for Country Kids: A case study on the role that Telehealth Coordinators play in ensuring growth and sustainability of a schools-based tele-allied health model** Rebecca Hammond, Royal Far West, New South Wales, Australia
11.45am	**Speech pathology and telehealth: from assessment and intervention to community capacity building** Silvia Pfeiffer, CSIRO / Coviu Pty Ltd, New South Wales, Australia	**Family-centred practices in a telehealth model** Melissa McCarthy, RIDBC, New South Wales, Australia	**Employment and future aspirations: healthcare workers' perceptions of a formal e-Health education program** Sisira Edirippulige, The University of Queensland

	Room B1	Room B2	Room B3
12.00pm	**The delivery of an aphasia group via telerehabilitation: perceptions of people with aphasia and their communication partners** Deb Theodoras, The University of Queensland, Australia	**Mobile health (mHealth) for chronic wound management: a review of the literature** Shararaeh R. Niakan Kalhori, Tehran University of Medical Sciences, Tehran, Iran	**Blended Medicine: Lessons Learned from a Combined Telehealth Service** Sean Halloran, Centre for Online Health, Queensland, Australia
12.15pm	Q&A with speakers	Q&A with speakers	Q&A with speakers
12.30pm - 1.30pm	Lunch, Exhibition & Poster Viewing		
	Room B1	Room B2	
1.30pm - 2.45pm	**Concurrent Session 11** **Orthopaedics**	**Concurrent Session 12** **Aged Care**	
1.30pm	**A review of the outcomes of the Princess Alexandra Hospital teleconference fracture clinics over six years** Alison McGill, Royal Brisbane and Women's Hospital, Queensland, Australia	**The effectiveness of e-interventions on reducing social isolation in older persons: A systematic review of systematic reviews** Jennifer Chipps, University of the Western Cape, Western Cape, South Africa	
1.45pm	**Clavicle Fracture Management: A comparison of a tertiary hospital and rural hospital via telehealth** Megan McKerrow & John North, Princess Alexandra Hospital, Queensland, Australia	**Silver Connections – linking country SA general practitioners (GPs) with Residential Aged Care Facility (RACF) residents via telehealth** Noelene Cooper, Country SA PHN, South Australia, Australia	
2.00pm	**Home telehealth for the non-surgical management of chronic spinal pain patients: a service evaluation** Michelle Cottrell, Royal Brisbane & Women's Hospital, Queensland, Australia	**Design of a telehealth virtual support groups intervention for carers of people with dementia** Annie Banbury, CQUniversity, Queensland, Australia	
2.15pm	**Tele-orthopaedic models of care: reported examples in Australia** Monica Taylor, The University of Queensland, Australia	**The Aged Care Sector Technology Roadmap for Australia: Implications for Telehealth** Anthony Maeder, Flinders University, South Australia, Australia	
2.30pm	Q&A with speakers	Q&A with speakers	
2.45pm - 3.15pm	Afternoon Tea, Exhibition & Poster Viewing		
3.15pm - 4.15pm	**Plenary Session**		**Boulevard Auditorium, BCEC**
3.15pm	**Keynote Address: The WA Emergency Telehealth Service: From initial perceptions to today's success** Melissa Vernon, WA Country Health, Western Australia, Australia		
3.35pm - 3.45pm	Q&A Session with Melissa Vernon		
3.45pm	**Reflections on SFT 2017**		
4.00pm	**Awards & Closing Speech**		
4.15pm	**Conference Close**		

This program is correct at time of printing. The organisers reserve the right to make necessary changes without prior notice.

INTERNATIONAL KEYNOTE ADDRESS

MONDAY 30 OCTOBER 2017, 8.45AM

PROFESSOR PETER YELLOWLEES

University of California Davis and American Telemedicine Association, United States

Professor Peter Yellowlees was the founding director of The University of Queensland's Centre for Online Health until 2004, before he moved to Sacramento, California where he is Vice Chair for Faculty Development and Professor of Psychiatry at the University of California Davis. He is President of the American Telemedicine Association, a member of the National Academy of Sciences review committee evaluating the national VA mental health services for veterans, a member of the American Psychiatric Association work group on telepsychiatry, and co-founder of HealthLinkNow Inc.

Professor Yellowlees is an experienced speaker and media commentator who has written and produced over 150 video editorials on Psychiatry for Medscape. He has a number of research interests and is presently working on the development and validation of asynchronous telepsychiatry, automated translation and clinical interpreting systems, internet e-mail and video consultation services, and assessment and treatment protocols to improve physician health and wellness.

From a clinical perspective Professor Yellowlees is an expert in physician health and telepsychiatry. He chairs the UC Davis Health System Wellbeing Committee and has many physicians as patients. He has provided clinical consultations to patients on Indian Health reservations via telemedicine for over a decade.

Professor Yellowlees has worked in public and private sectors in the USA, Australia and the UK, in academia, and in rural settings. He has published five books and over 200 scientific articles and book chapters.

Presentation Title: The Value and Future of Telemedicine

Telemedicine, with a 60 year history of development, is now widely used in most medical specialties and in many countries of the world. It is finally mainstream and having a major impact on healthcare with millions of patients treated per year in the USA alone. The major current challenges now facing those interested in the use of clinical health technologies are proving their value in an increasingly wide range of areas, from mobile devices to virtual reality, and scaling their use to enable clinicians to increasingly work with patients in a hybrid manner, both in-person and online, depending on mutual choice and accessibility. Technologies in health and social care must explore whose interests are served by different arrangements and eventualities.

The fourth generation paradigm will be illustrated by a new programme of research led by Professor Greenhalgh and funded by the Wellcome Trust which commenced in 2015: Studies in Co-Creating Assisted Living Solutions.

INTERNATIONAL KEYNOTE ADDRESS

MONDAY 30 OCTOBER 2017, 9.25AM

PROFESSOR JANE CLEMENSEN

Odense University Hospital, University of Southern Denmark, Odense, Denmark

Professor Jane Clemensen is an Associate Professor and Head of Clinical Research at Centre of Innovative Medical Technologies (CIMT) and has more than 13 years' experience with telemedicine research and Participatory Design. She is currently associated with 6 PhD students of whom she is the main supervisor for five.

Jane's research projects all have a starting point in the clinical practice, and involvement of all stakeholders including patients and relatives. They all revolve around the research design called Participatory Design (PD). Projects that use PD start by identifying and analyzing the clinical problem or challenge and from that develop a solution or technology. This is in contrast to many projects that start by identifying a technology and wanting to find a clinical environment to test it in. PD is a well-known design, especially within computer science, and has also proven to be an appropriate research design within health technology. Jane applied this design for the first time in a health science context in 2003 in her own PhD project and she is a pioneer both in the field of Health Technology and Participatory Design in Health Sciences.

Presentation Title: Change through Collaboration

Collaboration in clinical research is very important – and this will be described with examples of telehealth research involving a range of specialties. What each of these has in common is the research design: Participatory Design which has proven successful when the aim is to qualify the health services by collaborating with patients, relatives and their clinicians in creating new solutions with telemedicine as a tool. In Participatory Design projects technology is developed due to a new solution to a challenge or a problem. Working together with the stakeholders and an IT company we create the technology and the organizational changes together. Thus, user activities are a key point when being a Participatory Design researcher.

What we have discovered in our studies is a clear gap between the system and the lives of the patients. The system seems to focus on documentation and standardized care and treatment, and seems to focus much less on the relationship with their patients/relatives. How do we get care back into the relationship? We are building new hospitals and they all have less capacity than the ones they replace. At the same time the older generation is increasing with a higher demand for health care services. How do we prepare for the new hospitals and how can we work together to change mind-set and thereby the way we are offering health care services?

In Denmark, all hospitals have strategies which place a strong focus on patient involvement and a vision about: "The Patient First", but how does this translate into everyday practice? There is an important need for a change in the mindset of organizations – which promotes empowerment of the staff and management rather than just empowerment of the patient.

LOCAL KEYNOTE ADDRESS

TUESDAY, 31 OCTOBER 2017, 9.10AM

DR KIM WEBBER

Australian Digital Health Agency, New South Wales, Australia

Dr Kim Webber is the General Manager of Strategy at the Australian Digital Health Agency overseeing the development of the National Digital Health Strategy, policy, privacy, program delivery and benefits portfolios. Kim brings a rural and remote perspective to the Agency's work and leads the telehealth workstream for the Agency. Kim was previously CEO of the National Rural Health Alliance and CEO of Rural Health Workforce Australia. She was also a technical advisor to the World Health Organization on the rural health workforce review.

Presentation Title: My Health Record and the Digital Health Strategy for Australia

The National Digital Health Strategy – Safe, seamless, and secure: evolving health and care to meet the needs of modern Australia - identifies seven key priorities for digital health in Australia including delivery of a My Health Record for every Australian by 2018 – unless they choose not to have one.

More than 5 million Australians already have a My Health Record, which provides potentially lifesaving access to clinical reports of medications, allergies, laboratory tests, and chronic conditions. Patients and consumers can access their My Health Record at any time online or on their mobile phone.

The Strategy will also enable paper-free secure messaging for all clinicians and will set new standards to allow real-time sharing of patient information between hospitals and other care professionals.

The Strategy will prioritise development of new digital services to support newborn children, the elderly, and people living with chronic disease. It will also support wider use of telehealth to improve access to services, especially in remote and rural Australia and set standards for better information sharing in medical emergencies – between the ambulance, the hospital, and the GP.

The Strategy was developed by all the governments of Australia in close partnership with patients, carers and the clinical professionals who serve them – together with leaders in industry and science.

The Strategy draws on evidence of clinical and economic benefit from many sources within Australia and overseas, and emphasises the priority of patient confidentiality as new digital services are implemented. The ADHA has established a Cyber Security Centre to ensure Australian healthcare is at the cutting edge of international data security.

The Australian Digital Health Agency, which has responsibility for co-ordinating implementation of the strategy, is now consulting with partners across the community to develop a series of Frameworks for Action. The Frameworks will start to be published later this year to inform implementation of the strategy.

LOCAL KEYNOTE ADDRESS

TUESDAY, 31 OCTOBER 2017, 3.15PM

MELISSA VERNON

WA Country Health, Western Australia, Australia

Melissa Vernon is the Chief Operating Officer – Strategy and Reform for the WA Country Health Service. She has an extensive background in health-related leadership and executive positions in country WA with a mix of private, public health service, academic and clinical roles.

Melissa has worked extensively in consumer and community advocacy and leadership particularly related to health service equity, reform and improvement. Her work in this area has been recognised through three awards; the Health Consumer Council Award for Excellent Service to Consumers, the WA Director General of Health Award and the Australian Public Sector Medal.

Melissa's focus on equitable health service access for country communities has provided leadership for the successful development of telehealth services across country WA. Achieving equity of access for the country population of 532,000 dispersed across 2.55 million sq kms offers opportunity for innovative and technological solutions that foster multiple service provider and patient relationships and effective service pathways.

Presentation Title: The WA Emergency Telehealth Service: From initial perceptions to today's success

Country WA has a population of 532,000 spread across 2.55 Million sq kms. It is no small feat to achieve a reasonable level of health service access for such a distributed population that like most rural and remote communities has significantly poorer health outcomes.

The WA Emergency Telehealth Service (ETS) started with at least one country community member sceptical about the impending service;... "A way of those in Perth getting rid of country GPs"... that perception was his reality until he became a consumer and advocate. Medical specialists not convinced that emergency medicine could be safely and successfully delivered by videoconference stood back while a few change ready champions knew its potential and leapt in to cover the roster.

Since August 2012 the WA ETS has provided over 52,000 consultations to 76 small country hospitals and nursing posts. The ETS supports country clinicians to save lives and improve health outcomes, it demonstrates capacity to reduce unnecessary transfers and ensure required transfers are coordinated effectively with the right level of communication to achieve a safe transfer and handover.

Patients praise the service and speak of the difference it made to their situation. Country nurses, doctors and health leaders join the patients in recognising the difference the service has made for their confidence and ability to provide a reliable safe service for every patient that presents. No longer are they alone to deal with emergencies or complex conditions for which they have previously felt entirely responsible. Their confidence and their clinical capacity has increased and this has anecdotally affected their job satisfaction and decisions about staying in the country.

The ETS service architecture and model provides the basis for the addition of other specialties and acute inpatient services for times when the GP is not available. Far from replacing GPs, these services support both nurses and doctors to provide a range of services to their patients and communities, offering clinical expertise and back up. Real time education on location and separate videoconference education sessions meet their ongoing upskilling needs.

The Emergency Telehealth Service won the WA Premier's award for "Improving Government" in November of 2014.

NOTES

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ORAL PRESENTATIONS

Effectiveness of Mobile-Based Interventions on Health Behaviour Change in People with Diabetes: An Overview of Systematic Reviews

Azam ASLANI[1], Mahsa ROOZROKH[2], Elahe HOSSEINI[2], Farhad FATEHI[3]

1. Health Human Resources Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
2. Student Research Committee, Shiraz University of Medical Sciences, Shiraz, Iran
3. Centre for Online Health, The University of Queensland, Australia

Background / Objective
Over the past decade, mobile-based interventions have been increasingly used for health behaviour change, to foster the self-management of people with diabetes. However, the effectiveness of such interventions varied due to methodological quality of the studies and use of additional methods that may promote behaviour change. This study reviewed systematic review articles to assess the effectiveness and best practice of mobile-based interventions for achieving health-related behaviour change in diabetes.

Methods
We considered systematic reviews (SRs), and meta-analyses that were published since 2006 in peer-reviewed journals or the Cochrane Library, in which mobile-based interventions were the only or one of the main interventions under study. Out of 366 retrieved records from our electronic search, 19 systematic reviews were eligible and included in this review.

Results
The most common mobile-based interventions were various kinds of text-messaging (tailored, reminder, educational, unidirectional, and bidirectional SMS), and smartphone apps. Adherence to medication (12SRs), Physical activities (10 SRs), and diet (5 SRs) were the common health behaviour outcomes that were assessed. Most studies (10 SRs) reported a significant improvement on adherence to medication, but two SRs did not report clear effect. Significantly improved in diabetes physical activity was reported in two SRs, whereas eight SRs report didn't mention a significant effect. Tailored or Personalized text messaging was commonly used for improving adherence to medication. The combination of interactive Web site and text messaging (as a reminder or feedback) the effective in improving physical activity in diabetes. The Social Cognitive Theory, and Health Belief Model, were used as the theoretical basis in several SRs. Duration of the interventions ranged from 3 to 52 weeks.

Conclusion
Mobile-based interventions, especially personalized text-messaging have successfully improved medication adherence and promoting healthy diet but its role in improving physical activity was not conclusive.

Correspondence:
Azam Aslani
Health Human Resources Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
azamaslani@gmail.com

A Review of Telemedicine and E-health in Iran as a Developing Country: Situation and Challenges

Alireza ATASHI[1], Kambiz BAHAADINBEIGI[2], Sina MARASHI[1], Fatemeh HAJIALIASGARI[1], Najmeh NAZERI[3], Sra DORRI[3]

1. Virtual School, Tehran University of Medical Sciences, Tehran, Iran
2. Kerman University of Medical Sciences, Kerman Province, Iran
3. Motamed Cancer Institute, ACECR, Tehran, Iran

Aim
Although the progress in medicine is significant in Iran, no comprehensive application of medical information systems or technology-based health services is found. In fact, the situation of such services is unclear. The aim of this study is to review the Iranian researches, activities and progress in telemedicine and to address the barriers and challenges.

Methods
A general search was performed in PubMed, Scopus, Google Scholar, Web of Science and three other Iranian databases up to May 2017, using proper keywords for related studies and in Google and Bing for notable activities and projects. Some interviews with elites were conducted to study the related activities and documents. All results were studied carefully by two or three authors in three steps and included with the whole team consensus. The results were categorized in three groups of A, B and C considering the methods, reporting quality for studies, the scope and success for the projects. Finally, the useful information extracted, aggregated and reported.

Results
The total number of collected studies was 5470 but 42 English and 8 Persian studies were included; and out of that number only 13 were categorized in group A, having proper method and reporting. All of them were studies in terms of usage and evaluation of technology for imaging, sound and patient data transfer, without reporting any comprehensive deployment. No significant telemedicine project by medical sciences universities was found, but two large projects by Admiralty and Oil ministry have provided medical services for agents and navy sailors on ships and derricks. There is a general upper hand constitution but no authorized rule covering e-health or telemedicine. The other challenges are budget and denial by patients.

Conclusion
The status of telemedicine is not suitable in Iran in terms of research and services. More efforts are needed to provide guidelines and facilitating

Correspondence:
Alireza Atashi
Virtual School, Tehran University of Medical Sciences, Tehran, Iran
smatashi@yahoo.com

Design of a Telehealth Virtual Support Groups Intervention for Carers of People with Dementia

Annie BANBURY[1]

1. CQUniversity, Queensland, Australia

The disease burden of dementia is continuing to grow in Australia and is expected to reach over 500,000 people by 2025. In rural Australia, knowledge and utilization of support by informal caregivers of people with dementia (PWD) is lacking. Research suggests that socio-emotional support from family and friends play an important role in sustaining caregiving activities. In addition, these support networks assist in the successful transition though the post-care period and adjusting to changes in role and grief. Rural areas are disadvantaged in accessing traditional face-to-face support groups and using group videoconferencing (VC) may overcome known barriers. Trials of providing caregivers support programs by VC indicate encouraging results but few, if any, have been implemented in rural Australia. This project will combine the evidence from two recent research projects (TeleHealth Literacy Project and After the Dementia Carer Journey Has Ended) to collaboratively co-design and evaluate a facilitated VC peer support and information program to carers of PWD within rural areas. The study will be a mixed methods repeated measures randomised wait list design, with primary outcomes of self-efficacy, quality of life and mental health and secondary outcomes of perceived social support and user satisfaction with the technology and intention to continue to use. Participants will be recruited through the Community Care Smart Assistive Technology Collaborative platform and providers. To develop the intervention carers for PWD will be recruited take part in a series of co-design workshops. An evidenced based co-design framework will be developed utilising strategies such as pathway and experience mapping, vignettes, problem and solution ranking and reflection on health literacy and service needs. The project will utilise off-the-shelf technology rather than customised solutions. A focus of the project will be understanding IT and IT support requirements for delivering group VCs.

Correspondence:
Annie Banbury
CQUniversity, Queensland, Australia
a.banbury@cqu.edu.au

The General Practitioner's Perspective on E-health and Lifestyle Change - a Qualitative Interview Study

Carl BRANDT[1], Jane CLEMENSEN[2], Gabrielle Isidora SØGAARD[3], Jens SØNDERGAARD[3], Jesper BO NIELSEN[3]

1. University of Southern Denmark, Funen, Denmark
2. Centre for Innovative Medical Technology University of Southern Denmark, Denmark
3. Research Unit of General Practice, Dept. of Public Health University of Southern Denmark, Denmark

Background
Wearables, fitness apps and patient home monitoring devices are used increasingly by citizens and patients with lifestyle challenges. Ninety percent (90%) of all persons between 40 and 60 years of age prefer lifestyle change to medicine. All Danish general practitioners (GPs) use digital health records, but how they perceive the increasing demand for lifestyle advice and whether they see e-health as part of their lifestyle support should be explored further.

Objectives
To explore GP's perspectives on e-health and the use of e-health in supporting healthy lifestyle behaviour.

Design
Qualitative, semi structured, individual in depth interviews
Setting and participants: Ten GPs in the Region of Southern Denmark, Denmark.

Results
All GPs had smartphones or/and tablets and everyone communicated on a daily basis with patients about disease and medicine via Internet or smartphone. Most GPs used e-health to improve their own health, but only used e-health rarely for their patients and only in a one-way communication recommending homepages etc. even though all GPs used coaching techniques, discussed reachable goals, used measurable outcomes and valued the importance of appraisal both in relation to patients' and their own health.

Conclusion
GPs used e-health and self-monitoring in relation to their own lifestyle, but only infrequently in relation to patients' lifestyle. Looking ahead, education of GPs and recognising patients' ability and preference to use e-health with regard to a healthy living is needed.

Correspondence:
Carl Brandt
University of Southern Denmark, Funen, Denmark
cbrandt@health.sdu.dk

Evaluation of the Implementation of Telehealth Dysphagia Services within 5 Health Districts Across Queensland Health

Clare BURNS[1], Elizabeth WARD[2,3], Brooke COWIE[4], Kaia LEO[4], Robyn SAXON[4], Amy GRAY[4], Lisa BAKER[4], Jodie TURVEY[4], Samantha HENDREN[4], Natalie WINTER[4], Rukmani RUSCH[4],

1. Royal Brisbane & Women's Hospital, Queensland Health, Queensland, Australia
2. Centre for Functioning and Health Research, Queensland Health, Queensland, Australia
3. School of Health and Rehabilitation Science, The University of Queensland, Queensland, Australia
4. Queensland Health, Queensland, Australia

Background
The delivery of speech pathology services for dysphagia (swallowing impairment) are often impacted in non-metropolitan areas by: distance clinicians are required to travel; the geographical spread of the population to be serviced; and a lack of a locally available workforce. Recent research has validated a model for the delivery of dysphagia services via telepractice. The aim of this study was to examine the implementation of this telehealth model (delivered via hub and spoke) within 5 public hospital and health services in Queensland Health (QH). The purpose was to inform future service implementation and expansion.

Methods
Hub and spoke telepractice models for conducting dysphagia assessments were established at 5 QH services: Metro North, Sunshine Coast, Wide Bay, Southwest, and Cairns & Hinterland. Sessions were conducted using hardware videoconferencing systems connected via QH's Statewide Telehealth Network. After a minimum of 12 months post implementation, semi-structured interviews were conducted with key stakeholder staff from each service (n=9). Interviews were then coded using the Consolidated Framework for Implementation Research (CFIR), and the constructs and domains of the CFIR were then rated for influence (+ive, -ive) and associated strengths (2=strong, 1=weak, 0=neutral) on the implementation process.

Results
All hub sites were successfully established, though some experienced sustainability issues, and faced challenges at some spoke sites. CFIR domains found to be positive drivers for service implementation were: Innovation Characteristics; Outer setting; Inner setting, and Process. In particular, it was the CFIR constructs of: Design Quality & Packaging; Evidence Strength and Quality; Champions; and an External Change Agent which were perceived as key. Specific constructs which challenged implementation were: Structural characteristics and Available Resources.

Conclusions
The study revealed key factors which assisted the implementation and sustainability of telepractice models for delivery of dysphagia services. Findings can assist wider implementation of dysphagia services delivered via telepractice.

Correspondence:
Clare Burns
Royal Brisbane & Women's Hospital, Queensland Health, Queensland, Australia
clare.burns@health.qld.gov.au

Developing Video Conferencing for Remote Child Psychiatric Consultations in Pohjois-Savo, Finland

Kirsi BYKACHEV[1], Jussi KARPPI[1,2], Kirsti KUMPULAINEN[1,2], Hannele TURUNEN[1,2]

1. University of Eastern Finland, Pohjois-Savo, Finland
2. Kuopio University Hospital, Pohjois-Savo, Finland

Providing care on the local level and collaboration between primary and secondary healthcare are emphasized in the Finnish government program for 2015-2019. The Department of Child Psychiatry at Kuopio University Hospital provides treatment for children in the catchment area of approximately 60 000 km2. Long distances hamper providing care in the region Pohjois-Savo.

The aim of the “eHealth Services for Child and Adolescent Psychiatry (eCAP)” project implemented in Finland, Norway, Scotland and Sweden in 2015-2018 is to improve the child and adolescent psychiatry services in remote, sparsely populated areas with limited expert resources.

In Pohjois-Savo an online booking system and video conferencing service have been developed, allowing the staff in well-child clinics, school health care and family counselling clinics to contact specialists in child psychiatry for consultation, supervision or treatment. Online questionnaires are available for gathering pre-meeting information. Face-to-face training and manuals have been provided for over 150 professionals in 14 of 18 municipalities of the region to ensure smooth adoption and efficient use of the new tools. Feasibility of the service will be evaluated based on log data and user experiences.

However, the current software is revealed to be inflexible and clumsy. For example, automating the process of sending the questionnaire links to pursued respondents in a secure way has been challenging. Irrespective of provided training and extremely positive feedback by potential users, the service has not yet gained popularity, albeit the increased phone calls demonstrate high demand for child psychiatric consultations.

eHealth services may help by providing sufficient, timely care cost-effectively. However, developing feasible services takes a lot of time and resources, as human, cultural, organizational, juridical, technical and safety aspects must be considered. eCAP and other pilot projects provide valuable information about successes and failures in the development work, facilitating further improvement.

Correspondence:
Kirsi Bykachev
University of Eastern Finland, Pohjois-Savo, Finland
kirsi.bykachev@uef.fi

Stakeholder Perceptions of Telehealth for the Delivery of Allied Health Services to Children in Rural Communities

Jessica CAMPBELL[1], Deborah THEODOROS[2], Trevor RUSSELL[2], Nicole GILLESPIE[3], Nicole HARTLEY[3]

1. The University of Queensland, Queensland, Australia
2. School of Health and Rehabilitation Sciences and Centre for Research Excellence in Telehealth, Faculty of Medicine, The University of Queensland, Queensland, Australia
3. UQ Business School and Centre for Research Excellence in Telehealth, Faculty of Medicine, The University of Queensland, Queensland, Australia

Background
Telehealth can improve allied health service access for children in rural communities, yet telehealth implementation is reliant on multi-stakeholder adoption. Perceptions and willingness to use telehealth by key stakeholders including patients/clients, health care providers and community based referrers affect the uptake and sustainability of health care services offered via telehealth.

Objective
This study examines client, provider and referrer awareness, perceptions of and willingness to use telehealth in order to enhance allied health services to children in rural communities. A key aim is to identify stakeholder perceptions of barriers and facilitators to the adoption of telehealth.

Methods
This mixed methods study included thematic analysis of semi-structured interviews and quantitative reporting of survey responses from 38 stakeholders (12 clients, 16 providers, and 10 referrers) involved in the delivery of paediatric allied health services across 6 regions of Queensland, Australia.

Results
Awareness of telehealth was high across the stakeholder groups with 33 participants (87%) having heard of telehealth and 23 (61%) having used telehealth. Perceptions of telehealth varied across and within groups. Access to health services that would not otherwise be available was the most frequently identified advantage of telehealth (10 clients, 13 providers, 5 referrers) with inferior quality relationships and communication the most common disadvantage (8 clients, 6 providers, 1 referrer). Clients saw child engagement as both a barrier (n=8) and a facilitator (n=4) to telehealth use. Providers and referrers identified technology difficulties as a barrier and internal and external partnerships as a facilitator. Regarding participant willingness to use telehealth, 4 clients, 3 referrers and 1 provider were unwilling or unsure they would use telehealth, citing concerns about child participation, inferior quality relationships and communication, and inability to use physical touch.

Conclusion
This study highlights the importance of adopting a multi-stakeholder approach to understand and aid the uptake of telehealth innovations.

Correspondence:
Jessica Campbell
The University of Queensland, Queensland, Australia
jessica.campbell@uq.net.au

The Effectiveness of E-Interventions on Reducing Social Isolation in Older Persons: A Systematic Review of Systematic Reviews

Jennifer CHIPPS[1], Ann JARVIS[2],

1. University of the Western Cape, Western Cape, South Africa
2. University of KwaZulu-Natal, Durban, South Africa

Background
Globally older persons (60+) are a rapidly growing population group with evidence of increased social isolation and loneliness in this group, especially for older people living in residential care settings. To facilitate a mobile intervention for social loneliness, a systematic review of interventions to reduce loneliness in older people was conducted.

Aim
To review the evidence of the effectiveness of e-interventions to decrease social isolation/loneliness for older people (60+), living in community/residential care.

Methods
A systematic search of 12 databases for articles published 2000-2017 in English using search term synonyms for older people and social isolation and e-health. Three independent researchers screened articles and extracted data. An initial search of systematic reviews was conducted. Based on the high number of systematic reviews found, the search was restricted to systematic reviews. The R-AMSTAR was used to assess quality of reviews.

Results
The initial search revealed 11 articles which included an e-intervention. After R-AMSTAR review, 10 met criteria of adequate quality. E-Interventions included: video conference and or phone support, computer and Internet training, web and phone-based apps, virtual pets, games and robotics. Loneliness was most frequently measured using the UCLA scale, yet critiqued as insensitive to change. Intervention had medium or high level of bias with short term efficacy seen after 6 weeks, yet longer sustained studies were less evident. Rigour lacking in e-intervention studies was identified with need for interventions being accompanied by evidence facilitating conditions. Mobile phones were untapped source for interventions for social isolation.

Conclusion
There is potential for developing interventions to address social isolation and loneliness using mobile phones combined with face-to-face contact.

Correspondence:
Jennifer Chipps
University of the Western Cape, Western Cape, South Africa
jchipps@uwc.ac.za

Dental Health Services Victoria's Tele-Dentistry Pilot Program: Implementation and the Way Forward

Diane COLLINS[1], Hanlie ENGELBRECHT[1], Nicole HEAPHY[1]

1. Dental Health Services Victoria, Victoria, Australia

Rural and remote communities experience geographic challenges accessing oral health services. In 2015, the Department of Health and Human Services funded Dental Health Services Victoria (DHSV) to implement a Tele-dentistry pilot program. The aim of this program was to enable patients to receive specialist advice and/or advanced care through a clinical alliance between dentists at Community Dental Clinics (CDC) and the Specialists from the Royal Dental Hospital Melbourne (RDHM).

The pilot program included four rural CDC, equipped with suitable videoconferencing facilities. The main difference between this and other Tele-dentistry programs is that the RDHM Specialists participated in 'real-time consultation' with the patient and their dentist, in comparison to a patient by themselves or with a dental nurse. The pilot program included specialists from Oral Medicine, Oral Surgery, Endodontics, Orthodontics, and Paediatric Special Needs departments.

The Tele-dentistry program facilitated the development of comprehensive treatment plans in collaboration with the patients, their dentists and the RDHM Specialists. The program enabled 56 patients to be seen at their local CDC. Of these, 42 were able to complete their care at the CDC with 14 requiring an appointment at the RDHM. Patients and clinicians described their experience as 'positive' and expressed satisfaction with the services provided, including the convenience of receiving specialist care at their local CDC.

The Tele-dentistry program enabled the delivery of true patient-centred, integrated care. The collaboration between patients, dentists and RDHM Specialists allowed the delivery of right care, by the right staff at the right place. Tele-dentistry is an essential tool in providing value-based care for patients. With DHSV's strong focus on value-based health care, it is recommended that Tele-dentistry is rolled out to all public dental clinics across Victoria. This will allow integrated delivery of care while creating regional care pathways that link RDHM with regional CDC.

Correspondence:
Diane Collins
Dental Health Services Victoria, Victoria, Australia
diane.collins@dhsv.org.au

Silver Connections – Linking Country SA General Practitioners (GPs) with Residential Aged Care Facility (RACF) Residents Via Telehealth.

Noelene COOPER[1]

1. Country SA PHN, Nuriootpa, South Australia, Australia

Country SA PHN covers 99.8% of the State's geography with approximately 30% of South Australia's population. Most after-hours care in country SA is provided by GPs through an on-call service at the local hospital; often in a co-operative arrangement with GPs from neighbouring towns. For residents of RACFs assessment at the hospital by the GP requires transfer by ambulance. Within the Country SA PHN region there are just over 100 RACFs serviced by approximately 177 general practices. Across SA there are approximately 108 Ambulance Stations, 70 of these are rural and remote which are staffed by 1500 volunteers.

The Better Health Care Connections Pilot Project-Silver Connections which was established by the Country North SA Medicare Local and continued under the Country SA PHN, provided nurse supported video consultations, during business hours between GPs and RACF residents. Country SA PHN then extended the project under their After-Hours funding to include after-hours video consultations.

This presentation will focus on the outcomes that were demonstrated by the Silver Connections project:

- timely access to GPs.
- reduction on requests for face to face after-hours consults.
- reduction in unnecessary ambulance transfers to hospital for elderly unwell RACF residents.
- a positive impact on hospital admission rates.

Correspondence:
Noelene Cooper
Country SA PHN, Nuriootpa, South Australia, Australia
ncooper@countrysaphn.com.au

Home Telehealth for the Non-Surgical Management of Chronic Spinal Pain Patients: A Service Evaluation.

Michelle COTTRELL[1], Perry JUDD[1], Mark CRUICKSHANK[1], Trevor RUSSELL[2],

1. Royal Brisbane & Women's Hospital, Queensland, Australia
2. The University of Queensland, Queensland, Australia

The Spinal Physiotherapy Screening Clinic (SPSC) was established at the Royal Brisbane & Women's Hospital in late 2014 as a result of escalating Neurosurgical and Orthopaedic specialist outpatient waiting times. The primary objective of this clinic is for non-urgent spinal pain patients to access earlier assessment and case management by an advanced-scope physiotherapist. Whilst the majority of patients are recommended non-surgical management, over 40% reside in regional and rural communities where access to appropriate services is often severely limited.

The SPSC Telehealth Clinic was developed in response to this issue, commencing clinical activity in February 2017. The service is delivered by a multidisciplinary team comprising of physiotherapy, clinical psychology, occupational therapy, nutrition & dietetics, and pharmacy in a 2-day per week clinic. Patients are able to access their therapists via a web-based videoconferencing platform from their own Internet-enabled computer device, in the convenience of their own home. Since commencement more than 130 patients have been referred and over 500 individual appointments have taken place.

To our knowledge, the SPSC Telehealth Clinic is the first in Australia to provide a pragmatic, real-time multidisciplinary allied health telehealth service to patients with chronic spinal pain conditions. It is also one of the first clinics in which the patient is located within their home, using their own Internet-enabled computer device. Throughout this process, the I2I-4-Telehealth framework has been utilised to guide the development, implementation and evaluation of this innovative model of care, allowing for key facilitators and barriers to be identified and acted upon in a timely manner. Despite initial success in the adoption and acceptance of Telehealth as an alternative method of service delivery, a number of obstacles still need to be overcome before the clinic can be fully embedded within the existing SPSC service.

Correspondence:
Michelle Cottrell
Royal Brisbane & Women's Hospital, Queensland, Australia
m.depaauw@uq.edu.au

Telehealth Portal Benefits and Barriers in the MNHHS

Linda CUSKELLY[1], Elizabeth DAVIS[1]

1. Metro North Hospital Health Service, Queensland, Australia

Clinical Operations Strategy Implementation (COSI) sent an Expression of Interest via communications to all staff within our Metro North Hospital Health Service regarding new technology available. The new technology is the QHealth Telehealth Portal. The portal is a new safe way to videoconference into non-government organisations (NGOs), patients in their homes and GPs as long as they have adequate internet connectivity.

COSI received thirty-four submissions in total. The Telehealth Coordinator & Support Officer is currently working with eighteen groups to start using the Telehealth Portal into patient's homes, Residential Aged Care Facilities and General Practitioners. The aim for using the Telehealth Portal is to reduce the number of patients physically coming into an outpatient setting and will assist with Emergency Department avoidance.

The presentation will look at the barriers and the successes of the Telehealth Portal services within Metro North Hospital Health Services. Who has started and who is about to start

The benefits of using the Telehealth Portal have been; improved patient journey, timely access to treatment, reduced time off work for patients, their carers and family members, hospital avoidance, cost savings to both patient and QHealth, ability to connect others (other QHealth clinicians, external clinicians, family members) into the videoconference using Virtual Meeting Rooms.

Some of the barriers to date have been; older cohort of patients who don't have computer or smart devices at home, poor internet connectivity in some areas, RACFs not having devices or computers, patients not following instructions for set up as well as some resistance from some staff in some of the departments.

Correspondence:
Linda Cuskelly
Metro North Hospital and Health Service, Queensland, Australia
Linda.Cuskelly@health.qld.gov.au

Mobile Applications for Diabetes Mellitus Self-Management: A Systematic Narrative Analysis

Anthony DEACON[1]

1. The University of Queensland, Queensland, Australia

Aim
Mobile applications for diabetes self-management have a variety of different functions. Their role in disease management is poised to take on an increasingly important role, as the prevalence of glucose metabolism disorders and the use of mobile technology rises. Recently, several systematic reviews have presented different taxonomies of classifying mobile applications used in diabetes management, however, no studies have been conducted in an Australian context. The aim of this study was to (a) classify the functionality of the most popular mobile applications for diabetes management in Australia according to these taxonomies, and (b) explore relationships between functional classification, target population and application popularity.

Methods
A search of the Australian Apple App Store and Google Play Store was conducted to identify the 50 most popular applications tagged with the keyword 'diabetes'. These applications were then classified according to platform, target population group, the AADE7 Self-Care Behaviours, two previously published taxonomies, and gamification features. Ratings and user reviews were extracted using a script and analysed using NVivo.

Results
Most applications were designed for adults and adolescents, with only 1 of those identified specifically targeting children and 3 targeting careers. The most common AADE7 self-care behaviours promoted by applications were monitoring and medication tracking, with features that promote problem solving and healthy coping least likely to be included. Similarly, taxonomic classification showed BSL logging, insulin logging, and data visualization to be the most common functionality included. Few applications included interactive telemedicine methods, such as remote clinician support or social support, however approximately half had store-and-forward functionality. Few applications (<10%) used a gamified experience to encourage continued user interaction.

Conclusion
Results suggest the use of mobile applications is common in the Australian population, with most users using them as a replacement for paper-based logbooks. Thus, further evidence regarding the impact of this on clinical outcomes is needed.

Correspondence:
Anthony Deacon
The University of Queensland, Queensland, Australia
a.deacon@uq.edu.au

Outreach Rehabilitation Services

Shane DELVES[1]

1. Murrumbidgee Local Health District, New South Wales, Australia

The Murrumbidgee Local Health District (MLHD) cover a geographical area of ~125,000 square kms. Ensuring patients have equitable access to services is a challenge with many patients remaining in larger hospitals to receive treatment and ongoing rehabilitation. The MLHD Outreach Rehabilitation Service provides outreach rehabilitation services to those who have been discharged from Wagga Wagga Rural Referral Hospital (WWRRH) either back home, or to their local facility. The service now utilises local Allied Health Assistants at the patient end to provide face to face management with allied health professionals (Physiotherapy, Occupational therapy) and the Rehabilitation Consultant connecting via Telehealth. This has allowed patient to be managed in their local community, while also improving patient flow in the larger rehabilitation unit. The service utilises the PEXIP platform to connect clinicians and patients who use a range of hardware solutions that are fit for purpose.

Correspondence:
Shane Delves
Murrumbidgee Local Health District, New South Wales, Australia
shane.delves@health.nsw.gov.au

Employment and Future Aspirations: Healthcare Workers' Perceptions of a Formal E-Health Education Program

Sisira EDIRIPPULIGE[1], Anthony SMITH[1], Nigel ARMFIELD[2]

1. Centre for Online Health, The University of Queensland, Queensland, Australia
2. The University of Queensland, Centre for Clinical Research, Queensland, Australia

Background
Properly integrated, the use of e-Health may bring improvements to the quality and efficiency of health services. As part of this integration, whether by formal or on-the-job training, the health workforce will require new knowledge, skills and competencies to work best within the digital health system; the effects of such training should be assessed. By surveying graduates of a postgraduate (Graduate Certificate, Diploma, and Masters) e-Healthcare program, this study aimed to assess perceptions of the influence of the program on their professional careers.

Methods
An online survey of all graduates (n=52) from a postgraduate program in e-Healthcare offered during 2010-2015. The survey collected participants' perceptions about the influence and benefits of the e-health program on their current employment, and their future professional aspirations.

Results
Response rate was 35/52 (62%); 23/35 (66%) have worked in employment involving e-Health following graduation and the majority of respondents (22/52; 63%) believed that the education program had positively influenced their careers. Examples of employment included clinicians using e-Health in their practice, project management, telehealth coordination and technical roles, health information management, and academic research. Most respondents (26/35; 74%) indicated that the study had provided them with a foundation for their future professional aspirations.

Conclusions
This is the first study to examine perceptions of the influence of formal e-Health education and training on healthcare workers, subsequent professional practice. Respondents were overwhelmingly positive about the role of e-Health focussed education on their current employment and future professional aspirations.

Correspondence:
Sisira Edirippulige
Centre for Online Health, The University of Queensland, Queensland, Australia
s.edirippulige@uq.edu.au

Road Deaths Relating to the Attendance of Medical Appointments in Queensland

Phillip GREENUP[1], Boyd POTTS[2], John HADOK[3]

1. Queensland Health, Queensland, Australia
2. Australian Institute for Suicide Research and Prevention, Queensland, Australia
3. Mackay Hospital and Health Service, Queensland, Australia

New Telehealth models of care face scrutiny from a variety of perspectives when considered by clinicians and administrators. Concerns regarding patient safety are often raised and may take the form of identifying possible risks to data integrity and confidentiality, the support of the patient with appropriate clinical staff, reliability of technology or an availability of validated evidence. Less often considered are current practices and the inherent risk patients are required to accept when travelling by road.

Analysis of traffic-related mortality data reveal the frequency in which patients and/or family members are killed travelling to, or returning from medical appointments in Queensland. Speeding to make appointments, adverse weather conditions and fatigue are on occasion specifically mentioned as contributing factors to these events by survivors or investigators. Possible limitations of the analysis and implications of the outcome are discussed.

Correspondence:
Phillip Greenup
Queensland Health, Queensland, Australia
phil.greenup@health.qld.gov.au

Blended Medicine: Lessons Learned from a Combined Telehealth Service

Sean HALLORAN[1]

1. Centre for Online Health, The University of Queensland, Queensland, Australia

In 2015, the Telehealth Centre at the Princess Alexandra Hospital developed a novel service-model bringing together seven different medical specialty areas into a single telehealth service. It was envisioned that, by combining multiple specialty-specific clinics into a single service, multiple benefits would be achieved including: administrative cost efficiencies, improved access for rural/remote patients with no local access to specialists and the opportunity for clinicians unwilling to substitute existing face-to-face clinics with telehealth because of perceived risks to practice telehealth in a supported environment. Two years on, the service has been moderately successful and immensely popular with the patients who are offered the service. However, it has faced numerous challenges including uneven engagement of specialties within the service, distal site specific challenges and the failure to achieve the envisioned administrative efficiencies due to the unique requirements of each specialty. In this presentation, we will cover the history of the project, the challenges which were faced across each of the specialties and what lies ahead for this service.

Correspondence:
Sean Halloran
Centre for Online Health, The University of Queensland, Queensland, Australia
s.halloran1@uq.edu.au

The Evolution and Workflow of the Princess Alexandra Hospital's Skin Emergency Teledermatology Service

Mariya HAMID[1], Peter SOYER[1], Gregory SILLER[1], Anna FINNANE[2]

1. Princess Alexandra Hospital, Queensland, Australia
2. The University of Queensland, Transitional Research Institute, Queensland, Australia

Aim
To evaluate the functioning of Princess Alexandra Hospital's Skin Emergency Teledermatology Service, and compare service outcomes to previous years.

Methods
A retrospective audit was performed on all cases referred to the Princess Alexandra Hospital Skin Emergency Teledermatology Service from 1st January to 31st December 2016, assessing the number of referrals, referral sites, type of clinical presentations, and follow-up outcomes. We compared these results to previous audits performed between 2008 and 2014.

Results
The service received 545 referrals in 2016, which was a 1.7 fold increase compared to 2014 (n = 318). There were 36 referral centres, that were located as far as 1861km away from Princess Alexandra Hospital. In 90% of cases, a provisional diagnosis was able to be made based only on the Teledermatology referral information and clinical photographs provided. Since 2012, the pattern of types of referring presentations have remained consistent, with the top three provisional diagnoses being: skin infection, dermatitis, and drug reactions. Half of the patient referrals (n=271) were able to have ongoing monitoring with their general practitioner, whilst one third of patients (n = 185) required further outpatient dermatology consultation.

Conclusion
The Princess Alexandra Hospital's Skin Emergency Teledermatology Service has continued to grow in both number and the geographical radius for which it services. By providing management suggestions and streamlining their follow up, patients are less likely to be waiting unnecessarily for outpatient appointments, or travelling long distances for conditions that may safely be managed by the general practitioners. It further facilitates management and transfer of patients who require urgent Dermatology review, improving patient safety. Hence, the available data suggests that it is a sustainable and successful service that assists with resource-allocation. Future studies that examined the costs of the service, alongside the patient and health-service outcomes could further provide insight.

Correspondence:
Mariya Hamid
Princess Alexandra Hospital, Queensland, Australia
mariyafarah@live.com

TeleCARE for Country Kids: A Case Study on the Role that Telehealth Coordinators Play in Ensuring Growth and Sustainability of a Schools-Based Tele-Allied Health Model

Rebecca HAMMOND[1]

1. Royal Far West, New South Wales, Australia

The role of the 'Telehealth Coordinator' is relatively new in the digital health space. Despite limited global understanding of what a 'Telehealth Coordinator' should do, early studies have indicated that the role may be pivotal in determining the success or failure of a telehealth model. This case study looks at the evolution of this role through the eyes of a practicing telehealth coordinator, working on Royal Far West's (RFW) multi-disciplinary, school-based 'Telecare for Kids' program, providing services to children in rural and remote areas of Australia.

Approach/method
The case study explores, from the perspective of a RFW 'Telecare Coordinator', how their role has evolved over time, using process monitoring in the practice, evaluation and adaptation of 'Telecare'. The clinical insight required at the point of intake, program identification and through to managing client expectation throughout assessment and therapy has evolved the way this role is recruited.

Findings
The RFW 'Telecare Coordinator' role requires a complex set of highly adaptable technical, client relation, customer service and training skills, as well as an understanding of clinical settings and building capacity of key stakeholders in community. Key attributes include the ability to contribute to continuous quality improvement and service enhancement, and to be resilient, flexible and responsive to stressors and change in the fast-evolving digital health space.

Conclusion
Through evolving this role over the past 5 years, RFW has developed a deep understanding of the key position of this role in supporting the growth and success of a telehealth service. This knowledge is used to inform RFW Telecare workforce recruitment and the development of standardised operational procedures and processes that integrate and embed the role as the service expands. Learnings from the RFW experience are important for organisations looking to establish or grow their telehealth service particularly in relation to staff retention.

Correspondence:
Rebecca Hammond
Royal Far West, New South Wales, Australia
rebeccah@royalfarwest.org.au

Telehealth and Autism: Are Telehealth Language Assessments Feasible and Well Tolerated by Students on the Spectrum?

Rebecca SUTHERLAND[1], David TREMBATH[2], Antoinette HODGE[1], Jacqueline ROBERTS[2]

1. Children's Hospital at Westmead, New South Wales, Australia
2. Menzies Health Institute, Queensland, Griffith University, Queensland, Australia

Aim
Telehealth has been used to successfully treat a range of communication disorders (including speech and language difficulties, and stuttering) with adults and children, but there is very little research regarding the use of telehealth to interact directly with children on the autism spectrum. This study aimed to evaluate the reliability and feasibility of telehealth language assessments for children on the autism spectrum compared with face-to-face assessment.

Method
The language skills of children with autism aged 9 – 12 were assessed using the Clinical Evaluation of Language Fundamentals – 4th Edition, delivered via a custom designed, web-based telehealth platform. An online speech pathologist delivered and scored 4 subtests of the assessment via telehealth, and a second speech pathologist delivered a further 2 subtests in a traditional face-to-face condition and co-scored the telehealth assessment. Method comparison analysis and Pearson's correlation have been used to determine level of agreement and reliability. Feasibility of telehealth delivery has been evaluated by comparing observational measures of children's behaviour, including attention and engagement, in the two conditions.

Results
To date, data has been collected and analysed for 9 children, with data for a total target sample of 14 to be reported in the presentation. Preliminary results show that reliability between the face-to-face and telehealth raw scores is very high with correlation coefficients between 1.0 and 0.95 across the five subtests. No difference in behaviour across the conditions has been found, suggesting that the assessments via telehealth are well tolerated by students on the autism spectrum.

Conclusion
Exploring how children on the autism spectrum respond to telehealth will help to develop and refine direct telehealth services for children and adolescents who are isolated by geography and other circumstances.

Correspondence:
Antoinette Hodge
Children's Hospital at Westmead, New South Wales, Australia
antoinette.hodge@health.nsw.gov.au

The Use of Telemedicine for Delivering Healthcare in Japan: Systematic Review of Literature Published in Japanese and English Languages

Jun ITO[1], Sisira EDIRIPPULIGE[2], Nigel ARMFIELD[2], Takeshi AONO[3]

1. Hyogo University, Kakogawa, Japan
2. Centre for Online Health, The University of Queensland, Queensland, Australia
3. Centre for Community-Based Healthcare and Welfare Professionals, Hyogo University, Kakogawa, Japan

Background
Japan has a reputation for being a technologically advanced country, and it has a strong cultural and health-system focus on prevention. In common with other countries, Japan has an ageing population and geographical impediments to health care access. The role of telemedicine within the Japanese health system may be of wide interest, yet it has not been comprehensively explored and documented. Thus, the aim of this Japanese-Australian collaborative study was to systematically review the Japanese and English language literature relating to the clinical use of telemedicine in Japan.

Methods
For studies published in Japanese, we searched Ichushi, and CiNii. For English language publications, we searched Cochrane Library, PubMed, Embase, and Web of Science. All peer-reviewed articles, describing the clinical use of telemedicine, published between January 2006 and December 2016 were included. Comparable Japanese and English search terms were used. Data on clinical area, study type, technology used, type of communication, and the outlet of publication were extracted. Studies were categorised and reported by prevention, screening, diagnosis, surveillance, and treatment depending on their primary aim. Results were tabulated.

Results
The search yielded 1293 records; 26 Japanese language and 15 English language articles were selected for review. A wide range of clinical areas were represented, however, aged care, home care and life-style related studies were dominant. More than 50% of studies related to prevention and surveillance. The majority of Japanese studies involved doctor-to-doctor communication. Smart phones and remote monitoring systems were the main types of technology used.

Conclusions
Most studies of telemedicine in Japan are published in the Japanese language and thus relatively inaccessible to the rest of the world; for the first time, this study has provided an overview of the clinical use of Telemedicine in Japan. The clinically related papers reflect the Japanese cultural focus on disease prevention and surveillance.

Correspondence:
Jun Ito
Hyogo University, Kakogawa, Japan
itojun@hyogo-dai.ac.jp

The Challenge in Establishing Teleaudiology for the Mater Cochlear Implant Clinic

Janeen JARDINE[1]

1. Mater Health Services, Queensland, Australia

Cochlear implantation is well recognised as an effective management option for adults with severe-to-profound hearing loss. There are two established public adult cochlear implant (CI) services in Queensland, both operating from Brisbane. Adults from all regions of Queensland travel to Brisbane to undergo assessment, surgery, rehabilitation and life-long maintenance of their CI. The Mater Cochlear Implant Clinic is the only service to offer outreach services. Where possible a CI audiologist travels to regional communities to provide face-to-face post-operative care, however as the number of implantees in Queensland grows new models of service delivery need to be being considered.

With the emergence of Telehealth as an effective alternative to face-face services in Brisbane, we commenced on the road to offer this service to our growing number of outreach clients. TeleMapping is the use of telecommunication technology to remotely map the cochlear implant recipient and has been shown to be a safe, viable option for providing post-operative “mapping” services. Communication via videoconferencing. The aim of the TeleMapping session (or Mapping session when done face-to-face) is to create and fine-tune an individualised implant program for the implantee. There have been a number of challenges in delivering this change in model of care both with technology required and with the change in delivery from face to face to via Telelink. In addition a number of clients are both blind and deaf so there is the additional complication of not being able to use lipreading to understand the instructions.

The aim of this presentation is to look at how these problems have been overcome, how this new service has been embedded into the normal activity; the steps that have been required to make this an acceptable change and finally the satisfaction of the clients.

Correspondence:
Janeen Jardine
Mater Health Service, Queensland, Australia
janeen.jardine@mater.org.au

TAKING IT TO THE STREET- Police Ambulance Early Access to Mental Health Assessment via Tele Health-PAEAMHATH.

Jay JONES[1], Elizabeth NEWTON[1], Leanne GOW[1], Anthony TOWNSEND[2], David HORSEMAN[3], Leanne JOHNSON[1]

1. Hunter New England Health, New South Wales, Australia
2. New South Wales Police, New South Wales, Australia
3. New South Wales Ambulance, New South Wales, Australia

Aim
The aim of the PAEAMHATH project is for Police and Ambulance during their early point of contact with a client, to initiate and gain fast, reliable access to specialised clinical mental health triage.

Methodology
Using telehealth technology, a trained mental health professional is available to assess the person and provide recommendation's about care to: the person/carer, Police and/or Ambulance. The PAEAMHATH project will access the Mental Health Line and the Northern Mental Health Emergency Care-rural Access Program (NMHEC-RAP) resource to:

- Provide recommendations of care to: patient/carer; Police and/or Ambulance on safe and timely health interventions/requirements;
- Support Police and Ambulance in how to work with mental health consumers, utilising best practice
- The PAEAMHATH project will be introduced in the Port Stephens catchment area.
- PAEAMHATH will provide triage initially to adults >18
- PAEAMHATH will be available 7 days per week, 24hours per day

Results
Since implementation April the 3rd 2017 The PAEAMHATH project has provided at home triage to 11 consumers (out of a possible 17), all of the 11 consumers were safely triaged to stay within the community and avoid a hospital transport with emergency services. It is important to note two eligible patients offered PAEAMHATH triage declined as they requested to go to hospital and transportation by NSW ambulance occurred.

All consumes were followed up within 48 hrs by the local community mental health care team after being referred by the PAEAMHATH project. Nine of the consumers had the PAEAMHATH triage commence by Police NSW and the remaining 2 consumers, triage commenced with NSW Ambulance. Previous to PAEAMHATH project implementation on scene time for Police NSW at the trial site with a consumer was approximately 3 hours and for Ambulance 75 minutes. PAEAMHATH has reduced the on scene time for Police to 36 mins on average and for NSW Ambulance 32 mins on average.

Correspondence:
Jay Jones
Hunter New England Health, New South Wales, Australia
Jay.jones@hnehealth.nsw.gov.au

Evaluation of the Initial 30 Days of a Telenursing System for Patients with CHF, DM, and COPD.

Takuya KANAMORI[1], Tomoko KAMEI[1], Yuko YAMAMOTO[2], Yuki NAKAYAMA[3], Nobuaki KAMEI[4], Ikuo TOFUKUJI[5], Noritaka NAKAJIMA[4]

1. St. Luke's International University, Tokyo, Japan
2. Musashino University, Tokyo, Japan
3. Tokyo Metropolitan Institute of Medical Science, Tokyo Japan
4. Meisei University, School of Engineering, Tokyo, Japan
5. Takasaki University of Health and Welfare, Gunma, Japan

Aim
The constant increase of patients with chronic heart failure (CHF), diabetes mellitus (DM), and chronic obstructive pulmonary disease (COPD) in the aging Japanese population can be addressed by telenursing, which enables assessment of patients' conditions without frequent outpatient visits. This study aimed to evaluate the initial 30 days of a telenursing system for patients with CHF, DM, and COPD.

Methods
We conducted telenursing based on home monitoring for patients with CHF, DM, and COPD. Participants' mental and physical data were collected once per day and monitored and triaged by telenurses using individually tailored practice protocols. If data triggered an alarm, nurses provided instruction by using phone call.

Results
Eleven patients (3 CHF, 5 DM, 3 COPD) with mean ages of 78.3 (CHF), 72.8 (DM), and 76.7 (COPD) participated. Based on telenursing practice protocol, all patients with CHF and COPD, and 80% of those with DM, triggered at least one alert during the 30-day implementation. Frequent causes of alerts included weight gain and leg oedema for patients with CHF, physical pain and physical fatigue for patients with DM, and physical pain and breathlessness for patients with COPD. Twenty percent of alerts were caused by misoperations, mostly within the initial 10 days of implementation. Nursing implementation was provided a mean of four times per patient during the 30-day implementation; frequent content comprised "water intake" and "physical activity" for patients with CHF, "walking steps" and "diets" for patients with DM, and "breathlessness" and "feeding" for patients with COPD.

Conclusion
Most patients triggered an alert and were instructed by telenurses at least once during the 30 days. Frequent causes for alerts were disease-specific symptoms and misoperations within the initial 10 days. Therefore, providing disease-specific instruction and enhancing instruction for operating a computer tablet during the initial 10 days of implementation is important.

Correspondence:
Takuya Kanamori
St. Luke's International University, Tokyo, Japan
takuya-kanamori@slcn.ac.jp

Improving Early Detection and Service Delivery in Child Psychiatry

Jussi KARPPI[1], Kirsti KUMPULAINEN[1,2], Kirsi BYKACHEV[2]

1. Kuopio University Hospital, Kuopio, Finland
2. University of Eastern Finland, Kuopio, Finland

Aim
To measure psychiatric symptoms and disorders using computerized structured instrument for gathering diagnostic data via Internet in order to improve early detection of psychiatric problems in children in primary care settings.

Methods
Prospective randomized controlled trial involving 246 participants aged 2-14 yrs. The assessment of psychiatric situation when the first clinical concern is raised will be performed in two groups (n = 123 for intervention group, n = 123 for control group). Instrument used in the intervention group is The Development and Wellbeing Assessment (DAWBA) which allows gathering psychiatric data from parents or guardians, teachers and young people themselves via Internet. The DAWBA generates computerized summary from the data and more specific clinical rating will be performed by the Child Psychiatrist. After rating, the analyzed information including clinical recommendations for further actions will be given to the referring professional in primary health care. The control group will be assessed as usual by the primary care professional. The Strengths and Difficulties Questionnaire (SDQ) will be used as a measurement of mental health in both groups at the beginning of the study as well as for the follow up after 6 six months. Also information about psychiatric service use will be gathered.

Results
The use of computerized screening instrument is expected to improve early detection of psychiatric problems needing specialist consultation and treatment. It is also expected that children in the intervention group will show less psychiatric symptoms in the follow up.

Conclusion
Early interventions are known to improve the outcome and shorten the treatment process of psychiatric disorders in children. Telehealth solutions could be suitable for detection of psychiatric problem at the early stage.

Correspondence:
Jussi Karppi
Kuopio University Hospital, Kuopio, Finland
jussi.karppi@kuh.fi

Telehealth is Improving the Lives of People in Northeast Victoria's Hume Region

Jane KEALEY[1], John ELCOCK[1], Margaret BENNETT[1], Jorge SILVEIRA[1], Helen HAINES[2]

1. Northeast Health Wangaratta, Wangaratta, Victoria
2. University of Melbourne Department of Rural Health, Victoria, Australia

Background
The Hume Telehealth Agency (HTA) based at Northeast Health Wangaratta (NHW) in the Hume region of Victoria was developed to facilitate and support telehealth activities in a broad range of settings. Incorporated into HTA is a new program -'Specialists To You' (S2U). This program complements other Victorian Department of Health and Human Services (DHHS) funded telehealth specialist clinics and the Health Direct Video Call program in Victoria. The HTA and S2U recognises that many Hume residents are not digitally enabled and provides a central contact point for patients, clinicians and health services to facilitate telehealth consultations for patients.

Aims
To ensure all patients in Northeast Victoria have access to an expanding range of digital health services.

Methods
In 2016 NHW partnered with the Royal Victorian Eye and Ear Hospital to establish a cochlear implant telehealth clinic and other outpatient streams. Telehealth partners also include the Victorian Comprehensive Cancer Centre, and in the Hume region the Murray Primary Health Network, one regional and two rural health services. Patients are supported in a variety of ways from the provision of contact details of a service provider, to offering video conferencing facilities, through to access to assisted specialist telehealth consultations. Rural and regional staff are trained by tertiary specialists to support the delivery of care through telehealth. In collaboration with the University of Melbourne Department of Rural Health, and the DHHS Telehealth Community of Practice a mixed methods evaluation is being planned to assess the impact of the S2U.

Results
Early feedback from patients and clinicians indicate high level support for telehealth services.

Conclusion
Telehealth not only prevents travel, it provides access to services which were previously unattainable for patients living in Northeast Victoria.

Correspondence:
Jane Kealey
Northeast Health Wangaratta, Victoria, Australia
jane.kealey@nhw.hume.org.au

Transition from a Single-Site Pilot to a State-Wide Telehealth Service: Experience from the Victorian Stroke Telemedicine program

Joosup KIM[1], Kathleen BAGOT[2], Dominique CADILHAC[1], Michelle VU[3], Les BOLITHO[4], Glenn HOWLETT[5], Justin RABL[6], Helen DEWEY[7], Peter HAND[8], Sonia DENISENKO[9], Geoff DONNAN[2], Chris BLADIN[2]

1. Monash University, Victoria, Australia
2. Florey Institute of Neuroscience and Mental Health, Victoria, Australia
3. Ambulance Victoria, Victoria, Australia
4. Melbourne University, Victoria, Australia
5. Echuca Regional Health, Victoria, Australia
6. Goulburn Valley Health, Victoria, Australia
7. Eastern Health, Victoria, Australia
8. Melbourne Health, Victoria, Australia
9. Victorian Stroke Clinical Network, Victoria, Australia

Background
The Victorian Stroke Telemedicine (VST) program provides rural hospitals in Victoria with access to a network of Melbourne-based neurologists via telemedicine. The VST program was piloted at a single site in 2010 and gradually expanded state-wide to operate at 16 sites in 2017. Scalability and sustainability of hospital programs are underreported in the literature. The aim of this paper is to summarise the factors that facilitated the state-wide transition of the VST program.

Methods
Process evaluation data were analysed to provide a summary of the lived experience of developing the VST program. Minutes of program management committees and working groups (Steering Committee, Management Committee and 6 working groups: site coordinators, education and communication, information technology, medical, research and evaluation and a financial sustainability group) and research field notes taken by project staff were examined and thematically summarised. Factors that enabled successful scaling of the program were presented in narrative form.

Results
Early co-design was vital for program development, establishment and sustainability. Governance committees included representatives from all major stakeholders. Co-ordination and collaboration between clinicians and health care workers with health services researchers, government and Stroke Foundation representatives expedited establishment of the program and facilitated problem solving and practical decision-making. Having site co-ordinators employed for the first 12-18 months at each site was also essential. Continuous collection and reporting of hospital performance data was encouraged. This real-time integration of evaluation findings ensured ongoing enhancements to the program were based on evidence as well as demonstrating the value of the program to stakeholders.

Conclusion
Integrated implementation of the VST program has resulted in 94% of Victorians being able to access a stroke specialist within an hour drive. Key elements of success in scaling the single-site pilot to a sustainable state-wide program include co-design, focussed working groups and iterative evaluation (action research).

Correspondence:
Joosup Kim
Monash University, Victoria, Australia
joosup.kim@monash.edu

Challenges and Opportunities in Delivering School-Based Allied Health Care via Telehealth

Danette LANGBECKER[1], Lisa GARNER[1], Monica TAYLOR[1], Liam CAFFERY[1], Anthony SMITH[1]

1. Centre for Online Health, The University of Queensland, Queensland, Australia

Children experiencing speech and language or other physical health problems in rural and remote areas often face issues accessing allied health therapies relating to availability, distance from and affordability of services. The UQ Centre for Online Health, in collaboration with the UQ Telerehabilitation Unit and schools from both Education Queensland and Toowoomba Catholic Education have developed a new service model for the delivery of allied health therapy via telehealth to children in Western Downs, Queensland. The model also supports the training of the next generation of allied health professionals and upskilling of school staff. Implemented in 2015, 595 consultations have been provided to 78 children across five schools during the first two years of operations. A number of lessons have been learnt in developing and implementing this model, particularly around: (i) Sessions - Determining the appropriate number of consultations per child per semester and duration of each consultation, considering differences between therapy types; (ii) Children - Who to select for the program, taking into account child age, behaviour and absenteeism, while balancing a child's need for ongoing support across semesters with the needs of other children not receiving the service; (iii) Staff - Staffing requirements, both at the school and service provider levels; (iv) Technology - Technological requirements and emergent technology issues; and (v) Funding - Ongoing financial support for the service, considering funding models and opportunities. Evaluation of the service assessing implementation and effectiveness is ongoing. This has great potential to be applied in other schools/areas.

Correspondence:
Danette Langbecker
The University of Queensland, Queensland, Australia
d.langbecker@uq.edu.au

Diabetes Telehealth: Bridging Gaps in Diabetes Services in Rural Western Australia Through Innovative Technology

Amanda LEE[1]

1. Diabetes WA, Western Australia, Australia

During 2008-2012, ‘diabetes complications’ was listed as the leading cause of potentially preventable hospitalisations across all seven regions in Western Australia(WA). Limited regional capacity for diabetes education and the tyranny of geographical distance are some of the attributing factors to poor diabetes related health outcomes.

Partnering with Diabetes WA, in March 2015 the Diabetes Telehealth for Country WA Service commenced. Service gap locations were identified through data analysis and regional consultation. The service is delivered via videoconference (or phone if required), addressing gaps in diabetes education and clinical support for consumers and increasing regional capacity through provision of professional development for health professionals in the management of diabetes.

Delivering timely triage, assessed and individualised education sessions, service can be provided at home and outside of traditional business hours to support consumer needs. Referral is triaged to local diabetes educators if available and referred to other local health professionals (i.e podiatrist, dietitian) to provide a holistic approach to diabetes management. Interim back filling can also be provided to local diabetes educators to ensure continuity in diabetes care.

Lessons learned have been applied to subsequent telehealth service development. Flexibility to support tailoring of the service to the specific requirements of each region is integral. Liaising with local practitioners to demonstrate the triage process with referral back to existing services on the ground, ensuring private business models are supported, has been key to service acceptance. Building trust and establishing shared care roles via multidisciplinary team has resulted in GP and health professional acceptance.

Since commencement there have been over 1315 occasions of service, with 68 referrals for Aboriginal people. Over 43 hours of health professional upskilling has been delivered. An external evaluation is being finalised. Initial indications are $120,000+ service delivery savings for WACHS whilst saving consumers over 113,000 travel kilometres.

Correspondence:
Amanda Lee
Diabetes WA, Western Australia, Australia
amanda.lee@diabeteswa.com.au

Chaos to Calm - Applying Human Centred Design Thinking to Telehealth Coordination

Karrie LONG[1], Kudzai KANHUTU[1]

1. Melbourne Health, Victoria, Australia

Health organisations are complex systems. Integrating information and communication technology (ICT) programs such as telehealth into health services further escalates the environment from complex to complicated. Consequently, implementation of ICT programs into public and private sectors is often poorly deployed and commonly fails. In response, the health system has borrowed from other industries, adopting project management as a methodology to manage the risk of project failure with variable success. In the ICT sector, Agile principles are to employed to design, prototype and deliver solutions to best fit the targeted need.

An emerging methodology that could bridge the divide between these two approaches is human-centred design(HCD). HCD prioritises the actions of all people within a system at the centre when designing and delivering the technical and functional aspects of an intervention. HCD has been applied in commercial contexts to debunk previously established processes and dispels beliefs and assumptions about consumer needs. Applied to health, HCD can go further than consumer centred care, beyond consulting with patients, to include the second consumer, the clinician, at the core of the design process.

In the current setting of digital health expansion there is a genuine risk of wide scale failure and financial waste should the current trends of design and deployment persist. This work will discuss how HCD principles can be used to better design and deploy telehealth programs so that it meets the needs of both clients and clinicians.

Correspondence:
Karrie Long
Melbourne Health, Victoria, Australia
karrie.long@mh.org.au

A Multidisciplinary Renal Telehealth Service: Lessons Learnt

Karen LUCAS[1], Andrew WINN[2], Anne DUNN[2], Karin AHEARN[2], Ken-Soon TAN[2], Jeremy FRAZIER[2]

1. Metro South Health, Queensland, Australia
2. Logan Hospital, Queensland, Australia

Renal and Chronic Kidney Disease (CKD) patients sometimes travel long distances to access ongoing services. The Logan Hospital, Brisbane, Australia, has established a telehealth service to address the issues of patients travelling up to 100kms (2 hrs) round trip to visit a CKD clinic. This service provides patients with access to a Renal Consultant, Pharmacist, Dietician, Diabetes Educator, Social Worker and Psychologist. Just like at the Hospital's face to face clinic, patients see one or multiple clinicians with each visit. Resources at Logan Hospital are stretched with limited access to consult rooms and car parking so telehealth was an obvious solution.

The aim has been to create a link between Logan and Beaudesert Hospital (a small town of 6,000 people about 50kms south of Logan in South East Queensland) for the provision of Renal services to the local community. The service hopes to reduce travel time for patients, promote and increase telehealth within the community, and provide a patient centred care approach to renal patients.

Outcomes so far have been positive with 98% of patients "delighted" to attend a clinic closer to home. At time of writing the clinic had been running weekly for 4 months and is booked out for months in advance. Although still early days, this service looks to provide a sustainable model of multidisciplinary service delivery that could be replicated by other similar teams.

Lessons learnt.

- Telehealth is a patient-focussed option for reducing travel burden
- Nurses at the patient end need a separate observation room and time to complete direct data entry for access by the consultant
- Buy in from all Stakeholders along with planning contributed to the services' success
- Patient movement between clinicians and communication between clinicians during clinics continues to be a work in progress.

Correspondence:
Karen Lucas
Metro South Health, Queensland, Australia
karen.lucas@health.qld.gov.au

The Mindfulness App Study for Weight Management, Weight related Behaviours, and Stress in University Students: A Randomized Controlled Trial

Lynnette LYZWINSKI[1], Liam CAFFERY[2], Matthew BAMBLING[3], Sisira EDIRIPPULIGE[2]

1. The University of Queensland, Queensland, Australia
2. Centre for Online Health, The University of Queensland,Queensland, Australia
3. Faculty of Medicine, Psychiatry, The University of Queensland, Queensland, Australia

Background
University students are at risk of gaining weight during their studies known as the “Freshman 15”. The prevailing literature has linked stress with engagement in maladaptive weight related behaviours in university students. Stress is highly prevalent in university students. Emerging research suggests that mindfulness may hold promise for assisting with stress as well as the adopting of healthy eating behaviours and weight management. One novel medium for delivering a weight loss intervention is through mobile health. Research suggests that mobile health interventions are effective for weight loss. Delivering a mindfulness-based intervention to students via a mobile medium may offer unique benefits including the possibility for students to learn mindfulness techniques at any time and place, something which is pertinent to them given their busy schedules.

Methods/Design
A two-arm randomized controlled trial will be conducted at the University of Queensland St Lucia and Herston campuses in students over the age of 18 years of age owning a smartphone who wish to lose weight. We will aim to recruit >50 and up to 115 participants. Students meeting eligibility criteria will be randomized to a mindfulness-based app or to a standard control group receiving an information leaflet on diet and physical activity guidelines. Changes assessed from baseline to follow-up at 3 months will be BMI, weight, dietary intake, physical activity, and stress. Feasibility and acceptability will also be assessed.

Discussion
This will be the first mobile mindfulness-based app trial in university students. If effective, this app intervention may hold potential for assisting students with managing key health issues pertinent to them.

Correspondence:
Lynnette Lyzwinski
The University of Queensland, Queensland, Australia
Lynnette.Lyzwinski@uqconnect.edu.au

The Aged Care Sector Technology Roadmap for Australia: Implications for Telehealth

Anthony MAEDER[1]

1. Flinders University, South Australia, Australia

In June 2017, after extensive stakeholder consultations, the Aged Care Industry IT Committee released a Technology Roadmap for future directions in IT-based aspects of aged care services. The initiative was prompted partially in response to the emergence of the national "Living Well Living Longer" agenda and the recent MyAgedCare support environment, and partially by the increasing profile of digital health in Australia.

The Roadmap document identifies seventeen areas in which issues related to technology adoption and use, across five areas of Systems, Services, Access & Information, Assessment and Workforce. A set of twenty-four specific actions was recommended for the sector as a whole to address these issues, over the next seven years. Several of these correspond to increased use of telehealth capabilities, and others intersect with other areas in digital health that have cross impacts with telehealth.

This presentation will provide an overall summary of the Roadmap, and then will concentrate on a discussion of the key recommendations aligned with telehealth in its broader sense. These cover a diverse range of focus areas including systems standards and interoperability, technology readiness and literacy, Smart Homes, mhealth apps, clinical assessment and care management, and workforce capability building. Some concluding comments will be provided on early initiatives being established across the nation, to progress many of the related actions from the Roadmap.

Reference:
http://aciitc.com.au/roadmap/

Correspondence:
Anthony Maeder
Flinders University, South Australia, Australia
anthony.maeder@flinders.edu.au

Trial of an Asynchronous Tele-Audiology Screening Service in a Rural School in South Africa

Maurice MARS[1], Samantha GOVENDER[2]

1. University of KwaZulu-Natal, Durban, South Africa
2. Sefako Makgatho Health Sciences University, Gauteng Province, South Africa

All school children in South Africa are required to undergo diagnostic hearing testing. This is not being achieved because of the shortage of audiologists and facilities, especially in rural areas. Asynchronous hearing tests using automated tele-audiology can potentially be performed in schools to identify hearing loss.

Aim
To evaluate an asynchronous, automated tele-audiology screening model in a rural school.

Methods
73 Children (146 ears) at a school in the Northwest Province of South Africa participated. After asynchronous video otoscopic examination, and cerumen management as needed, asynchronous bilateral screening was performed on all ears by a trained facilitator. An automated KuduWave device was used at frequencies from 500Hz to 4000Hz. The pass criterion was adjusted from 20dBHL to 25dBHL. Screening results were assessed by an audiologist after screening, with rescreening if hearing loss was detected. All children then underwent diagnostic air and bone conduction testing at the school for comparison.

Results
21 ears of 18 of children had hearing loss on diagnostic testing. The screening test was positive for 11 of these ears (sensitivity 52.4% and specificity 98.4%). Of the 10 false negative screening tests all ears had mild to moderate hearing loss at frequencies of 500Hz or less and 7 had loss at some frequencies above 500Hz.

Conclusions
The high false negative screening rate is of concern. Screening does not test hearing below 500Hz and may miss low frequency hearing loss. Other factors, including noise levels and noise dampening during testing, the accuracy of the device, children's understanding of what they must do during the test, and the need to possibly lengthen the test response time require investigation. The use of asynchronous, automated tele-audiology for screening in the school setting is feasible and facilitates early identification of hearing loss but the sensitivity of the test needs improvement.

Correspondence:
Maurice Mars
University of KwaZulu-Natal, Durban, South Africa
mars@ukzn.ac.za

Family-Centred Practices in a Telehealth Model

Melissa MCCARTHY[1], Michael ARTHUR-KELLY[2], Greg LEIGH[1]

1. Royal Institute for Deaf and Blind Children, New South Wales, Australia
2. University of Newcastle, New South Wales, Australia

Aim
To examine caregiver and practitioner perceptions about the use of telehealth in the provision of family-centred early intervention services for children who are deaf or hard of hearing.

Methods
The study focused on a cohort of families receiving early intervention services, either in-person or through telehealth, and the practitioners who supported them. Primary caregivers whose children were deaf or hard of hearing and had been receiving early intervention services for at least two months were included. A total of 482 eligible caregivers were identified: 351 receiving in-person services and 131 receiving telehealth services. Caregivers were invited to complete The Scale of Parental Involvement and Self-Efficacy (SPISE), a self-report questionnaire examining caregivers' perceptions of self-efficacy and involvement in early intervention sessions. All 52 practitioners working with these families were invited to complete the Measure of Processes of Care for Service Providers (MPOC-SP), a self-report questionnaire that examined practitioner perceptions of their use of family-centred practices in early intervention sessions.

Results
A total of 176 responses were received: 138 from caregivers and 38 from practitioners. Caregivers were assigned to either the in-person or the telehealth cohort based on their mode of service delivery. Mean scores for four different subscales were calculated for both groups and comparison of means found no significant differences between groups. Similarly, practitioners were assigned to either an in-person or telehealth group based on their experience and training. Comparison of mean scores across four subscales found no significant differences between groups.

Conclusion
Preliminary results indicate that families feel involved and self-efficacious regardless of whether services are delivered in-person or through telehealth. Likewise, practitioners believed they consistently applied family-centred practices regardless of the mode of service delivery. This evidence suggests that telehealth models can be a viable method for delivering family-centred early intervention services.

Correspondence:
Melissa McCarthy
Royal Institute for Deaf and Blind Children, New South Wales, Australia
melissa.mccarthy@ridbc.org.au

A Review of the Outcomes of the Princess Alexandra Hospital Teleconference Fracture Clinics Over Six Years

Alison MCGILL[1], John NORTH[2]

1. Royal Brisbane and Women's Hospital, Queensland, Australia
2. Princess Alexandra Hospital, Queensland, Australia

Aim
To evaluate the experience and outcomes over 6 years of teleconference fracture clinics held between the Princess Alexandra Hospital and Mt Isa Hospital.

Methods
Teleconference fracture clinics have been held between the rural Mt Isa Hospital and the Princess Alexandra Hospital, a tertiary referral centre, since January 2011. An analysis of the cost effectiveness of the first 18 months has previously been published. We reviewed the data assessing the number of clinics held, the number of patients seen, and the estimated cost saved by reduced patient transfers during the six years.

Results
Since 2011, over 300 clinics have been held by two orthopaedic surgeons, and approximately 2 400 patients have been seen in the teleconference fracture clinics. By applying the costs estimated in our original research, the estimated cost of holding the clinics is $390 000. The initial study modelled the cost of transfer and estimated each patient transfer to cost $1269 - $2134 for adult and paediatric patients respectively. Therefore, it is estimated that the teleconference clinics have saved approximately $2 400 000 over 6 years. Advantages of the teleconference fracture clinics have been identified, including, importantly, the ability to bring consultant directed orthopaedic care in a timely manner to remote centres. The challenges of the clinics include limitations of telehealth with reliance on a medical, nursing or allied health practitioner at the other end to assist in evaluating the patient.

Conclusion
Our review of six years of teleconference fracture clinics shows a significant number of rural and remote patients have been able to be assessed in their local health service by an orthopaedic surgeon, with a significant cost saving by reducing patient transfers.

Correspondence:
Alison McGill
Royal Brisbane and Women's Hospital, Queensland, Australia
talktoalison@hotmail.com

Clavicle Fracture Management: A Comparison of a Tertiary Hospital and Rural Hospital via Telehealth

Megan MCKERROW[1], John NORTH[1]

1. Princess Alexandra Hospital, Queensland, Australia

Aim
The clavicle is one of the most commonly fractured bones in the adult population, accounting for between 2.6-5% of all fractures presenting to a hospital Emergency Department (Robinson, 1998). Clavicle fractures are described by the location of the fracture, with 69-81% in the middle third of the shaft (Van der Meijden, Gaskill & Millett, 2012). Some recent literature has suggested that operative management of mid-shaft clavicle fractures is associated with a decreased incidence of non-union (Burnham, Kim, & Kamineni, 2016), however other research has demonstrated little difference in patient outcome between operative and non-operative treatment of clavicle fractures (Shetty et al., 2017).

The aim of this study was to analyse the proportion of operative and non-operative treatment methods for clavicle fractures in the Mt Isa Telehealth Orthopaedic Fracture Clinic and Princess Alexandra Hospital Fracture Clinic and compare patient outcome between these two methods of clavicle fracture management.

Methods
A retrospective review of patients with clavicle fractures presenting to the Mt Isa Telehealth and Princess Alexandra Orthopaedic Fracture Clinics was conducted to establish fracture management and outcome. Radiographs and clinic notes were reviewed for each patient, and the proportion of operative and conservative treatments between the groups will be compared, along with the outcome of these two management methods.

Results
Final results are still being compiled, however preliminary findings indicate a firm preference towards surgical management at the Princess Alexandra Hospital for all clavicle fractures. The opposite is true for Mt Isa Hospital, with conservative management the predominant treatment method. Patient outcome between conservative and surgical management appear similar, however more detailed results will be revealed at the conference.

Conclusion
Preliminary findings indicate, as predicted, that a surgical method is preferred at the tertiary hospital, whereas conversely, a conservative method is preferred rurally. Patient outcome, at this stage, appears similar.

Correspondence:
Megan McKerrow
Princess Alexandra Hospital, Queensland, Australia
megan.mckerrow@gmail.com

A Comparison of Characteristics of Patients Seen in a Tertiary Hospital Diabetes Telehealth Service versus Specialist Face-to-face Outpatients

Anish MENON[1,2], Len GRAY[1], Farhad FATEHI[1,4,5], Darsy DARSSAN[3], Dominique BIRD[1], Denise BENNETTS[2], and Anthony W RUSSELL[2,3].

1. Centre for Online Health, The University of Queensland, Queensland, Australia
2. Department of Diabetes and Endocrinology, The Princess Alexandra Hospital, Queensland, Australia
3. Faculty of Medicine, The University of Queensland, Queensland, Australia
4. The Australian e-Health Research Centre, CSIRO, Queensland, Australia
5. School of Allied Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran

Aim
To examine the diabetes telehealth service(DTS) in comparison to outpatient face to face(OP) diabetes clinic at the Princess Alexandra Hospital, Brisbane.

Methods
Cross sectional survey was done as part of the Australian National Diabetes Audit in May 2016 for all patients attending the DTS and OP diabetes clinic.

Results
Of the 33 patients that attended the DTS - 21(63.6%) were type 2 diabetes(T2DM) and 11(33.3%) were type 1 DM (T1DM). Of the 155 patients that attended the outpatient diabetes clinic 95(61.3%) were T2DM and 58(37.4%) were T1DM. The average HbA1c of T2DM in DTS were 9.1%(76mmol/mol) vs 8.1% (65mmol/mol) in the OP diabetes clinic. The average HbA1c of T1DM in DTS were 8.8%(73mmol/mol) vs 8.3%(67mmol/mol) in OP diabetes clinic. The proportion of patients with an HbA1c >7.9%(63mmol/mol) were higher in the DTS group. The proportion of initial visits were higher in DTS group for both T2DM and T1DM (24% and 18% vs 9% and 9% respectively). As expected there were more indigenous T2DM & T1DM patients in the DTS when compared to OP diabetes clinic (43% and 18% vs 1% and 2% respectively). The rates of adherence to diabetes complication screening and access to allied health staff were similar in both groups.

Conclusion
DTS increases access to specialist care with minimal travel. The higher HbA1c in the DTS group as compared to OP diabetes clinic is likely related to higher proportion of first visits to the service and Indigenous clients in the DTS group. Access to multidisciplinary team seems to be similar, which is a key component in diabetes management. To our knowledge, there has been no prior evaluation of DTS in Australia. The limitations of the study are (1) small numbers and (2) cross-sectional audit with no longitudinal follow-up.

Correspondence:
Anish Menon
The University of Queensland, Queensland, Australia
anish.menon@uq.net.au

Mobile Health (mHealth) for Chronic Wound Management: A Review of the Literature

Mahsa MOSADEGHI-NIK[1], Shararaeh R. NIAKAN-KALHORI[1], Farhad FATEHI[2]

1. Tehran University of Medical Sciences, Tehran, Iran
2. Centre for Online Health, The University of Queensland, Queensland, Australia

Aim
Considering the widespread use of mobile phones in healthcare, the aim of this review was to reveal the role of mhealth technology in the management of chronic wounds through self-care or self-management enhancement of the patients and improving access to health care providers.

Methods
We searched PubMed, Scopus, Web of Science and Embase databases for studies reporting the use of mobile phones for managing chronic wounds. The electronic search was conducted in May 2017 and returned 656 records. After removing duplicates and screening at title/abstract level, the full text of 499 papers was examined and 68 studies met the inclusion criteria. We then checked the reference list of retrieved review papers and hand searched the Journal of Medical Internet Research, which identified seven more papers.

Results
We identified 75 papers reporting the use of mobile phones for chronic wounds management. The most common types of the wound under study were lower extremity wound and pressure ulcer with 30 and 20 papers respectively. 45 studies were designed for monitoring and controlling of wounds, 19 for prevention, 7 for detection and diagnosis, 2 for wound treatment and 2 for self-management enhancement by patients. The mobile apps have been developed for both patients and health care providers. Remote wound care, image capturing and transforming, collecting and analysing individual's data, messaging, and alerting have been the main applications for mobile phones. The most dominant technologies used in studies were image-processing algorithms, interface between sensors, mobile Apps and wearable devices.

Conclusion
The use of mobile phone for chronic wound management could help to provide high-quality care, increase the knowledge of the providers, patients and their relatives, facilitate remote wound care, reduce the cost of patient care/patient transportation and decrease rate of infection, amputation and consequently mortality rate.
Key word: Chronic Wound, Mobile phone, mHealth, Mobile health, Smartphone.

Correspondence:
Mahsa Mosadeghi-Nik
Tehran University of Medical Sciences, Tehran, Iran
mahsanik.medinfo@gmail.com

Barriers and Facilitators to Adopting Telehealth within Early Hearing Support Services: A Qualitative Study Using the COM-B Model of Behaviour Change

Mansoureh NICKBAKHT[1], Carly MEYER[2], Nerina SCARINCI[2], Rachael BESWICK[3]

1. The University of Queensland, Queensland, Australia
2. School of Health and Rehabilitation Sciences, The University of Queensland, Australia & The HEARing CRC, Australia
3. Healthy Hearing, Children's Health Queensland Hospital and Health Service, Queensland, Australia

Aim
Families of children with hearing loss report having a range of unmet needs, including informational needs, professional and peer support needs, and skill development needs. One way to address family needs is through telehealth. Prior to developing and implementing a telehealth service, however, it is important that we explore families' and support professionals' capacity to adapt to telehealth. Accordingly, the aim of this study was to explore the required skills, knowledge, motivation, and opportunities for families' and support professionals to use telehealth.

Methods
A qualitative study incorporating semi-structured in-depth interviews was conducted with two participant groups: (1) families of children with permanent hearing loss aged between 6 to 24 months (N=16); and (2) professionals who support these families following the diagnosis of hearing loss (N=11). Two interview topic guides were developed based on the COM-B, a model which recognises that behaviour is part of an interacting system involving the components of capability, opportunity, and motivation. The qualitative interview data was analysed using template analysis in the context of COM-B model.

Results
Overall, both families and professionals were physically able to use computers and smart phones, however, some families indicated that they had: (1) a lack of knowledge of how to use the Internet; and (2) a lack of access to computers and the Internet. Most families, however, perceived there to be benefits associated with using telehealth services, primarily due to time savings. In contrast, the "face-to-face" culture amongst professionals was perceived to be a barrier to the provision of telehealth services to families, with some professionals in the study expressing their belief that telehealth could not replace in-person services.

Conclusion
The findings indicate that telehealth is a viable option for providing early hearing support services to families, and highlight that addressing knowledge, resource gaps, and motivational barriers are important before developing a telehealth service.

Correspondence:
Mansoureh Nickbakht
The University of Queensland, Queensland, Australia
mansoureh.nickbakht@uqconnect.edu.au

Ipswich Hospital Telepharmacy Service – An Innovation in Inpatient Clinical Pharmacy Activities

Katherine NUNN[1], Cal WINCKEL[1]

1. Ipswich General Hospital, Queensland, Australia

Ipswich Hospital, part of West Moreton Hospital and Health Service, provides clinical pharmacy services across four rural facilities (Boonah, Gatton, Esk, Laidley) via a hub and spoke model. The spoke sites lack onsite pharmacists, with registered nurses extending their roles to include traditional pharmacy services, such as stock ordering, medication management and creation of electronic medication lists for patients on discharge. Nurses do not perform a clinical pharmacy review role which is a safety and quality risk.

Utilising telehealth we provide a daily clinical pharmacy review of inpatients at Boonah and Gatton, with patients at Esk and Laidley hospitals reviewed on a weekly basis. Nurses at the rural facilities scan medication charts to the pharmacist at Ipswich Hospital who performs a clinical pharmacy review. Recommendations and interventions are documented electronically using the enterprise wide medication system(eLMS). The pharmacist leads a multidisciplinary clinical pharmacy review meeting with the medical officer and nursing staff via Cisco-jabber videoconference. Outcomes of this review (dose clarification, changes to the medication regimen, monitoring requirements) are recorded and form part of the clinical care plan.

Over 6 months the service has received variable spoke site support with early adopters benefiting the most. Current limitations to the service include, lack of an electronic medical record, staffing constraints and inconsistent engagement. Positive outcomes have been immediacy of intervention, improved medication management with the responsible prescriber and a daily clinical pharmacy review of each admitted patient to a 10-bed facility located over 1 hour away from the main campus.

Through the provision of this telepharmacy service, we have improved medication management in the rural setting, with an average of 2 accepted interventions per chart review. It is our aim to standardize this service across all facilities to maximize clinical pharmaceutical management of our rural patients.

Correspondence:
Katherine Nunn
Ipswich General Hospital, Queensland, Australia
katherine.nunn@outlook.com

General Medicine Inpatient Telehealth Service in Far North Queensland Remote Hospitals: The Trends and Why?

Queen OKEREKE[1], Nirjhar NANDI[1]

1. Cairns Hospital, Queensland, Australia

The General Medicine Telehealth service commenced at Cairns hospital in June 2015 with the provision of acute inpatient medical consultation to two hospitals serviced by non-specialist senior medical officers. Over the past two years, the network has provided care for approximately 2100 inpatients across eight remote hospitals in far north Queensland, Australia.

Whilst the service has been very successful overall, the number of consultation hours decreased with time in most hospitals. In some cases, consultation hours ceased completely. The aim of this study was to determine which factors were responsible for this decline in consultation hours. Identifying the causes of this trend is crucial for implementing mechanisms that can support remote hospitals given the reported benefit of the Telehealth service in these places.

A survey was conducted, using email, to all centres involved in the network. Six centres with a total of 31 clinical staffs (Doctors, nurses and allied health staff) responded appropriately. Staff perception of telehealth was good. 90% (31) respondents thought it was beneficial to the patients and 74.2% (23) thought it helped reduce the health gap in remote areas. The factor identified as impeding the success of telehealth was lack of time (14,45.2%) responders), followed by both technological constraints and lack of staff (12, 38% responders).
This study highlights that though clinical staff appreciates the advantages of the Telehealth service, time constraints, low staffing and suboptimal Internet connectivity/device issues reduced its use in rural hospitals. This raises the issue of how to simplify the processes involved in organising these services. Perhaps regular meetings with the service delivery teams to identify and address problems as they arise will allow this service to be productive.

Correspondence:
Queen Okereke
Cairns Hospital, Queensland, Australia
drqueenokereke@yahoo.com

A Telehealth Supported Rural Stroke Unit Pilot - Informing the Future of Stroke Care in Australia

Matt PAGE[1]

1. Queensland Health, Queensland, Australia

Aim
The aim of the pilot was to conduct a trial of a telehealth supported rural stroke unit to inform the development of a large-scale model of care.

Method
In collaboration with the Queensland Health State-wide Stroke Clinical Network SSCN a regional "hub" provider with an existing endorsed stroke unit, and a rural recipient site admitting <15 stroke admissions were recruited. A draft clinical pathway was developed in collaboration across multiple levels/key stakeholders from both facilities. Site visits were conducted to the rural recipient site. The local multi-disciplinary team was provided with in-service education in the model of care and management of the videoconferencing component, and the Emergency Department team received training in the administration of remote thrombolysis via telehealth.

Results
The pilot program identified a number of potential challenges and risks to the development of a system wide model of care.

Conclusion
We considered each of these challenges as opportunities to inform the development of a scalable state-wide model and identify potential risks as the current movement toward state-based or national "Tele-Stroke" models continue to gain momentum. Identified challenges and risks included:

- Few stroke presentations despite historical data trends, thus difficult for the clinical teams to retain knowledge of the model of care.
- No stroke presentations were candidates for remote thrombolysis.
- Ward reviews were performed on an ad-hoc basis, and for deteriorating patients requiring palliation/transfer decisions.
- There was significant clinician turnover during the trial period, including the primary medical lead from the rural recipient site.
- The model was informal and the parameters shifted across the duration of the pilot.
- The pilot commenced on a public holiday
- The draft procedure was not consistently followed, indicating a knowledge dissemination issue.
- Cross hospital jurisdiction and determining the responsibilities of each site.

The identified challenges and risks are not insurmountable, rather they provided learnings to ensure the design and implementation of a larger scale model includes informed risk mitigation and solution development. We acknowledge the significant commitment of the participating sites to informing the development of telehealth enabled stroke care.

Correspondence:
Matt Page
Queensland Health, Queensland, Australia
Matthew.page2@health.qld.gov.au

Speech Pathology and Telehealth: From Assessment and Intervention to Community Capacity Building

Silvia PFEIFFER[1,2], Rebecca SUTHERLAND[3], Fiona EASTLEY[4]

1. CSIRO, New South Wales, Australia
2. Coviu Pty Ltd, New South Wales, Australia
3. Westmead Children's Hospital, New South Wales, Australia
4. NSW Centre for Effective Reading, New South Wales, Australia

For many health professions, the delivery of telehealth services requires more than simple talking heads. In this paper, we focus on custom functionality needs in speech pathology and how a variety of speech pathology services have been delivered using an affordable web-based solution. Three case studies will be presented together with scientific evidence of their efficacy, all using the same adaptable software:

(1) Assessment: we use a custom interface to provide standardised language assessments via telehealth. In a study of 23 school aged children with reading difficulties, a speech pathologist based in Sydney delivers the Clinical Evaluation of Language Fundamentals – 4th ed. to students in a remote hub. Results showed that the assessments were valid, feasible and well tolerated by the children.

(2) Intervention: students with significant learning difficulties in rural and remote areas in NSW are provided with a remote speech pathology intervention through their school - a service impossible to source locally. Providing about 30 interventions a month to students with their teachers has a substantial impact on students' communication and literacy skills, giving them tools relevant to the rest of their lives.

(3) Community capacity building: the Sounds, Words, Aboriginal Language and Yarning (SWAY) program builds speech pathology capacity of rural and remote teaching staff in NSW. SWAY is an oral language and early literacy programme for preschool and kindergarten students. Targeted small group speech pathology is delivered and provides intervention to 'at risk' (tier 2) students, modelling of evidence based language strategies to teaching staff as well as advice and onward referral, when required. The local teaching staff gain remote professional development and ongoing mentoring, while the children get early intervention. A focus on the local Aboriginal language in the program provides further community inclusion.

Correspondence:
Silvia Pfeiffer
CSIRO, New South Wales, Australia
Coviu Pty Ltd, New South Wales, Australia
silvia@coviu.com

The Delivery of an Aphasia Group via Telerehabilitation: Perceptions of People with Aphasia and Their Communication Partners

Rachelle PITT[1], Deborah THEODOROS[1], Trevor RUSSELL[1], Anne HILL[1]

1. The University of Queensland, Queensland, Australia

Aim
Group aphasia therapy offers a unique therapeutic environment that promotes communicative participation and psychosocial functioning. It is recommended that people with aphasia should have long term access to group therapy however significant barriers to access prevent this. Telerehabilitation offers a potential solution to these barriers however evidence for online group therapy is limited and further research regarding stakeholder perspectives is needed. This mixed-methods study aimed to explore the acceptability, satisfaction and experience of an online aphasia group intervention, TeleGAIN, from the perspectives of people with aphasia and their communication partners.

Method
Nineteen participants with chronic aphasia accessed 12 weeks of group therapy via telerehabilitation. The overall goals of therapy were to 1) create communication opportunities, 2) share personal life history, and 3) provide support for living with aphasia. Three to four PWA accessed each 1.5 hour session from their own homes via their own ADSL internet connection or mobile internet hotspot. Following treatment, these participants and seven communication partners participated in semi-structured in-depth interviews and completed a satisfaction survey. Data from the satisfaction survey were analysed descriptively and the semi-structured interviews were analysed using qualitative content analysis.

Results
Participants were highly satisfied with the intervention and identified many positive outcomes. Five themes emerged from the interview analysis relating to their perceptions of 1) the group structure and format, 2) experience of telerehabilitation, 3) positive group environment, 4) positive outcomes experienced and 5) satisfaction with TeleGAIN. Findings highlighted the impact of contextual, people or telerehabilitation factors on the overall positive experience of the group.

Conclusions
The results from this study suggest that online group aphasia therapy is satisfactory to people with aphasia, may result in positive changes in functioning and reduce service barriers. Findings support further investigation of this service delivery option.

Correspondence:
Rachelle Pitt
The University of Queensland, Queensland, Australia
r.pitt1@uq.edu.au

Ten Years of Telehealth: Telepractice Principles and Lessons Learned from RIDBC

Cassandra SCHUBERT[1], Melissa MCCARTHY[1]

1. Royal Institute for Deaf and Blind Children, New South Wales, Australia

RIDBC Teleschool was established in 2007 to provide support and services to families of children with hearing or vision impairment via Telepractice. RIDBC Telehealth services today are delivered internationally to adults and children, from multiple departments and includes professional development and training, cochlear implant consultation and mapping, and vision and hearing education and intervention. Data of stakeholder engagement and assessment measure are used to demonstrate the effectiveness of Telehealth services. The success of these services rely on a number of principles for Telepractice, evolution of the service delivery model, strong clinical experience, and continuous learning and quality improvement. This paper will focus primarily on the principles developed at RIDBC Teleschool.

Correspondence:
Cassandra Schubert
Royal Institute for Deaf and Blind Children, New South Wales, Australia
cassandra.schubert@ridbc.org.au

Internet Psychotherapy with “net-step”: A Therapist delivered IPT for Depression and Anxiety Disorders in Primary Care Patients

Ulrich SPRICK[1], Martin KÖHNE[1]

1. St. Alexius- / St. Josef Clinic Neuss, Neuss, Germany

Anxiety disorders as well as depression belong to the highly prevalent and disabling diseases in the world. Although effective treatments for depression and anxiety disorders are well established, fewer than 50% of those being affected receive adequate treatments. Acknowledged as a therapy model by the ministry of health NRW and by AOK (health insurance company) therapist delivered IPT “net-step” was used as an alternative approach for primary care outpatients.

Patients with a confirmed diagnosis of depression, social phobia or panic disorder were recruited from practitioners, the hospital ambulance or from the internet. Every patient had a personal talk and was tested face to face in the hospital´s ambulance. In a randomised trial 60 individuals suffering from depression, 30 individuals with panic disorder and 30 individuals with social phobia took part in the study. Patients having IPT were compared with controls receiving no therapy during a waiting period and other controls (n=30) who had conventional face to face therapy.

In the Depression-group the mean BDI-Score was significantly reduced from 25.5 to 10.5 after 12 weeks, while controls did not show any reduction of the BDI-score. Face-to-face therapy was as effective as IPT-treatment. Patients who received IPT after the waiting interval of 12 weeks also showed a significant reduction of the BDI-score (from 23.1 to 8.1). Patients with social phobia also showed a significant reduced SPS-level after 12 weeks of treatment. In the Panic-group BSQ-scores were also significantly reduced. Patients of all groups were very satisfied with the online-treatment. Over 90% of the patients would reuse the treatment if necessary and they would recommend it to others.

“Net-step” as a therapist delivered blended CBT-internet-psychotherapy may become an effective tool for the treatment of depression, panic disease and social phobia.

Correspondence:
Ulrich Sprick
St. Alexius- / St. Josef Clinic Neuss, Neuss, Germany
u.sprick@ak-neuss.de

Lessons Learned from a Randomized Controlled Trial of a Web-Based Stepped Collaborative Care Intervention

Jennifer STEEL[1], David GELLER[1], Kathleen Ell[2], Ritambhara PATHAK[1], Hannah CHENG[1], Yoram VODOVOTZ[1], Allan TSUNG[1], Lisa BUTTERFIELD[1], Wallis MARSH[1], Jessica MICELI[1], Yisi WANG[1], Michael ANTONI[3], Michael SPRING[1]

1. University of Pittsburgh, Pennsylvania, United States
2. University of California, California, United States
3. University of Miami, Florida, United States

Aim
According to a NIH consensus statement, the three most common and debilitating cancer-related symptoms are depression, pain, and fatigue. The aims of this study were to describe: (1) the findings of a pilot study of a web-based collaborative care intervention to reduce cancer-related symptoms for advanced cancer patients; and (2) how the findings of the pilot study, and advancements in technology, were integrated into a new multisite randomized controlled trial (RCT) testing this web-based stepped collaborative care intervention.

Methods
The pilot study included 261 patients and caregivers and the current trial includes 450 patients and caregivers. Patient primary outcomes included pain, fatigue, depression, quality of life, biomarkers of inflammation, and survival. Caregiver primary outcomes included stress, depression, quality of life as well as biomarkers of inflammation and cardiovascular risk factors.

Results
Large effect sizes were observed in patients with clinically significant levels of symptoms on measures of depression, pain, and quality of life during the pilot study. Small to medium effect sizes were observed for biomarkers of inflammation. We will describe how the findings and lessons learned from the pilot study, and how advances in technology, were integrated in the new randomized controlled trial. Changes in recruitment strategies (i.e., Qualtrics), the website (i.e., interactive CBT tools, use of text-to-voice); trial management (i.e., REDCap); the use of electronic progress notes (e.g., improve fidelity and analysis of dose, and active ingredients); and the use of a HIPAA complaint videoconferencing tool were employed for the ongoing RCT. After enrolling patients and caregivers for 1.5 years we will discuss lessons learned from this trial that uses technology and includes psychological, behavioural, biological, and health data.

Conclusions
The use of technology complements and extends the scalability of the interventions; however, the use of technology is not feasible in all populations and settings.

Correspondence:
Jennifer Steel
University of Pittsburgh, Pennsylvania, United States
steeljl@upmc.edu

Tele-Orthopaedic Models of Care: Reported Examples in Australia

Monica TAYLOR[1], Liam CAFFERY[1], John B NORTH[2], Anthony SMITH[1]

1. The University of Queensland, Centre for Online Health, Queensland, Australia
2. Princess Alexandra Hospital, Queensland, Australia

Aim
Telehealth may be used for the delivery of specialist orthopaedic services. This study explored the perceived barriers and enablers of tele-orthopaedics; from the perspective of the service provider.

Methods
Tele-orthopaedic services in Australia were identified from multiple sources including a national telehealth provider directory, telehealth coordinators, and members of the Australasian Telehealth Society. Each service was invited to participate in a structured interview. Responses were recorded in an Excel spreadsheet to facilitate structured analysis and narrative review.

Results
Nine tele-orthopaedic services were interviewed. Telehealth activity ranged from 1-75 patients/week; and service maturity ranged from three months to ten years. All services used hub-and-spoke models of care and seven (78%) involved public hospital services. Services included: fracture clinics (56%) and peri-operative consultations (44%). The majority (78%) of services were delivered by videoconference. Typically, the patient was accompanied by a local medical officer, nurse or physiotherapist. Two services used store-and-forward methods where the orthopaedic surgeon reviewed radiological images and coordinated patient management via the local hospital staff or general practitioner (GP).

A commonly reported barrier to implementing tele-orthopaedics was staff or executive resistance. Care processes such as imaging, prescribing, and simple procedures were considered feasible for remote sites, however, the decentralised nature of imaging repositories from multiple providers did complicate access to information. Key enablers included staff who promoted the delivery of telehealth (clinical champions); Picture archiving and communication systems (PACS) and teleradiology systems; and the perceived benefit to patients who would be saved the need for travel.

Conclusion
In the right circumstances, telehealth can be used for the delivery of orthopaedic services. When the logistics of attending a specialist appointment (due to distance, cost or physical impairment) are challenging, tele-orthopaedics should be considered as part of the model of care.

Correspondence:
Monica Taylor
The University of Queensland, Queensland, Australia
m.taylor2@uq.edu.au

Establishing and Evaluating an Online Mental Health Peer Support Group – Lessons Learnt During the First 12 Months

Monica TAYLOR[1], Julie LING[2], Clare GUILFOYLE[2], Liam CAFFERY[1], Anthony SMITH[1]

1. The University of Queensland, Centre for Online Health, Queensland, Australia
2. GROW Community Mental Health, Queensland, Australia

Grow is a community organization which facilitates mental health peer support groups across Australia, mainly in metropolitan locations. Providing support groups in rural and remote locations has been challenging due to stigma, distance, technology and travel costs. Grow sought an alternative option of providing mental health services to rural communities. Hence, the idea of facilitating group sessions by videoconference – eGrow – was explored.

The eGrow service was advertised on Grow's webpage and interested participants were given a link to connect by videoconference with a group using the Jamvee™ platform. Members in remote locations could then access the Grow program by video, for a two-hour session once per week, similar to the face-to-face group method.

Many challenges were encountered during the first twelve months of establishing eGrow. These included recruitment of new groups, experimentation with new technology, access to telecommunications and the logistics of evaluating this service at a distance.

Evidence of the successes and failures of eGrow was obtained from qualitative interviews with inaugural group members as well as staff involved in setting up the online service. The opportunity to establish an eGrow service was met with excitement and scepticism. Participants agreed that the program was working as intended and supported members with their mental health issues. There was good communication and connection reported within the group. For most participants, there was no alternative group support available in their remote area. Access to affordable and reliable telecommunications (Internet) – and personal travel expenses were other issues commonly raised by interviewees. Connection into the online support groups also warranted some additional time and patience to support videoconference connections and intermittent technical issues. The lessons learnt through the eGrow experience are important for service expansion opportunities and the implementation of similar services for people living in rural and remote locations.

Correspondence:
Monica Taylor
The University of Queensland, Queensland, Australia
m.taylor2@uq.edu.au

Paediatric Teledermatology in Queensland - A Case Series From a Service Combining Store-and-Forward and Live Consults for Best Results

Alexander TEDMAN[1], Stephen ANDREWS[1], Nerilee WALL[1], Lisa BYROM[1], Tania ZAPPALA[1]

1. Lady Cilento Children's Hospital, Queensland, Australia

Within the field of telemedicine, teledermatology is a well established subdivision. (1) The types of teledermatology services can be divided into two groups: store-and-foward teledermatology (still images transferred to a remote dermatologist for review and opinion), and live teledermatology (patient and dermatologist undertake a face-to-face appointment via an internet connection and computerised camera equipment). (2) While both forms of teledermatology have advantages and disadvantages, each plays an important role in provision of a complete telehealth service.

The year 2017 has seen the roll-out of a new paediatric teledermatology service at the Lady Cilento Children's Hospital in Brisbane, Queensland. This service provides a formalised conduit of referral for general practitioners and other hospital specialists to access tertiary-level paediatric dermatology advice. We present a series of case snapshots from the first six months since our service's launch, from common presentations through to more unusual referrals. Each of these cases demonstrates important aspects of the service, including provision of advice over vast distance, decreasing the need for the patient and their family to travel, and more efficiently triage and allocation of face-to-face appointments. We also demonstrate our service's ability to contribute to medical education through lessons learned by remote practitioners while participating in the service. Moreover these cases demonstrate that, through use of store-and-forward and live telehealth consultations, this combined service most effectively affords care to the approximately one million children of Queensland (3).

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Correspondence:
Alexander Tedman
Lady Cilento Children's Hospital, Queensland, Australia
alexander.tedman@uqconnect.edu.au

Comparing the Effect of Service Model for the Delivery of Intensive, Preventative Swallowing Therapy to Patients with Head/Neck Cancer: A three-arm RCT

Laurelie WALL[1], Elizabeth WARD[2], Bena CARTMILL[3], Annie HILL[4], Elizabeth ISENRING[5], Joshua BYRNES[6], Sandro PORCEDDU[7]

1. The University of Queensland, Queensland, Australia
2. Centre for Functioning & Health Research, Metro South Health; & School of Health & Rehabilitation Sciences, The University of Queensland, Queensland, Australia
3. Centre for Functioning & Health Research, Metro South Health; & Speech Pathology Department, Princess Alexandra Hospital, Queensland, Australia
4. School of Health & Rehabilitation Sciences, The University of Queensland, Queensland, Australia
5. Faculty of Health Sciences & Medicine, Bond University, Queensland, Australia
6. Centre for Applied Economics, School of Medicine, Griffith University, Queensland, Australia
7. Radiation Oncology Department, Princess Alexandra Hospital & School of Medicine, The University of Queensland, Queensland, Australia

Background / Aim
Research advocates that patients undergoing (chemo)radiotherapy ([C]RT) for head/neck cancer (HNC) should receive intensive, preventative swallowing therapy during (C)RT, to help reduce the severity of swallowing difficulties. However, growing patient numbers and limited clinical resources necessitates exploration of new service-delivery models. An asynchronous telepractice application, “SwallowIT”, was developed to enable patients to perform their therapy at home, with remote clinician support/monitoring. The current study used a pragmatic three-arm RCT design to investigate the effect of service-delivery model on clinical outcomes, satisfaction, therapy adherence, and clinical/service costs for patients completing prophylactic swallowing therapy during (C)RT.

Methods
Patients (n=79) with oropharyngeal HNC were stratified by functional oral intake then randomised to receive therapy via 1 of 3 models: clinician-directed face-to-face therapy (current gold standard, n=26), independent patient-directed therapy (current usual care, n=27), or SwallowIT-assisted therapy (n=26). Swallowing, nutrition, and overall functional endpoints were collected at baseline, 6 weeks and 3 months post-(C)RT. Therapy adherence (percent of prescribed exercise completed) was tracked prospectively during (C)RT. Comparative economic modelling examined patient-attributable costs (e.g., travel time), staff-attributable costs (e.g., clinician time) and consumables. Mixed-effects general linear modelling was used for between-group analyses.

Results
The clinician-directed and SwallowIT models yielded superior therapy adherence rates in weeks 1-3 of (C)RT. However, mode of service-delivery did not significantly affect patients’ swallowing, nutritional or functional outcomes. Both the SwallowIT and clinician-directed models were preferred by significantly ($p=0.002$) more patients than patient-directed therapy. The SwallowIT model was significantly ($p<0.001$) cheaper to provide than clinician-directed therapy (m = $1901.10 AUD/patient), and more cost-effective than the patient-directed model.

Conclusion
These collective findings demonstrated that the SwallowIT model provides a clinically equivalent and economically superior model of care for delivering prophylactic swallowing therapy to patients with HNC during (C)RT.

Correspondence
Laurelie Wall
The University of Queensland, Queensland, Australia
l.wall@uq.edu.au

Evaluating the use a Multisite Telehealth Group Model for Persistent Pain Management for Rural/Remote Patients.

Elizabeth WARD[1], Heather SCRIVEN[2], Darren DOHERTY[3]

1. Queensland Health and The University of Queensland, Queensland, Australia
2. South West Hospital & Health Service, New South Wales, Australia
3. Gold Coast Hospital & Health Service Interdisciplinary Persistent Pain Centre, Queensland, Australia

Introduction
Studies show chronic pain is more prevalent in rural/remote Australia. However, for individuals living remotely, there are numerous barriers impacting access to specialist services for persistent pain management.

Aim
To evaluate the feasibility of delivering a persistent pain management program to individuals living in rural sites via a multisite telehealth group model, through an exploration of clinical outcomes and consumer perceptions.

Methods
Participants (n=21) with persistent pain completed 1 of 5, 8 hour (4 x 2hr) “Manage Your Pain” programs, delivered via a modified hub and spoke model. The telehealth model enabled individuals to connect with the specialist pain service (hub site; ~600 kms away), and simultaneously engage in real-time, group interactions with participants from multiple remote spoke sites. A battery of standardised pain measures (CPAQ20; BPI; DASS 21; PSEQ20, PROMIS, PGIC) were used to document clinical changes. Technical difficulties were recorded, and a telehealth user perceptions survey and a structured interview were used to examine perceptions of the model.

Results
Results revealed significant ($p<0.05$) improvements in the CPAQ20 activity and total score, indicating a higher level of pain acceptance post program. There were no major technical difficulties. Post program the majority (> 90%) indicated that visual/audio was adequate for the sessions and they found telehealth to be comfortable, convenient and would use telehealth in the future to improve their health. Importantly, interviews revealed participants felt connected, part of a group, and in a shared health experience with other group members through the group model.

Conclusion
Rural/remote patients showed direct benefits regarding acceptance of persistent pain and activity levels. Perceptions of using telehealth to access specialist pain services and participate in a group experience, were positive. The telehealth model can assist individuals in a rural context to access specialist persistent pain management services and participate in a group program experience.

Correspondence:
Elizabeth Ward
Queensland Health and The University of Queensland, Queensland, Australia
liz.ward@uq.edu.au

A Cost-Minimization Analysis of a Telediabetes Service to a Remote Indigenous Community in Western Queensland

Sumudu WICKRAMASINGHE[1], Centaine SNOSWELL[2], Liam CAFFERY[1], Natalie BRADFORD[3], Anthony SMITH[1]

1. Centre for Online Health, The University of Queensland, Queensland, Australia
2. School of Pharmacy, Pharmacy Australia Centre of Excellence, The University of Queensland, Queensland, Australia
3. Centre for Health Services Research Faculty of Medicine, Queensland, Australia

Aim
To perform a cost-minimisation analysis for a telediabetes service for a remote Indigenous community.

Methods
A videoconferencing based telehealth service was established in remote Western Queensland in 2015 connecting the Cunnamulla Aboriginal Medical Service with the Telehealth centre at the Princess Alexandra Hospital in Brisbane. A cost-minimisation analysis was conducted using the data from the first year of service provision. The comparators were a telehealth service, outreach services, and patient travel to a metropolitan hospital. Cost estimates were calculated using government travel reimbursement scheme values, market values for private travel, observational study data, and expert opinion. Technology costs were depreciated evenly over a 5 year period and weighted according to the time they were monopolised by this service. A cost-model was developed to evaluate how costs would vary if telehealth activity substituted 25%, 50%, and 75% of demand for specialist consultations.

Results
The estimated fixed costs for the telehealth service was $12,888, with the principal cost source being fixed staff salaries. The estimated average variable cost per consultation for telehealth, outreach, and patients travelling were respectively, $213, $845, and $997. The demand for specialist consultations for Cunnamulla Indigenous community was 48 during the 12 month period. The 75% telehealth model (75% telehealth service, 25% outreach service) recorded the lowest estimated average variable cost per consultation, $371. Overall, increased substitution with telehealth reduced the total estimated costs of providing care. The estimated cost break-even points for the 50% telehealth model and the 75% telehealth model, were 41 and 27 consultations respectively, offsetting fixed costs of telehealth within the first year of service.

Conclusion
Increased use of telehealth within a blended model of care with outreach services can provide specialist endocrine services for remote patients at a lower cost.

Correspondence:
Sumudu Wickramasinghe
Centre for Online Health, The University of Queensland, Australia
sumuduwickramasinghe@gmail.com

eCYMHS: Innovation and Expansion in Paediatric Telepsychiatry

Jennylee WOOD[1]

1. Queensland Health, Queensland, Australia

eCYMHS, the electronic Child & Youth Mental Health Service, is a co-ordinated consultation-liaison telepsychiatry service based in Brisbane. eCYMHS supports young people under 18years and their families who are dealing with significant mental health issues across rural and remote Queensland. A team of Consultant Child & Adolescent Psychiatrists and allied health professionals provides support via videoconference, email and telephone to mental health clinicians based in these areas. Additionally, an outreach service operates to each clinic on a scheduled basis. The integration of eCYMHS as part of local service provision contributes to a team balance of experience, skills and knowledge, and leads to improved service sustainability and greater professional support for CYMHS staff and other key stakeholders. eCYMHS enables more effective local management of complex cases and reduces/prevents the need for clients and their families from having to travel to regional or metropolitan health facilities for care. The service has seen a 300% increase in consultations since its inception in 2007. eCYMHS is exploring new and innovative ways to address the increasing complexity and challenges. The complex interplay between mental health and paediatric presentations and their subsequent diagnostic clarification and management, has led to the introduction/establishment of a new component of eCYMHS: the eDevelopmental Paediatric Service. The service aligns with the fundamental goal of eCYMHS - to provide a level of parity in mental health care between metropolitan, regional and remote services.

Correspondence:
Jennylee Wood
Queensland Health, Queensland, Australia
jennylee.wood@health.qld.gov.au

ORAL POSTER PRESENTATIONS

Addressing Primary Care Access Challenges in Regional and Remote WA with After-Hours Telehealth

Amandeep HANSRA[1]

1. Telstra Health, New South Wales, Australia

In March 2016 Telstra ReadyCare, in partnership with healthdirect, WA Country Health Service, WA Primary Health Network and the WA Department of Health, commenced 'Call a Doc' a 12 month trial to deliver telemedicine services into rural and remote regions of Western Australia. The trial explores the ability of telemedicine to address after hours GP access issues by providing access to a GP telephone or video consultation, funded by the collaborative parties mentioned above.

Call a Doc is available to residents and visitors in selected postcodes. The call is first assessed for suitability for telemedicine before a consultation with a GP is booked. Post the consultation, the patient's regular GP is sent a care summary, with the patient's consent, ensuring continuity of care. All the caller needs is a telephone, or web enabled device with video capability and an internet connection.

ReadyCare is an existing service that provides teleconsultations to customers and clients, however a unique service was set up for this trial. Extensive stakeholder engagement and consultation was required to ensure minimal disruption to existing services and create awareness.

The trial has highlighted key stakeholder issues requiring collaboration with rural GPs and their representative bodies to ensure there is no impact on their role and that the service continued to promote continuity of care and a strong relationship between a patient and their GP. These issues slowed the uptake of the service however as acceptance and awareness increased, interesting findings were obtained, and the service has been extended until December 30 2017.

The trial identified key access issues in particular regions, demonstrated the benefits a telemedicine service can bring these regions and lessons regarding how to implement similar new services in a respectful and considered way that won't alienate or disturb existing health services to vulnerable regions.

Correspondence:
Amandeep Hansra
Telstra Health, New South Wales, Australia
Amandeep.Hansra@team.telstra.com

Telehealth Throughout the Cancer Journey

Michelle JUDD[1]

1. Goulburn Valley Health, Victoria, Australia

Cancer and Cancer related effects are a major public health burden, telehealth can decrease this affliction, making care more accessible, less cost prohibitive whilst reducing many widespread discrepancies in access to care, particularly those attributable to geography or provider shortages. In the 2014-15 financial year residents of Greater Shepparton were admitted to hospitals outside the region on 2,225 occasions for cancer specific admissions, approximately equating to 232,000 km travelled. Telehealth in the Hume Region has enhanced access for many people whom were until recently faced with a substantial burden of travel and time away from home.

Telehealth, across the Cancer Journey includes; treatment planning, through the Multi-disciplinary teams. During Treatment, for review consultations, Supportive Care Multi-disciplinary meetings, providing staff in outreach clinics, with peer support and pathways for patients back to local community, when having treatment outside the region. Patient Education through Living with Cancer Education Programs2 and more recently, Wellness and Life after cancer2 providing people access to vital information whilst forming bonds and a support network within their local community.

In the Hume region, all of these programs have been made possible utilising existing infrastructure. As the aging equipment needs replacing the establishment of Telehealth provides a business case for the continual advancement and expansion of equipment. As technology continues to effect and progress the way we deliver health services, there is profuse value in recognising today's progresses are likely to become the conventional way we deliver healthcare in the future. The Hume Region Cancer Telehealth program supports both patients and caregivers as they circumnavigate the modern-day health care scene together. By addressing the above-mentioned challenges, Telehealth gives us the opportunity to better treat and support our patients across their entire cancer journey.

Correspondence:
Michelle Judd
Goulburn Valley Health, Victorian, Australia
michellejudd@iinet.net.au

Engineering a Mobile-Based Self-Management System for Tubercular Patients: TBMed Development Study

Shararaeh R. Niakan KALHORI[1], Hajar HASANNEJADASL[2], Reza SAFDARI[1], Bahram NIKMANESH[1]

1. Tehran University of Medical Sciences, Tehran, Iran
2. Department of Health Information Management, School of Allied Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran

Background
TB, a largely curable disease, remains a public health challenge for humanity. One-third of the estimated nine million people who become ill with TB every year is still not accurately diagnosed or effectively treated, and at risk of dying. A major challenge for health systems globally is to develop innovative solutions for control of tuberculosis. This research discusses the development of TBMed, a mobile-based system to improve self-management in tubercular patients and provide a monitoring tool for healthcare providers.

Methods
In order to consider technical aspects and an adequate clinical validation, a structured literature review has been developed. Information retrieved from several databases and systems such as PubMed, Embase, and Elsevier. Through development process and user-centred design approach, key features of the mobile application that fitted the requirements of the end users and environment were obtained. The app was initially tested by both the researchers and the app developers for minor issues and bugs. Through testing, the preliminary acceptability and usability of the system were obtained.

Results
System was developed, including several required features embedded in the mobile app for patient self-management enhancement in one hand and follow up the possibility for healthcare providers on the other. The mobile-based application was developed by the Android Studio framework and PHP, and MySQL technologies were used to prepare the website. A small convenience sample of users was recruited to evaluate the app for functionality and usability. The results showed 77% of the samples were satisfied using this product.

Conclusions
TBMed maximizes health impact by harnessing the opportunities offered by mobile phone technology. According to the results, electronic monitoring of patients empowers healthcare providers to observe patients easier at a lower cost. To control and prevent TB drug resistance, involve TB patients in treatment.

Correspondence:
Shararaeh R. Niakan Kalhori
Tehran University of Medical Sciences, Tehran, Iran
sh-rniakank@sina.tums.ac.ir

Dermatologist Remuneration Expectations for Store-and-Forward Teledermoscopy.

Centaine L. SNOSWELL[1], Anna FINNANE[2], Louisa G. GORDON[3], Peter SOYER[2], Jennifer A. WHITTY[4]

1. The University of Queensland, Queensland, Australia
2. Dermatology Research Centre, The University of Queensland, The University of Queensland Diamantina Institute, Translational Research Institute, Queensland, Australia
3. QIMR Berghofer Medical Research Institute, Queensland, Australia
4. Health Economics Group, Norwich Medical School, University of East Anglia, Norwich, United Kingdom

Aim
To explore dermatologist remuneration expectations for a single-lesion store-and-forward teledermoscopy consultation for skin cancer.

Methods
A convenience sample of 14 dermatologists participated in telephone interviews during May and June 2017. Participants were sent the questions prior to the interview. Questions centred around a specific teledermoscopy single-lesion scenario (current patient, benign lesion, no follow-up required, taking 3 minutes). Participants selected the amount that they would expect to be remunerated for the teledermoscopy consultation from specified remuneration ranges. The question was repeated five times with one aspect of the scenario changing each time, for example consultation source (patient or general practitioner) and consultation outcome (no action or follow-up required). Participants were also asked how appropriate they thought teledermoscopy was for the scenario and whether they would choose to undertake the consultation.

Results
Dermatologists selected remuneration ranges of $0, $1-30, $30-61, $61-90, and $91-120 for the scenario provided. Nine respondents selected the $61-90 or $91-120. When asked if they would change their remuneration expectation for a patient who required a face-to-face examination after the teledermoscopy consultation, seven participants said they would consider either discounting the teledermoscopy consultation or the resultant face-to-face examination. When the scenario was changed to a patient who had not visited this dermatologist before, four participants responded that they would not undertake the teledermoscopy consultation without general practitioner involvement. Nine respondents felt that teledermoscopy was appropriate for the original scenario and given the choice 10 respondents would undertake the consultation. When given the opportunity to comment on teledermoscopy service provision in Australia respondents reflected that it was a valuable, advanced dermatology service, but they would prefer face-to-face consultation with patients if possible.

Conclusion
Dermatologists expect to be remunerated in the range of $61-$120 for a single-lesion store-and-forward teledermoscopy consultation when face-to-face examination is not possible.

Correspondence:
Centaine L. Snoswell
The University of Queensland, Queensland, Australia
c.snoswell@uq.edu.au

Flying Doctor Telehealth: A Collaborative Effort and Partnership Approach to Delivering Telehealth Services in Rural Victoria

Jocelyn SYME[1], Cassie MOORE[1]

1. Royal Flying Doctor Service Victoria, Victoria, Australia

Royal Flying Doctor Service (RFDS) Victoria has been providing a telehealth service to rural communities in Victoria since November 2013, conducting over 1000 appointments. RFDS Victoria partnered with members of the Small Rural Health Services Research Team (SMARRT) to enhance the delivery of expanded telehealth services through the Flying Doctor Telehealth platform; called the Flying Doctor Telehealth Specialist Service (FDTSS).

The aim of the FDTSS is to improve access for rural communities to specialist services via a telehealth service. Increased access to specialist services will support the management of chronic conditions and reduce the burden of disease. Additionally, the service will work towards building the capacity of rurally isolated health professionals and reduce professional isolation.

FDTSS is provided through the Flying Doctor Telehealth platform; a purpose-built telehealth platform with an integrated booking system to facilitate appointment booking and safe sharing of patient details. The platform is highly accessible through standard hardware and internet browser software, reducing barriers associated with access. The platform can also be used on a normal 4G Internet service, with measures in place to assess and mitigate connectivity which is important in rural locations. The expansion of the FDTSS will include specialist services such as: cardiology, psychiatry, respiratory and rheumatology, in addition to the existing endocrinology services currently available on the platform.

A mixed methods approach will be adopted by FDTSS to assess if access has been improved for patients who access the service, including analysis of Medicare data that will reflect use of health services such as GPs, Allied health, Specialists and hospitalisations prior to and during service involvement.

The collaboration between SMARRT and RFDS Victoria is a clear demonstration of collaboration across the sector, with the FDTSS delivered to address the issues associated with access to specialist services experienced in small rural communities across Victoria.

Correspondence:
Jocelyn Syme
Royal Flying Doctor Service Victoria, Victoria, Australia
jocelyn.syme@rfdsvic.com.au

Usability of a Personal Assistant and Health Coach Application to Support Telerehabilitation Post-Stroke

Maayken van den BERG[1], Maggie KILLINGTON[1], Claire MORRIS[2], Anthony MAEDER[1], Maria CROTTY[1]

1. Flinders University, South Australia, Australia
2. Repatriation General Hospital, South Australia, Australia

Aim
There is growing development and increasing use of efficient approaches to deliver stroke rehabilitation such as telehealth, extending access to rehabilitation, and family involvement, enabling increased practice intensity. The purpose of this study was to evaluate the use, feasibility and acceptability of virtual assistant technology to provide post-discharge psychosocial support for people with stroke receiving telerehabilitation, and their caregivers.

Methods
This was a pragmatic usability study using a convenience sample from a real patient service. For the duration of four weeks Anna CaresTM acted as a virtual assistant via a tablet, and was used for health coaching sessions, reminders, messaging, monitoring, and scheduling. In-depth interviews and focus groups with participants were undertaken to explore their perspective on the use of the assistive mobile technology. NVivo software was used to identify major themes.

Results
'Anna' provided participants with 11 different health coaching sessions delivering stroke-specific educational content, a daily fact, approximately two messages per week (one free text and one in survey format). Although some participants needed prompting, generally they thought the technology was easy to use, considered the health coaching sessions informative, appreciated the ongoing support through the messaging system and the feeling of being able to connect. Yet, there was not much interest in the scheduling function of the application.

Conclusion
Virtual assistant technology seems a feasible and acceptable means of providing educational information, health coaching, and support among community-dwelling people with stroke and their caregivers. Future studies are required to determine the potential benefit of this support system on health outcomes as well as therapy engagement.

Correspondence:
Maayken van den Berg
Flinders University, South Australia, Australia
maayken.vandenberg@flinders.edu.au

Does Utilising an M-Health Platform Enhance Cardiac Rehabilitation Participation?

Marlien VARNFIELD[1], Lisa GILROY[2], Liz COLLINS[2], Fiona BOURKE[2], Yvonne MARTIN[2], Manuel GONZALEZ-GARCIA[1], Mohan KARUNANITHI[1]

1. CSIRO, Queensland, Australia
2. Metro South Health, Queensland, Australia

Background
Cardiac rehabilitation (CR) can improve health outcomes and reduce re-hospitalisation, morbidity and mortality. Despite these benefits, only 30-50% of eligible patients finally take up CR. In Australia, new research indicated that greater uptake of CR in Victoria alone can lead to net financial saving of $46.7-$86.7 million and benefit cost ratio of 5.6 and 6.8 for 50% and 65% CR uptake, respectively over 10 years (compared to status quo of 30%).

An m-Health care model to remotely deliver CR, has demonstrated significantly better uptake and completion than, and equal clinical outcomes as that of the traditional centre-based CR program. Recent real practice implementation of this m-Health CR program as an optional offering, demonstrated similar improvement of CR use overall. The objective of the current research is to further improve CR participation in a Queensland Hospital and Health Service (HHS) through offering of a variety of CR program options.

Methods
The study aims to recruit 400 subjects (Dec'16 to Oct'17). Patients referred to three CR Services within the HHS undergo a comprehensive initial face-to-face assessment and are assigned to a CR program according to their individual circumstances and choices. These include centre-based, home-based or hybrid CR program options. Based on 2015 data during which ≈1600 patients were referred to the HHS, with historical data indicating a 50% uptake rate, we believe that offering a variety of CR program options would improve the uptake rate to at least 65% or more.

Results
As of Feb 2017, a total of 124 patients were offered CR at the three participating CR Services, with 45 patients declining the service (uptake of 63.7%).

Conclusion
Demonstrating an increase in CR uptake to 65% and more, can reduce the burden of disease, directly translating to significant benefits to health services and the economy.

Correspondence:
Marlien Varnfield
CSIRO, Queensland, Australia
marlien.varnfield@csiro.au

POSTER PRESENTATIONS

The Evaluation of a Telemedicine Planning Framework Based on Needs Assessment

Sharifah AL DOSSARY[1], Melinda MARTIN-KHAN[1], Nigel ARMFIELD[2], Anthony SMITH[1]

1. Centre for Online Health, The University of Queensland, Queensland, Australia
2. Centre for Clinical Research, The University of Queensland, Queensland, Australia

Background
A telemedicine planning framework was developed based on needs assessment. It consists of two phases divided into six parts. Phase one comprises access and needs assessment (data collection) , while Phase two involves priority setting analysis .The developed framework was applied in one community and evaluated by an expert panel.The aim of this study was to evaluate the developed telemedicine planning framework, using an expert panel.

Methods
A range of experts in telemedicine and planning health services were sought to establish the expert panel. The total panel included 11 participants. The panel members were asked to review a summery document about the framework, and the practical guide developed to explain how to apply the framework. The process of evaluation consisted of two voting rounds, following the RAND-UCLA appropriateness method. Round one, involved an expert panel meeting and a formal voting process, followed analysis of voting and a second voting round. The panel were asked to rate each part of the framework, and its relevant practical guide application, with a score from one to nine based on compliance with the selected criteria.

Results
There are six parts in the practical guide. Edits were applied to the practical guide following voting round one, but no changes to the framework were required. Following round two, Parts 3-6 were rated compliant with all the criteria elements. Parts 1-3 had 5 elements rated ‘Undecided’, with disagreement within the panel on the potential to collect data in relation to accessibility and capacity to collect required data. With some panel members feeling it was more feasible than the others. There were no ‘non-compliant’ ratings for the framework or guide.

Conclusion
A framework and a practical guide for planning telemedicine services based on needs assessment, was developed and evaluated, to provide guidance in the assessment of the needs.

Correspondence:
Sharifah Al Dossary
Centre for Online Health, The University of Queensland, Queensland, Australia
sharifah.aldossary@uq.net.au

Spatial Mapping of My Health Record Statistics by Primary Health Network in Australia

Olabanji ALO[1], Mark GRIFFIN[1], Sisira EDIRIPPULIGE[1]

1. The University of Queensland, Queensland, Australia

Aim
This study seeks to employ spatial mapping techniques to (a) explore consumers' and healthcare providers' My Health Record (MyHR) Statistics by Primary Health Network (PHN), (b) determine consumer uptake rates for MyHR by gender and age groups, and (c) examine correlations between sociodemographic characteristics and consumer MyHR uptake rates.

Methods
Secondary data were utilised. Spatial maps were developed using Esri ArcMap v10.5.

Results
Consumer registrations and uptake rates for My Health Records by gender and age group were highest in PHNs in Eastern Australia. Individuals aged 65 years and above had better My Health Record uptake rates. More females than males were registered for My Health Record. For all types of healthcare provider registrations, most registrations were observed in PHNs in Eastern Australia. Many individuals in PHNs in Eastern Australia and Western Australia were employed. Many residents in PHNs in Western Australia, South Australia, Northern Territory and Eastern Australia were mid or high-income earners. Many individuals in South Australia, Eastern Australia and Western Australia were highly educated. Many Indigenous and non-Indigenous individuals were observed in some PHNs in Western and Eastern Australia.

Conclusion
There was an uneven distribution of consumer and provider MyHR registration and uptake rates across PHNs in Australia. Consumer MyHR uptake rates were most in PHNs in Eastern Australia. However, whether the automatic MyHR registration strategy implemented for all individuals in Nepean Blue Mountains and Northern Queensland influenced the uptake rates in these regions remains to be formally elucidated. Individuals aged 65 years or more had the highest MyHR uptake rates. Females had better MyHR registrations than males. Education, income, and employment status of individuals were associated with consumer MyHR uptake rates, while Indigenous status did not correlate with consumer uptake rates. Continuous consumer and provider awareness and education are needed to improve MyHR uptake rates.

Correspondence:
Olabanji Alo
The University of Queensland, Queensland, Australia
olabanji.alo@uqconnect.edu.au

Assessing the Feasibility of Sensor-Based Remote Patient Monitoring Applications

Teena ARORA[1], Andrew STRANIERI[1], Venki BALASUBRAMANIAN[1]

1. Federation University, Victoria, Australia

The monitoring of patients using sensors is an emerging trend in healthcare. However, the deployment of remote patient monitoring applications faces many challenges that not only depend on technical constraints related to sensors and network connectivity but also on other factors that include clinical and economic requirements. Assessing the feasibility of a remote patient monitoring system for any given clinical application requires the consideration of multiple factors in order to reach an informed decision. In this work, a framework is advanced that presents major factors influencing the assessment in technical, business and clinical categories. This framework is illustrated using a case study involving a remote patient monitoring application that identifies the deteriorating health condition of a patient using the Multiple Early Warning Score (MEWS) deployed in many hospitals world-wide. A real-time trial of the MEWS application was conducted in a hospital where patients wore sensors that monitored their vital signs and transmitted the data to devices and servers where software calculated a MEWS score automatically. The software raised SMS alarms and enabled clinicians to view the vital signs remotely.

Correspondence:
Teena Arora
Federation University, Victoria, Australia
teena.melb10@gmail.com

Computer Software and Mobile Apps for Alcohol and Substance Abuse Treatment: A Systematic Review

Marzyeh ASKARI[1], Sharareh R. NIAKAN-KALHORI[1], Marjan GHAZISAEEDI[1], Farhad FATEHI[2]

1. Tehran University of Medical Sciences, Tehran, Iran
2. Centre for Online Health, The University of Queensland, Queensland, Australia

Aim
Alcohol and substance abuse is a serious concern and the need of effective treatment is obvious; reaching this point is facilitated by computer and mobile-based software. The aim of the present study was to determine the most common features and characteristics in computer software and mobile apps for alcohol and substance abuse treatment interventions.

Methods
Pubmed, Scopus, Embase and Web of Science were searched using keywords, phrases and MeSH terms in May 2017 and 2327 results were generated and then duplicates removed (n = 1931). Retrieved abstracts were screened and 244 studies found relevant to the current study and finally, 67 studies met the inclusion criteria and were reviewed by two of the authors.

Results
Computer and mobile software used for alcohol and substance abuse treatment were analysed and the most common features were extracted including Education (n = 38), Monitoring (n = 31), Counselling (n = 21), Messaging (n = 20). Alert, Reminder and Security and Privacy with the frequency of 6, 6 and 5 were the next most common features, respectively. Overall, 47 different applications were used for the studies. 30 of them were patient-side and 10 were health provider-side, and 7 were bilateral. 39 applications were used for follow-up and the rest used for behavioural counselling and interview between patients and healthcare providers. Only five applications were designed and developed based on psychological theories.

Conclusion
Ease of use and learning the most common features in any given software are crucial for their acceptability by the users. It reveals that application developers should consider these features in application design. Software which have been used for patient follow up decrease the risk of relapse by improving the decision making process for patients and healthcare providers. Successful treatment needs applications which have been developed based on theories and studies.

Correspondence:
Marzyeh Askari
Tehran University of Medical Sciences, Tehran, Iran
marzyeh.askari@gmail.com

Effectiveness of Mobile-Based Interventions on Smokers Health Behaviour Change: An overview of Systematic Reviews

Azam ASLANI[1], Fariba AGIN[2], Hosnieh-sadat MIRAZIMI[2], Farhad FATEHI[3]

1. Health Human Resources Research Centre, Shiraz University of Medical Sciences, Shiraz, Iran
2. Student Research Committee, Shiraz University of Medical Sciences, Shiraz, Iran
3. Centre for Online Health, The University of Queensland, Queensland, Australia

Background /objective
The Cochrane Tobacco Addiction Group published an update to a review on mobile-based interventions for smoking cessation in April 2015. However, most studies under review were conducted in high-income countries with good tobacco control policies. In this study reviewing systematic reviews, we assessed the effectiveness of mobile-based interventions for smoking cessation in a variety of contexts.

Methods
We considered systematic reviews (SR), and meta-analyses that were published since 2006 in peer-reviewed journals or the Cochrane Library, in which mobile-based interventions were the only or one of the main interventions under study. Out of 325 retrieved records from electronic search, 17 systematic reviews were eligible and included in this review.

Results
The systematic reviews included studies on both high-income and low-income populations from New Zealand, USA, Norway, UK, Germany, Switzerland, Spain, and China. The most common mobile-based interventions were various kinds of text-messaging (tailored, text &videos messages, bidirectional, text message & online communication, text message & interactive website with educational module), smartphone app and cell phone–delivered smoking cessation counselling. Text messaging was a common intervention that could be effective in smoking cessation if continued for six months or more. Combinations of text message with video clip, interactive web site or online consultation based on a behaviour change theory were the most effective for smoking cessation. The common behaviour change theories were Social cognitive theory and Behavioural self-regulation theory.

Conclusion
Mobile-based interventions for smoking cessation, especially text messaging, are more effective if designed based on behaviour change theory and last at least six months.

Correspondence:
Azam Aslani
Health Human Resources Research Centre, Shiraz University of Medical Sciences, Shiraz, Iran
azamaslani@gmail.com

Launching Telemedicine Services for Paediatric Neurology and Paediatric Cardiology Patients In Children Medical Centre, The Iranian Paediatric Centre Of Excellence

Alireza ATASHI[1], Khosrow TAYEBATI[2], Francesco AMENTA[2], Sina MARASHI[1], Shervin BADV[1], Masoud MIRMOEINI[1]

1. Virtual School, Tehran University of Medical Sciences, Tehran, Iran
2. University of Camerino, Camerino, Italy

The National health system should be based on equity and equality principles. Actually, this has to provide a prompt, suitable and efficient health service to all individuals. Large numbers of young populations are present in some emergent countries like Islamic Republic of Iran. Actually, in this nation the number of paediatric population (up to 14) is quite high. In this context, research, innovation and technology have to serve everyone who lives in the disadvantaged counties and villages.

In a pilot project, organized by a joint venture between University of Camerino (UNICAM) and Tehran University of Medical Sciences (TUMS), health and medical assistance for supporting the paediatric population was designed. In this project two medical priorities were identified: 1) Tele-neurological service 2) Tele-cardiological service. Primarily, these services should offer a second opinion for a correct and appropriate interpretation of the EEG and ECG traces. The Children's Medical Centre of TUMS in Tehran will play a crucial role to provide the second opinion for any kind of request (regarding neurology and cardiology) coming from other paediatric and/or general hospitals, where they are taking care of the children.

Another important mission of the present project concerns the health assistance for a correct development of Iranian children. This kind of assistance has to involve all of the regions of the country both for a correct alimentation and for other features of a correct and harmonic development.

The results of this project will be of great help to expand the system to other parts of the country as well as other areas of medicine for providing services. Some of the challenges for these types of services include lack of credits, the lack of infrastructure, the staff and organization's resistance to changes in tasks and organizational chart, and the distrust of doctors and patients toward Telemedicine.

Correspondence:
Alireza Atashi
Virtual School, Tehran University of Medical Sciences, Tehran, Iran
smatashi@yahoo.com

A Systematic Review of Group Videoconference Interventions into the Home Setting

Annie BANBURY[1], Lynne PARKINSON[1], Susan NANCARROW[2], Jared DART[3], Len GRAY[4]

1. CQ University, Queensland, Australia
2. Southern Cross University, New South Wales, Australia
3. Bond University, Queensland, Australia
4. The University of Queensland, Queensland, Australia

Aim
We conducted a systematic review of the literature on the use of group videoconferencing (VC) into the home to provide education and/or social support and assessed the quality of the evidence.

Methods
A database search identified 15 studies which met the inclusion criteria. The quality of the evidence was assessed using the Mixed Methods Assessment Tool. We developed an analysis framework using hierarchical terms feasibility, acceptability, effectiveness and implementation.

Results
There were nine high-quality studies and six of lower quality. VC groups predominantly targeted caregivers (n=6) and those with chronic disease (n=5), with most participants aged over 50 years. The majority of studies (n=10) employed VC group meetings as one of multiple components of the intervention. Overall, group videoconferencing into the home setting is feasible even for inexperienced computer users, however good IT support is required for participants. Mhealth device use is limited. The acceptability of group VC was high across age ranges and adherence was comparable to face-to-face interventions. Over time, participants were able to modify their communication for the online environment. Few studies reported on the process for delivering VC groups. Exposure into people's homes was not a concern and access from home was highly valued. Quantitative data reported improved outcomes but due to the heterogeneity of studies comparison across studies was not possible. Comparative studies reported similar results for face-to-face groups and usual care but better than text-based forums. Qualitative data indicated a range of benefits including improvements in social connectedness and support; health knowledge, insight and skills; and increased access to group-based programs.

Conclusion
Groups delivered by VC are feasible and potentially can improve access to group interventions. Outcomes are similar in face to face groups, but future research is required on the facilitation process and larger scale studies to develop the evidence base.

Correspondence:
Annie Banbury
CQUniversity, Queensland, Australia
a.banbury@cqu.edu.au

Access to Specialist Care for Regional Patients

Colleen BIRCHLEY[1]

1. Telstra Health, Queensland, Australia

In January this year Telstra Health and the Royal Flying Doctors Service (RFDS) Victoria launched the Flying Doctor Telehealth platform, linking remote and regional patients with specialists providing greater access to healthcare. The RFDS has been delivering a Diabetes Telehealth service to rural communities in Victoria since 2013, and as the service expands RFDS Victoria were seeking a reliable platform that could support this growth.

This partnership enables patients living with diabetes to connect with Endocrinologists in Melbourne from their local health centre. The service brings together video conferencing capabilities, secure document management, advanced clinician scheduling and an online booking system in one fully integrated solution. The service is available to diabetes patients in Mildura, West Wimmera and Kerang, with the view to expand to other regions in Victoria, and treat other conditions such as in; cardiology, respiratory medicine, psychiatry, rheumatology and gerontology.

Telstra Health and RFDS worked closely to customise the platform to support the RFDS workflow. A staged approach to deployment was adopted to manage and minimise the risk of change and allow for improvements as the rollout progressed.

Under this service model, patients travel to clinic locations to attend their telehealth consultation with the Endocrinologist so that a practice nurse or diabetes educator is also in attendance. For patient Ron Hick, this means he now receives specialist treatment from his local health centre, saving him an eight hour round trip every three months.

With the partnership having only commenced in January, the impact is still being assessed, however, the RFDS already delivers in excess of 100,000 services per annum, of which only a small proportion are delivered via telehealth. There is enormous opportunity to expand the Flying Doctor Telehealth Platform to new communities across the country, and more conditions providing greater access to key healthcare services.

Correspondence:
Colleen Birchley
Telstra Health, Queensland, Australia
colleen.birchley@team.telstra.com

Teleaudiology: A Working Model in an Online World

Sophie BRICE[1], Nick BAJAN[1]

1. Blamey Saunders hears, Queensland, Australia

Over 4 million people in Australia have at least mild hearing loss with more than three quarters leaving their hearing loss untreated, leading to increased likelihood of cognitive decline and mental health issues. The traditional model of Audiology is centered around the clinician, potentially under valuing the client's input. Empowering the client is important for improving compliance, potential benefit and overall outcome with hearing aids in turn improving the client's potential quality of life. Online tools for communication are almost ubiquitous among those still working, newly retired and increasingly across the elderly population. Tele- models of health care service maximise the communication between client and healthcare provider, while minimising the disruption to the patient's life. Rural and remote access to healthcare provisions is limited and has been a barrier to many of the Australian population accessing hearing aids and the support needed. A Tele- based service model for Audiology (Teleaudiology) is scalable, cost effective, and allows far greater reach to clients limited either by distance or by time as more people retire later.

For 6 years Blamey Saunders hears has been operating a sustainable, growing, effective service model for delivering hearing aid solutions and online support. With only 2 sites, thousands of clients across Australia have been supported with hearing aids.

Correspondence:
Sophie Brice
Blamey Saunders hears, Queensland, Australia
sophie.brice@blameysaunders.com.au

Evaluation of a Multi-Site Speech Pathology Telepractice Service Providing Specialist Swallowing and Communication Intervention for Patients with Head and Neck Cancer

Clare BURNS[1], Elizabeth WARD[2], Annie HILL[3], Sanjeewa KULARATNA[4], Joshua BYRNES[4], Lizbeth KENNY[5]

1. Royal Brisbane & Women's Hospital, Queensland Health, Queensland, Australia
2. Centre for Functioning and Health Research, Queensland Health & School of Health and Rehabilitation Science, The University of Queensland, Queensland Australia
3. The University of Queensland, Queensland, Australia
4. Centre for Applied Health Economics, Menzies Health Institute, Queensland, Australia
5. Queensland Health, Queensland, Australia

Introduction
A multi-site telepractice service was developed to support the swallowing and communication management of patients with head and neck cancer between the Speech Pathology Departments of a specialist cancer centre, the Royal Brisbane & Women's Hospital (RBWH) (hub site), and three regional cancer centres in Queensland (spoke sites): Nambour Hospital, Hervey Bay Hospital, and Rockhampton Hospital.

Methods
A multi-site randomized controlled trial comparing standard care with telepractice care was conducted to evaluate this new service. In the standard care model, the RBWH speech pathologist supported the regional speech pathologist's management of the patient via email or phone contact. The telepractice model of care involved the RBWH speech pathologist providing online, direct clinical intervention to the patient and regional clinician during live telepractice sessions. Connectivity between sites was achieved using a hardware videoconferencing and medical camera system via the Statewide Telehealth Network. In both service models, patients were required to travel to RBWH for face-to-face appointments if the clinical issue/s could not be resolved. Data pertaining to service outcomes, health service costs, patient +/- carer costs, patient reported quality of life (AQOL-4D) and consumer/clinician satisfaction were collected.

Results
Eighty-two referrals (39 standard care; 43 telepractice care) were managed and available for analysis. The telepractice service reported a significant reduction in the number ($p=0.004$) and duration ($p=0.024$) of events required to manage referrals, and an average cost saving of 12% ($p=<0.0058$) for the health service and a saving of $40.05 per patient per referral. A positive but equivalent increase in quality of life (0.04) was reported for both treatment groups with higher consumer and clinician satisfaction reported for telepractice care.

Conclusion
A speech pathology telepractice service providing specialist support for swallowing and communication management benefits both the patient and health provider through higher service and cost efficiency, and treatment satisfaction.

Correspondence:
Clare Burns
Royal Brisbane & Women's Hospital, Queensland Health, Queensland, Australia
clare.burns@health.qld.gov.au

Establishing a Telehealth Service for Dysphagia Assessment in Rural Hospitals

Shannon CHALK[1], Natasha MOLLER[1], Emily COMBEN[1]

1. West Moreton Hospital and Health Service, Queensland, Australia

Background
West Moreton Hospital & Health Service (WMHHS) provides rural outreach to four hospitals, (Boonah, Esk, Gatton and Laidley), with 75 inpatient speech pathology occasions of service delivered in 2014. Major patient populations are stroke, respiratory and degenerative conditions. We established a Telehealth service to improve timeliness of dysphagia assessments and reduce clinician time and cost associated with travel.

Aims
1) To establish a prompt and highly reliable dysphagia service to rural hospitals using telerehabilitation;
2) To evaluate the clinician's and patient's experience of using Telehealth for dysphagia assessment.

Method
Literature reviews were conducted around Telehealth and cervical auscultation. A telehealth service was established for acute dysphagia assessment of rural inpatients The Statewide Telehealth Support Unit funded the purchase of four digital microphones which are used to replace cervical auscultation. Speech Pathologists and Registered Nurses were trained in Telehealth and conducting dysphagia assessments. 18 patients were included in the trial. Travel and referral waiting time reduction, and staff / patient satisfaction were measured.

Results
The use of Telehealth resulted in: 1) A total reduction of 1,800 minutes of clinician travel time; 2) Same-day assessments were offered 100% of the time; and 3) 80-100% staff and patient satisfaction reported with use of Telehealth.

Discussion
Using Telehealth has improved the time and cost effectiveness of our dysphagia service delivery to rural hospitals within WMHHS. Staff and patient satisfaction were high. Challenges identified included availability of equipment, technological breakdowns, documentation and timetabling.

Conclusion
The use of Telehealth offers a prompt, sustainable and highly reliable dysphagia service to rural hospitals within the West Moreton Hospital and Health Service.

Correspondence:
Shannon Chalk
West Moreton Hospital and Health Service, Queensland, Australia
shannon@chalkelectrical.com.au

An Evaluation of a Social Mobile Media Spaces Group to Support Newly Qualified Nurses During Transition

Jennifer CHIPPS[1], Rita OLOGUN[1], Felicity DANIELS[1], Urs GROHBIEL[2], Christoph PIMMER[2]

1. University of the Western Cape, Cape Town, South Africa
2. University of Applied Sciences and Arts Northwestern Switzerland, FHNW School of Business, Switzerland

In South Africa, newly qualified nurses are required to do one year of community service at selected underserved placements in the country.These nurses encounter numerous challenges during this transition period such as professional isolation and lack of access to information. It has been suggested that support through the provision of ongoing educational information and the strengthening of professional networks will facilitate professional development and transition during this period. United Nations organizations such as the WHO, UNICEF and THE WORLD BANK have emphasized the potential of mobile phones and social media to support health workers. AIM: The aim of this study was to develop, implement and evaluate a Social Mobile Media Spaces intervention to support newly qualified nurses during transition.

Methodology
Phase 1: Development of a mobile intervention using a user-centred design framework, a needs assessment systematic review and an enrolment survey. Phase 2: Evaluation of intervention using a mixed method evaluation research design with pre- and post-questionnaires focused on outcomes of use, professional isolation and social capital and qualitative interviews.

Results
A WhatsApp Community of Practice was set up with 63 newly qualified nurses enrolled into a pilot study. A moderated 6-weeks mobile professional education program of support, professional development activities and useful professional information was developed and implemented. The pre-questionnaire was completed by 46 (73%) participants using Survey Face on WhatsApp. Moderate levels (62%) of social connectedness with other nurses were reported, however 50% reported professional isolation. The process evaluation showed high usage of the Community of Practice with interactions with both the moderator and each other. Challenges with prepaid data were reported which limited participation.

Conclusion
Initial results indicate that social media spaces have potential to support newly qualified nurses during transition.

Correspondence:
Jennifer Chipps
University of the Western Cape, Cape Town, South Africa
jchipps@uwc.ac.za

Tele-Mental Health to Deliver Child Mental Health Services in Resource Limited Settings: State of Readiness in a South African Setting.

Jennifer CHIPPS[1], Rene NASSEN[2], Akhona MKOZI[3]

1. University of the Western Cape, Cape Town, South Africa
2. Lengegeur Hospital, Cape Town, South Africa
3. Western Cape Department of Health, Cape Town, South Africa

One in 7 children and adolescents have significant mental health difficulties, with about 10% having a specific psychiatric disorder in sub-Saharan Africa.Child and adolescent mental health users in South Africa experience significant barriers to accessing mental health services at primary and district levels of care, both within the metropolitan and rural catchment areas. Funding constraints and lack of political will have limited the expansion of child and adolescent mental health services sufficient to serve the need, and in line with policy frameworks. The Lentegeur Hospital Child and Adolescent Mental Health Service is a tertiary level unit, located in Cape Town, South Africa. Mental health care is provided for young people from adverse social and economic environments. A particular focus has been outreach and support to district and rural catchments which includes clinical supervision, visits to district hospitals and community health clinics, mentoring, training, advocacy and improved networking. Challenges to the sustainability of such programmes include time constraints, cost, geographic distances, travel time and safety. Evidence has shown that videoconferencing seemed to improve the accessibility of services, access to education and savings in time, costs and travel and that feasibility and acceptance of telepsychiatry in child and adolescent mental health services was high. To develop a child telemental health program, site visits to rural catchments have been conducted to determine the state of readiness both in terms of infrastructure, technology, as well as staff receptiveness. The proposed Child Telemental Program aims to maximally utilise existing personnel and resources in order to reach larger numbers of children and adolescents, particularly in distant geographic areas. The initial focus would be provision of clinical supervision, mentoring and training via videoconferencing, podcasts and use of a mobile platform.

Correspondence:
Jennifer Chipps
University of the Western Cape, Cape Town, South Africa
jchipps@uwc.ac.za

Tele-Handover in Major Trauma Recovery: Integrating Multidisciplinary Case-Conferenced Telehealth Handover Across the Patient Journey.

Jessica DAWBER[1], Martin WULLSCHLEGER[1], Kate DALE[1], Benjamin CHEN[1], Heidi ATKINS[1]

1. Gold Coast HHS, Queensland, Australia

The Gold Coast University Hospital, Trauma Service, has adopted the practice of Tele-Handover as part of the Trauma Service model of care as an outcome of the Tele-Recover project. Tele-Recover is a clinical pathway that uses telehealth for handover, access to specialist services and follow up in major trauma recovery. Tele-Handover involves multidisciplinary teams at sending and receiving facilities meeting via videoconference to handover patient care using a case-conference format. The patient, family and care-givers are included in Tele-Handover where suitable. The teams discuss the case presentation, medical history, physical, social, psychological and functional considerations of the patient to ensure treating teams and the patient are empowered towards optimal rehabilitation outcomes. Whilst developed in the context of major trauma care, Tele-Handover has broad applicability to rehabilitation as well as chronic and complex conditions. There has been positive feedback from clinicians, patient and families involved in the Tele-Handover process.

Benefits of Tele-Handover include:

- Multidisciplinary team to multidisciplinary team communication
- Improved relationships between facilities and teams
- The inclusion and empowerment of patients, families and caregivers in clinical handover
- Safer, higher quality clinical handover
- More efficient handover through the avoidance individual phone calls between disciplines
- Passive knowledge transfer and peer education

The unique aspect of Tele-Recover is integrating Tele-Handover as part of the business as usual model of care. Case reports of using telehealth for case conferenced handover have indicated that historically, telehealth case-conferencing occurs when there is refusal of referral, concerns about the ability to manage the patient or inter-facility relationships are strained. Proactive use of Tele-Handover streamlines inter-facility and team handover, leading to more collaborative care and better patient outcomes.

Correspondence:
Jessica Dawber
Gold Coast HHS, Queensland, Australia
jessica.dawber@health.qld.gov.au

Mental Health Outpatient Pilot

Shane DELVES[1]

1. Murrumbidgee Local Health District, New South Wales, Australia

One of the challenges facing Mental Health Drug and Alcohol (MHDA) service provision across Murrumbidgee Local Health District (MLHD) is the size of the catchment. The current model of outreach service provision involves clinicians travelling to outreach sites to deliver clinical services face to face. The geographical area covered by teams varies considerably with teams servicing an area of up to 37,511 square kilometres and ten outreach sites. There is an identified need to make better use of technology to support clinical practice, alleviate workload pressures and challenges associated with inequitable access to services resulting from isolation. MLHD was provided with an opportunity to collaborate with Healthdirect Australia to pilot a web-based model of service delivery that uses real time interaction between clinicians and consumers to support MHDA consumers in rural and remote communities within the District. It was anticipated that use of web-based counselling would help to create a sustainable and cost effective service that was more responsive to the needs and expectations of the Murrumbidgee communities. The initial project methodology proposed a six month trial and evaluation of Healthdirect Video Call by the Deniliquin and Temora Community MHDA teams and the Wagga Wagga Mental Health Recovery Unit. There was limited uptake of the technology during the first six months. Issues with service readiness meant that consumers were required to use their own devices as the service could not offer a secure IT environment to conduct consultations. Other issues impacting on participation was the hesitancy of some clinicians to embrace the technology. Staff did however begin to use the technology as intended during the second half of the pilot as well as for a range of other purposes including clinical review meetings and specialist clinics.

Correspondence:
Shane Delves
Murrumbidgee Local Health District, New South Wales, Australia
shane.delves@health.nsw.gov.au

The Telehealth Discharge Summary - Myth or Holy Grail?

David EVANS[1]

1. MetroSouth Hospital and Health Service, Queensland, Australia

For hundreds of years, the Discharge Summary or communication produced at the end of a hospital stay has been the main source of information for most general practitioners and many other community care providers concerning the care delivered in hospital and any future treatment plans.

It is a much loved and much-maligned communication tool, emotively generating angst for practitioners consequent to its huge variability in legibility, comprehensibility, timeliness and accuracy. Over the last 40 years, there have been ongoing attempts to improve the nature, quality and usefulness of this intrinsic healthcare tool with some dramatic improvements and some continuing difficulties. Many of the issues above are far from resolved and at times worse.

Electronic Discharge Summaries are now becoming the norm with the appearance of national standards and escalating value adding including treatment guides and multiple methods of distribution.

How does the summary meld with a two or more person telehealth consultation? Who is accountable for its production and distribution to primary care, nursing home or carer and patient? Where should it reside on completion? How does it become integrated with the other records, including the discharge summary, of with large vendor EHRs, scanned paper records or traditional paper?

Does the format of the online discharge summary (shortly to have an Australian Standard of its own) bond with the telehealth environment?

One possibility is to explore the use of cloud technology, web services and templates at the front end. Practitioners and facilities have almost ubiquitous access to the web, or will have if the NBN bears fruit. Producing a small document, on line, available to all who participated in the telehealth event is not a technological challenge. Use of national patient, provider and facility identifiers would allow all participants to seek, store and integrate the completed template into their own.

Correspondence:
David Evans
Metro South Hospital Health Service, Queensland, Australia
devans@dajuroka.com

Major Effort - Mixed Results: Reviewing What Works

Beverley GIEBEL[1]

1. West Moreton Hospital and Health Service, Queensland, Australia

Like other HHSs across QLD, West Moreton has been active in encouraging telehealth uptake for the last few years, and is the QLD leader for inpatient numbers for 2016-2017. The general uptake though has been inconsistent across various outpatient specialities. Despite our efforts to target services with the most potential for improvement, most success has occurred from unexpected areas. Review of the reasons for this has identified the two recurring themes of our unique geography, and the value of service champions.

West Moreton's geography is unique - four rural hospitals surround the large hospital at Ipswich, which itself is only 37 km from Brisbane and includes tertiary mental health services even closer. This clearly offers the opportunity to link Ipswich with rural beds only 50 km away for sub- acute patients with telehealth being the enabler for these back-transfers. Clinicians at Ipswich though, have often had no experience of rurality, the transport limitations, or the effects on patients with limited family supports. For someone living in Brisbane, Ipswich is west just down the road and easy to reach for employment. Rurality is therefore not a lived experience for some clinicians, and telehealth options are not a priority.

It was also surprising that the areas with a large potential cohort of telehealth patients, such as fracture clinic or urology were not the actual areas of growth. Cardiac rehabilitation, palliative care and telepharmacy with the rural hospitals were much more successful. In each of these of these cases, individual teams with motivated champions took the plunge in setting up a service and persisting to deliver and refine the service.

This paper reviews how the opportunities provided by our geography, the role of champions and individual motivation were the critical factors in developing our telehealth service.

Correspondence:
Beverley Giebel
West Moreton Hospital and Health Service, Queensland, Australia
WM-Telehealth@health.qld.gov.au

MoTER: A Story of E-Success in Chronic Heart Disease Management

Manuel GONZALEZ GARCIA[1], Marlien VARNFIELD[1], Mohan KARUNANITHI[1]

1. CSIRO, Queensland, Australia

In 2014, CSIRO's Australian e-Health Research Centre (AEHRC) for the first time validated an Internet and smartphone-based platform supporting home care for post-myocardial infarction (MI) patients. This home-based cardiac rehabilitation (CR) program improved post-MI CR program uptake, adherence and completion and was as effective in improving health outcomes as the traditional centre-based CR program. Since then, the platform has evolved towards its integration in daily clinical practice (now called Mobile Technology Enabled Rehabilitation or MoTER) and it is currently used in three different CR centres at Metro South Hospital and Health Service. From this multicentre clinical experience, important information regarding barriers and enablers in implementation will be examined. MoTER has recently also been adopted to support management of other chronic conditions and is currently being tested through different feasibility studies in Chronic Obstructive Pulmonary disease (m-COPD), Chronic Kidney Disease (PD-Buddy) and gestational diabetes (MoTHer), and a specifically designed program (e-PAH) for Pulmonary Arterial Hypertension management is also in progress in collaboration with PAH-services at The Prince Charles Hospital. Additionally, the internationalisation of the platform is addressed in the 'Diversity-1' feasibility study, in which three European countries will conduct concomitant CR programs (according to local routines) supported with the MoTER platform. The patient's recruiting phase is expected to start in October 2017. The objective of the Diversity-1 study is to evaluate the efficacy of the platform irrespective of the idiosyncrasy of the health structure, the local traditional system to deliver CR-programmes at each site, and the culture and the language of the users.

In summary, it can be concluded that the MoTER platform's story is a story of success, where only imagination sets limits to evolution.

Correspondence:
Manuel Gonzalez Garcia
CSIRO, Queensland, Australia
manuel.gonzalez-garcia@csiro.au

The e-PAH Platform: A Novel Monitoring and Rehabilitation System for Patients with Diagnosed Pulmonary Arterial Hypertension (PAH)

Manuel GONZALEZ GARCIA[1], John FEENSTRA[2,3], Stefan SÖDERBERG[4], Marlien VARNFIELD[1], Hang DING[1], Farhad FATEHI[5], Mohan KARUNANITHI[1], Ian YANG[2]

1. CSIRO, Queensland, Australia
2. The Prince Charles Hospital, Queensland, Australia
3. Metro North Hospital and Health Service, Queensland, Australia
4. Heart Centre, Norrlands University Hospital. Umeå.Sweden
5. The University of Queensland, Queensland, Australia

PAH is a rare, progressive and incurable disorder characterized by high blood pressure (hypertension) in the arteries of the lungs (pulmonary artery). The cause of this fatal condition is in many cases unknown although the introduction of targeted medical therapies in recent years has led to a significant survival improvement. PAH is now considered as a chronic disease and an appropriate management (rigorous therapy control followed by a close clinical monitoring) has improved quality of life and survival. This approach currently requires hospital-based complex and expensive management systems. Recent advances in information and communication technologies, such as smartphones and the Internet, have shown potential to address remote clinical monitoring for the following up of several chronic diseases such as congestive heart failure or ischemic heart disease. In general, these alternative models for CR have shown to be feasible and efficient. A recent literature review in our group (data not-published) has shown a practical absence of e-Health-based technology for PAH management. The development and implementation of comprehensive Internet and smartphone-based technology (Apps) for PAH management is an innovative idea that may contribute to empower patients, promote individualized care and improve the necessary multidisciplinary collaboration into the PAH service. For that purpose, PAH services of The Prince Charles Hospital, QLD and the Umeå University Hospital in Sweden, will conduct a collaborative international multisite Randomised Control Trial (RCT), n=90 (45 patients per site). The primary hypothesis is that a smartphone-and Internet-based interactive support system for PAH care (e-PAH) improves health-related quality of life and exercise capacity of the patients and reduces the number of unscheduled visits or hospitalizations and length of hospitalisations (LOS). The primary endpoint is Health Related Quality of Life variations and the secondary endpoints include modification of exercise capacity.

Correspondence:
Manuel Gonzalez Garcia
CSIRO, Queensland, Australia
manuel.gonzalez-garcia@csiro.au

Allied Health: From a Distance

Jo GOODERSON[1]

1. Ember Healthcare, Queensland, Australia

The challenges in providing quality healthcare services to the rural and remote population is significantly different from the challenges faced in a metropolitan or regional centre, however for allied health services this is a uniquely complex task, compounded by the significantly low numbers of therapists covering a wide geographical region, with small patient numbers.

In the metropolitan area it is possible to have a population density of 760 people per km2, but in a rural area the population density can be as low as 1 person per 10km on average, and in reality the area can be significantly higher.

To provide adequate allied health cover for this number of patients, would require a significant amount of travel by either the patient or therapist, which leads to a significantly higher healthcare cost associated with this care. Unfortunately, this is often deemed to be too high a fiscal burden for either party and this leaves a significant proportion of our population without comparable access to the healthcare services that they require.

This presentation aims to highlight the remote monitoring software / wearable technology that allied health providers can utilise to support the goal attainment of their patients, and how this can be applied across a wide range of conditions, such as post operative, sporting, cardiothoracic and disability services. A brief musculoskeletal assessment will be conducted to highlight the applicability of Telehealth into allied health services.

We will discuss the barriers to the implementation of these services, and highlight some of the areas we are already seeing benefit in. By providing timely interventions and reducing the cost of these services (through reducing or removing the need to travel by patient and/or therapist) the potential for good health outcomes can be improved significantly.

Correspondence:
Jo Gooderson
Ember Healthcare, Queensland, Australia
jo@emberhealthcare.com.au

Cognitive and Literacy Assessments for Children Using Telehealth

Antoinette HODGE[1], Rebecca SUTHERLAND[1], Kelly JENG[1], Natalie SILOVE[1]

1. Children's Hospital at Westmead, New South Wales, Australia

Aim
Access to cognitive and literacy assessments in regional areas is limited. Assessments conducted via telehealth offer a potential solution to overcoming difficulties with access as well as barriers associated with distance. This study aims to evaluate the feasibility of conducting cognitive and literacy assessments using telehealth technology and determining its equivalence with face-to-face delivery. The study has been designed to overcome the methodological and ethical issues identified in previous studies.

Methods
Primary school aged children are being recruited through a rural and remote reading difficulties clinic. The Wechsler Intelligence Scale for Children-5th edition (WISC-V) is being administered to assess intellectual abilities. A comprehensive battery of reading assessments is also being undertaken. All assessments are being delivered via a telehealth platform using a web-based interface, which includes synchronized image viewing and remotely visible click-markers for pointing at images as well as videoconference functionality. Test scores and observations of behaviour in both telehealth and face-to-face conditions will be compared.

Results
Twelve children have been assessed to date. Preliminary data on these assessments will be presented. Results have indicated that completing assessments via telehealth is feasible; no significant difficulties associated with the telehealth technology have been reported. The children have tolerated the assessment well with 100% completion rate to date.

Conclusion
This is the first full scale trial of telehealth assessments for intelligence and reading in children. It demonstrates the potential use of telehealth technology in this area to increase accessibility to services.

Correspondence:
Antoinette Hodge
Children's Hospital at Westmead, New South Wales, Australia
antoinette.hodge@health.nsw.gov.au

Enhancing the Security of Web Sites and Patients' Portals by Detecting Malicious Web Robots Using Machine Learning Techniques

Nafiseh HOSSEINI[1], Kobra ETMINANI[1], Farhad FATEHI[2]

1. Mashhad University of Medical Science, Mashhad, Iran
2. The University of Queensland Centre for Online Health, Queensland, Australia

Introduction
There is increasing demand for access to medical information via web sites and patients' portals, but one of the challenges towards widespread utilization of such service is maintaining the security of those web sites and portals. Recent reports show an alarming increase in cyber-attacks using web robots. These software programs crawl web pages and are capable of executing various commands such as attacking web servers, cracking passwords, harvesting user's personal information, and testing the vulnerability of servers.

Aim
The aim of this research was to develop a new effective model for detecting malicious web robots using machine-learning techniques.

Method
In this research, different methods of web robots detection were investigated. Log files of a sample of compromised web sites were analyzed and the best features for the detection of web robots were extracted. Then after testing and comparing several machine learning algorithms including Support Vector Machine (SVM), Bayesian Network and Decision Tree, the best model was developed using the most appropriate features and its accuracy was evaluated.

Results
Our analyses showed the SVM-based models can yield higher accuracy (f=0.97) comparing to Bayesian Network (f = 0.88) and Decision Tree (f = 0.95) for detecting malicious web robots. However, extracting proper features can increase the performance of the Bayesian network (f = 0.94) and the Decision Tree (f = 0.96).

Conclusion
Security concerns are among the potential barriers to widespread utilization of patient portals. Machine learning algorithms can be effectively used to detect malicious web robots and enhance the security of sensitive patients' information. Selecting appropriate features for the development of these algorithms can remarkably increase their accuracy.

Correspondence:
Nafiseh Hosseini
Mashhad University of Medical Science, Mashhad, Iran
Hosseini84.stphd@gmail.com

The Telehealth Victoria Community of Practice

Susan JURY[1, 3], Lindy JOHNSON[1], Alice KING[2]

1. Royal Children's Hospital, Victoria, Australia
2. Barwon Health, Victoria, Australia
3. Peter MacCallum Cancer Centre, Victoria, Australia

At the start of 2017, 15 health services across Victoria received Department of Health and Human Services (DHHS) funding to implement or expand telehealth video call access to specialist clinics. The DHHS also funded the establishment of a Community of Practice (COP) to help facilitate collaboration and sharing of resources between practitioners.

Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly(1). The Telehealth Victoria COP has diverse representation across tertiary, primary, metro and regional health services and includes telehealth project staff, administrators, clinicians and IT staff.

Key deliverables and outcomes to date

- 120 COP members and 64 health services represented.
- An engaging and interactive website, including an online discussion forum, resources, news and events, and members contact list. (Over 5,000 page views since launch on 30/6/17).
- Four face-to-face workshops, with 25 - 40 participants at each workshop.
- Weekly email newsletter updates.
- Shared resources, problem solving and ongoing support between members.
- Establishment of a monthly webinar series.
- Collaboration and engagement with a range of partners including DHHS, professional bodies, educational institutions, Primary Health Networks and other States.

Key learnings:

- The formation of the COP has enabled connection, collaboration and knowledge sharing that may not have otherwise occurred.
- Implementing the COP concurrently with new projects helped ensure the COP aligned with project needs. However, this also meant the COP was less responsive initially, as it established itself.
- Members' needs varied greatly according to their background, telehealth experience, roles, project context (including type of health service and technology) and objectives, which made meeting all needs challenging. However, this diversity also delivered the benefit of new perspectives to challenges and solutions.

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Correspondence:
Susan Jury
Peter MacCallum Cancer Centre, Victoria, Australia
susan.jury@petermac.org

Home Self-Monitoring Equipment Management Time Taken by Older Adults with Non-Communicable Disease: Support Needs for Initial Introduction

Tomoko KAMEI[1], Yuko YAMAMOTO[2], Takuya KANAMORI[1], Yuki NAKAYAMA[3], Nobuaki KAMEI[4], Ikuo TOFUKUJI[5], Noritaka NAKAJIMA[4]

1. St. Luke's International University, Graduate School of Nursing, Tokyo, Japan
2. Musashino University, Nishi-tokyo, Japan
3. Tokyo Metropolitan Institute of Medical Science, Tokyo, Japan
4. Meisei University, Hino, Japan
5. Takasaki University of Health and Welfare, Takasaki, Japan

Aim
The number of older adults with non-communicable diseases is increasing, particularly in the super-aged population in Japan. We developed a telehome monitoring-based telenursing (THMTN) system for chronic obstructive pulmonary disease (COPD), amyotrophic lateral sclerosis (ALS), and diabetes mellitus (DM) (CAD) patients. The system comprised a 19-item physical and mental status self-assessment, including appetite, sleeping patterns, and physical symptoms, and recorded using a self-monitoring equipment (manometer, pulse oximeter, and bath scale with a Bluetooth wireless system) that automatically sends data to the tablet personal computer (TPC). The THMTN system was adapted to and operated by individual patients. This study evaluated the time taken by the patients to operate the equipment and respond to screen items and clarified initial support requirements.

Methods
CAD patients utilized the system for a 3-month monitoring period. We analyzed the logged time via the patients' login, and vital sign measurements, response to screen items, and data sent to the server were assessed.

Results
The system was tested by 15 patients (two with COPD, six with ALS, and seven with DM, with mean ages of 75, 63, and 73 years, respectively) for a mean monitoring period of 83 days.

The login time was the longest during the first 10 days and gradually decreased. Sixty days after initiation, the login time was half the time taken initially. The total login time was longer for COPD patients followed by DM and ALS patients. Two patients faced some issues while handling the equipment because of rapid muscle weakness or cognitive disorder. Two patients were reinstructed via the phone for managing TPC for the first several days.

Conclusion
For home self-monitoring equipment management, it is necessary to consider the patient's physical and cognitive functions and the lack of skills of older adult patients and to provide support, particularly during 10 days after telenursing introduction.

Correspondence:
Tomoko Kamei
St. Luke's International University, Graduate School of Nursing, Tokyo, Japan
kamei@slcn.ac.jp

Smart Glasses: A New Technology for Supporting Patients with Parkinson's Disease

Marzieh KORDI[1], Marzieh SAREMIAN[1], Amirhossein RASHIDIAN[1], Alireza KORDI[2]

1. Lorestan University of Medical Sciences, Khorramabad, Iran
2. Iran University of Medical Sciences, Tehran, Iran

Aims
The aim of this review is the indication of the roles of smart glasses in supporting patients with Parkinson's disease.

Methods
This article is a systematized review carried out through searching in English in databases such as Pubmed, Scopus, Cochrane and Web of Science, using keywords related to the subject area including eyeglass display, digital eyeglass, smart glasses, Parkinson's disease without time limitation. Then, all the relevant articles indexed in these databases before 18th February 2017 were reviewed and analysed. In the first review, 25 articles were found. Articles relevant to the subject, keywords and abstracts were selected. In second analysis, the articles were selected according to 1) relevance to research objectives 2) availability of their full texts. If an article did not fulfil these two requirements, it was not included in the reviewed articles. At the end, 5 articles were evaluated on the basis of abovementioned criteria.

Results
The conducted studies indicate that recent advances in designing the smart glasses can lead to providing the facilities to treatment or rehabilitation patients with Parkinson's disease. Using smart glasses can improve motion impairment via visual cues and auditory ones, help patients in self-care activities via training films, help patients to take preventive actions in order to prevent disease exacerbation. The important point is that no findings were obtained regarding negative effects of smart glasses on treatment, care and supervision of the patients.

Conclusions
So, using smart glasses in treatment or rehabilitation of patients with Parkinson's disease can be included in strategic planning of health service organizations as an effective strategy to improve the quality of care for this. Therefore, it is necessary to make appropriate programming to motivate patients to this technology and develop substructures as well as adopting required policies to encourage physicians to prescribe this technology.

Correspondence:
Marzieh Kordi
Lorestan University of Medical Sciences, Khorramabad, Iran
kordimarzieh@yahoo.com

Videoconferencing in Clinical and Professional Practice: A Qualitative Meta-Synthesis of the Experiences of Registered Nurses and Midwives

Danette LANGBECKER[1], Natalie BRADFORD[2], Robyn PENNY[3]

1. The University of Queensland, Queensland, Australia
2. Queensland Youth Cancer Service and Queensland University of Technology, Queensland, Australia
3. Children's Health Queensland Hospital and Health Service, Child and Youth Community Health Service, Queensland, Australia

Aim
To synthesise evidence of registered nurses' and midwives' experiences with videoconferencing (VC) with the objective of identifying perceptions of appropriateness, meaningfulness and feasibility in clinical and professional practice.

Methods
A qualitative meta-synthesis of primary qualitative studies was undertaken following a published protocol [1]. Nineteen databases were systematically searched to identify relevant qualitative studies or study components. Two reviewers independently appraised studies, extracted data and synthesised findings to construct core concepts.

Results
From 608 records screened, nine studies were included, reporting experiences across a range of settings, yielding five synthesised findings: VC is useful on a continuum; VC allows a broader range of information to be gathered that facilitates safer and more inclusive care; VC has implications for professional practice including patient safety and privacy, and professional credibility; barriers influence use of VC; and the success of VC use depends on technical support, training and encouragement.

Conclusion
VC offers benefits but has personal, organisational and professional implications for nurses and midwives. Successful adoption requires nurses and midwives to adapt to the virtual environment whilst retaining valued aspects of professional practice. Training must include skill development around assessment, communication and relational practice in the virtual context and to build on this knowledge through research and evaluation.

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Correspondence:
Danette Langbecker
The University of Queensland, Queensland, Australia
d.langbecker@uq.edu.au

Telehealth Goes Viral - Results of a Tertiary Hospital Hepatitis C Clinic

Karrie LONG[1], Beverley Ann BIGGS[1], Thomas SCHULZ[1], Sally WATKINSON[1], Joseph SASADEUSZ[1], Kudzai KANHUTU[1]

1. Melbourne Health, Victoria, Australia

Aims and background
A shortage of specialist hepatitis services in rural or regional settings means many patients have to travel considerable distances to access care. Rural patient cohorts have also been found to experience greater morbidity and mortality from hepatitis C.

To address this problem the Victorian Infectious Diseases Service currently provides telehealth care for patients with hepatitis C. Since March 2016, the availability of safer medications with shorter treatment durations have also improved the patient experience.

The primary aim of this study is to determine if telehealth delivered hepatitis C management achieves virological outcomes comparable to that achieved in randomised clinical trials (RCT).

Methods
The study is part of a quality audit of the hepatitis and outreach service. Measured outcomes were;

- Proportion of patients achieving a cure
- Failure to attend rate (FTA)
- Frequency of technical difficulties
- Patient travel kilometres saved through not attending clinic in person
- Consultation duration time

Results
Over 12 months, 58 patients have been commenced on Hepatitis C treatment and managed either partially or completely via telehealth. Of those who have so far completed therapy 97% have achieved a cure (n = 29). Expected cure based on RCT data; genotype 1 (>95%) and genotype 3 (>85%). The average travel avoided for each telehealth consultation was 616km and each patient had a median of two telehealth consultations. Technical difficulties occurred in less than 10% of consultations with FTA of 17%. Consult duration averaged 15 minutes or less.

Conclusion
Our completed patient cohort results demonstrate comparable virological outcomes for telehealth managed patients as compared to onsite management, even when adjusted for age, gender and hepatic fibrosis status. This indicates that telehealth can be used to improve access to specialist viral hepatitis care without compromising patient outcomes.

Correspondence:
Karrie Long
Melbourne Health, Victoria, Australia
telehealth@mh.org.au

An Integrated Medical Healthcare Record System: Acting a Proposed Solution for Patients Administration and Consultancy in Limpopo Region

Zamikhaya MAPUNDU[1], Thierry SIMONNET[2], Thanyani Godfrey THARAGE[3]

1. Tshwane University of Technology, Pretoria, South Africa
2. ESIEE Paris University, Noisy-le-Grand, France
3. Limpopo Hospital, South Africa

South Africa is one of the nation's highly burdened by the TB (Tuberculosis) pandemic. The DOTS program (Directly Observed Treatment Strategy) was adopted into the national health care system to address the issue of non-compliance. TB treatment requires a strict treatment intake of about 6-8 months and DOTS program has made some notable progress in increasing patient compliance and increasing cure rates however cases of non-compliance and defaulting patients are still reported. Healthcare providers in Limpopo region are consulting in multiple public hospitals and clinics within a short space of time and this results in medication shortages that also contribute to patients receiving conflicting treatment. Defaulters are likely to infect 10-15 people annually and are at high risk of developing a drug resistant TB which is expensive and takes longer to treat ultimately leading to high mortality rates. There is a need to explore and leverage on technological advancement by implementing an integrated Medical Healthcare Record System to address the above challenges. A literature review case study was conducted after following a scientific applied research processes with an aim of addressing the main research question. The content of the study followed a simplified strategic process, it was conducted as the literature review which starts by introducing a state of the art about the advancement of medical technologies in Sub-Saharan Africa region and its interconnections in order to discover theories and success stories behind implementations. Therefore the experimental scientific research approach with VOIP supporting tools were conducted and applied in the study in order to address the main research objectives. Evaluation and validation of the developed system was conducted only from the lab environment by following further tests and reviews. After successful completions of all tests, the possibility of providing and deploying an integrated medical record system became known.

Correspondence:
Zamikhaya Mapundu
Tshwane University of Technology, Pretoria, South Africa
mapunduz@tut.ac.za

Preliminary eHealth Readiness Assessment for Telemedicine Services in the Public Sector in Uganda

Maurice MARS[1], Vincent KIBERU[1], Richard SCOTT[1,2]

1. University of KwaZulu-Natal, Durban, South Africa
2. NT Consulting, Durban, South Africa

eHealth readiness assessment (eHRA) is an essential step in planning telemedicine services. There are no formal telemedicine services in Uganda and no readiness assessment has been undertaken. Aim: to determine the readiness of public health facilities for telemedicine as part of the development of a national eHealth readiness framework.

Methods
Surveys were undertaken of clinical and, administrative staff at one level four health clinics (HCIV), and one rural referral hospital (RRH) randomly selected in each of the three regions. A national referral hospital (NRH) purposively selected in the fourth. Surveys addressing administrators' and health professionals' readiness for telemedicine were undertaken and focus group discussions were conducted with patients at each site.

Results
Study 1 (n=114) found that 71% of doctors and senior administrators at the three facility levels use ICT and felt that their facilities were ready for telemedicine, with HCIVs significantly less ready. In study 2 (n=406), 70% of clinicians and health workers knew of telemedicine, 63% felt that health workers were ready to use it. Of the 133 doctors, 53% had used telemedicine for referral or consultation and 68% for education. Doctors felt the need for licensing 91%, policy 84%, remuneration 61%, ethical guidelines 54%, and training 42%. Over 90% felt that telemedicine would be cost effective, fill clinical gaps and improve clinical outcomes, and 94% would use telemedicine if available. Many patients equated telemedicine to telephone calls, email and instant messaging and perceived some benefits. Some voiced concern over lack of face-to-face consultation.

Conclusions
Clinical staff and administrator's express readiness for telemedicine and see potential benefits. I they feel the need for policy, guidelines and training. Patients are not fully aware of telemedicine. Further studies are required to assess infrastructural and technical readiness and the opportunity and ongoing costs of establishing and maintaining telemedicine services.

Correspondence:
Maurice Mars
University of KwaZulu-Natal, Durban, South Africa
mapunduz@tut.ac.za

Development of Personalised Text Messages for Self-Management of Type 2 Diabetes

Anish MENON[1], Dominique BIRD[2], Anthony RUSSELL[3], Farhad FATEHI[2], Mohan KARUNANITHI[4], Len GRAY[5]

1. The University of Queensland, Queensland, Australia
2. Centre for Online Health, The University of Queensland, Queensland, Australia
3. Princess Alexandra Hospital; The University of Queensland, Queensland, Australia
4. Australian e-Health Research Centre, Western Australia, Australia
5. Centre for Health Services Research, The University of Queensland, Queensland, Australia

The management of persons with type 2 diabetes is complex. Good glycaemic management is crucial to prevent complications related to diabetes. As with many chronic diseases, self- management is a key factor in achieving disease control. Personalised text-messaging is a cheap and convenient communication strategy that has been shown to be effective in self-management of chronic diseases. We have incorporated an individualised, algorithm-based text messaging service to enhance the previously developed, Bluetooth-enabled glucose-meter remote monitoring system for blood glucose – MDMS Diabetes (Mobile-based Disease Management System). The text messages are intended to alert patients regarding their diabetes management. The triggers for the text messages are displayed on the web-portal, along with blood glucose levels (BGL) for assessment by healthcare providers.

The development of the individualised, algorithm-based text messaging service required four phases over four months.

- Phase 1: Development of the algorithm
- Phase 2: Development of text messages
- Phase 3: Consumer feedback
- Phase 4: Pilot testing of the algorithm

Parameters for the algorithm are BGL and frequency of daily blood glucose tests. The algorithm is based on standard diabetes management guidelines, and, was reviewed by two endocrinologists. Text messages provide information related to the alert trigger, motivation and general diabetes-related information. These messages are based on behaviour change techniques and evidence-based information. A consumer group with eight participants discussed the modality of text messaging and reviewed the content. Different alert scenarios were then subsequently tested by eight testers.

Development of the individualised, algorithm-based text messaging service is complex. Few studies have discussed the issues surrounding this process. We aim to discuss the challenges faced in the development process and possible ways to address them. This will be useful for other researchers/developers who are considering the use of text messaging in the management of chronic diseases.

Correspondence:
Anish Menon
The University of Queensland, Queensland, Australia
anish.menon@uq.net.au

Clinician Perspectives of an Electronic Avatar-Directed Scheduling and Memory Aid

Claire MORRIS[1], Chris BARR[2], Stacey GEORGE[2], Maayken VAN DEN BERG[2], Maria CROTTY[2, 1]

1. South Australia Repatriation General Hospital, South Australia, Australia
2. Flinders University, South Australia, Australia

Objective
The purpose of the study was to investigate clinician perspectives of an electronic avatar-directed scheduling and memory aid in the form of an app, called Anna CaresTM for use within two busy rehabilitation teams.

Materials and Methods
Two focus groups were conducted with a total of sixteen clinicians from various disciplines working in two rehabilitation settings at a metropolitan hospital in Adelaide (SA, Australia). Focus groups aimed to explore, clinicians' perceptions of the usefulness of the app, acceptability, and their attitudes towards this type of technology in general. Clinicians also completed self-assessed technology proficiency, perceived usefulness, and perceived ease of use scales.

Results
Clinicians described time constraints and the reliable scheduling of appointments and therapy sessions to be of significant importance, and they welcomed technology that could assist with this. They liked the concept of the avatar, found the app interesting, novel and fun. However, although the app was reasonably easy to use, the setting up was problematic and time consuming. The experienced clinicians in the Home Rehabilitation service did not see the app as beneficial to their patients and felt that the technology did not add value to the delivery of care. The older, more experienced clinicians perceived the app as difficult to use, however there was no significant relationship observed between age and experience, and the mean score for usefulness. Nor did there appear to be a relationship between self-assessed level of technology proficiency and either perceived usefulness and perceived ease of use.

Conclusions
Although clinicians appreciated the concept of an avatar-directed scheduling and memory aid, they did not see it as a useful tool in the provision of scheduling assistance in short-term time-poor rehabilitation services.

Correspondence:
Claire Morris
SA Health - Repatriation General Hospital, South Australia, Australia
claire.morris@sa.gov.au

Aggregation of Patients' Data for Telemedicine Services Using Cloud-Based Solutions

Elham NAZARI[1], Elias AMELI[2], Farhad FATEHI[3]

1. Mashhad University of Medical Sciences, Mashhad, Iran
2. Azad University of Mashhad, Mashhad, Iran
3. The University of Queensland Centre for Online Health, Queensland, Australia

Availability of patient's data is crucial for successful implementation of telemedicine services. However, in most cases, there is no simple and practical solution for aggregating heterogeneous patients' data that are collected from various sources. Recent advances in cloud computing provide opportunities for collecting, storing, and accessing medical information virtually from anywhere at a lower cost, comparing to traditional server-client models. The aim of this study is to propose a comprehensive model of a cloud-based data management system for telemedicine services.

A specialised data structure was developed to address the need for managing various types of patients' data in cyberspace. For optimal data transfer through the network, and improved readability for humans, the Telemedicine JSON(JavaScript Object Notation)model was used to allow third party applications to communicate with the database. Furthermore, to provide the users with access to the database, a web-based portal was designed that allows executing queries and data retrieval from the database. To support the new features, a new layer was added to the stack of service layers that enables the management of patients' information with required security and privacy, and authorization levels. the new features considered in the cloud layers were added so that different data could be transferred optimally.

New features of cloud-based clinical data management systems can meet the security and scalability requirements of complex telemedicine services. Our proposed model is a step forward towards the development of a purpose-built cloud-based solution for telemedicine services.

Correspondence:
Elham Nazari
Mashhad University of Medical Sciences, Mashhad, Iran
nazarie951@mums.ac.ir

Investigating the Availability of Brain Injury Rehabilitation Services in Queensland and Potential for Telehealth

Tin Aeint NGE NGE[1], Sisira EDIRIPPULIGE[2], Emma FINCH[3]

1. The University of Queensland, Queensland, Australia
2. Centre for Health Services Research, The University of Queensland, Queensland, Australia
3. School of Health and Rehabilitation Sciences and Princess Alexandra Hospital, Queensland, Australia

Aim
Queensland has the highest national rate of acquired brain injury, yet little is known about the level of services available. This study aimed to investigate the level of need, utility and accessibility of Queensland brain injury (BI) rehabilitation services.

Methods
This was a mixed-method study. We reviewed databases at Brain Injury Rehabilitation Unit (BIRU) over two years (2014–2015) and obtained information relating to demographics, severity of illness, functionality, geographic spread and telehealth use. We also collected quantitative and qualitative data from surveys with BI outpatients (n=10) and BI practitioners (n=7) relating to the needs, utility and potential of BI telerehabilitation services.

Results
Our analysis showed that 40% (n=114) of the 287 BI patients involved in the database review lived outside major cities. Queensland patients had to travel mean distances of 164.5 kms from home to BIRU; 80.6 kms to their Community-based Rehabilitation Team (CBRT); and 39.6 kms to their GP. 64.29% of patients with severe traumatic brain injury would not qualify for Medicare Benefits Scheme using telehealth with their GP as they lived too close, and nor would 32% of patients living in major cities qualify to have subsidised telehealth consultations with BIRU, even though 36% of those patients were homebound. Of the 176 participants referred to CBRTs, 63.7% (n=98) could utilise telehealth for mobility reasons. Outpatients surveyed identified main barriers to accessing BI services were issues involving travel, transport and mobility (90%; n=9), support (60%; n=6), and finance (30%; n=3). We found 100% (n=7) of BI practitioners were willing to use telerehabilitation as an augmentative service.

Conclusion
Results of this study suggest that BI patients have a need for higher accessibility to healthcare, especially early rehabilitation services. Many rural and remote patients have a very low level of access to services. Current level of telehealth use is low.

Correspondence:
Tin Aeint Nge Nge
The University of Queensland, Queensland, Australia
tinaeint.ngenge@uqconnect.edu.au

Mobile Applications to Support Depression Self-Management: A Review of Apps

Shararaeh R. Niakan KALHORI[1], Hajar HASANNEJADASL[1]

1. Tehran University of Medical Sciences, Tehran, Iran

Background
According to World Health Organization 33% of the years lived with disability (YLD) are attributed to neuropsychiatric disorders. WHO estimated that 350 million people suffer from depression globally. The effect of this burden on society is overwhelming. Meanwhile, Self-management is an important aspect of required care in long-term disorders and diseases management. mHealth based tools such as smartphone applications have been recommended as new tools to support Self-management in depression.

Methods
In this review, we assessed mobile apps focusing on depression in English. The review of mobile apps was developed in the Google play store for Android and then we classified the results to see what is available and what is missing. An evaluation was conducted based on seven functionalities.

Results
Of 251 potentially relevant apps, 68 met our inclusion criteria. However, for self-management assessment 7 applications had the minimum eligibility. The most common functionalities were inform and record. For those with the function to inform, the majority focused on providing information on Depression diagnosis, severity and how to deal with it. Although a number of apps were identified having various functionalities to support depression efforts, some had issues such as incorrect spelling and grammar, inconsistent responses to data entry, problems with crashing, or links to features that had no data.

Conclusions
Given the complex challenges faced by patients with depression, there is a need for further app development targeting their needs. In addition, in development of a multifunctional app, it is required to support the management of depression along with other related mental disorders such as anxiety and stress concurrently.

Correspondence:
Shararaeh R. Niakan Kalhori
Tehran University of Medical Sciences, Tehran, Iran
sh-rniakank@sina.tums.ac.ir

Artificial Intelligence Applications for Diabetic Patient Distance care: A Review of Literature

Shararaeh R. Niakan KALHORI[1], Hamidreza MAHARLOU[2]

1. Tehran University of Medical Sciences, Tehran, Iran
2. Shiraz University of Medical Sciences, Shiraz, Iran

Aim
Considering the widespread use of mobile phones in healthcare, the aim of this review was to reveal the role of artificial intelligence in distance care of diabetic patients.

Methods
We searched PubMed, Scopus, Web of Science and Embase databases for studies reporting the use of artificial intelligence for diabetes distance care. The electronic search was conducted in June 2017 and returned 300 records. After removing duplicates and screening at title/abstract level, the full text of 79 papers was examined and finally 32 studies met the inclusion criteria.

Results
Beside artificial intelligence based technologies for automatic insulin level control (2 papers), machine learning methods have been widely applied to develop mobile based self-management monitoring systems. These systems suggest the proper level of physical activity, nutritional intake, insulin and other required medication management based on collected data trough tracking these measures. Collected data were analyzed using intelligent modeling algorithms such as Fuzzy Set Controller (5 paper), decision tree(6 papers), artificial neural networks(7 papers). Also, Agent based Personal Health Systems can personalize for each patient monitoring rules defined in a graphical way (2 papers).

Conclusion
Having collected data of diabetic patients remotely through mobile apps, several vital measures were tracked and patients, data gathered. They were analyzed through intelligent analysis methods and produced a model. Applying these models in the structure of diabetes self-management apps created features such as predicting, estimating, detecting, warning, notification and suggestion for groups of patients to be applied in routine life style improvement. Obviously, using intelligent methods in patient centered models, particularly in distance delivery system, improved the level of care and system performance. Different artificial intelligent approaches, specifically machine learning methods, have potential of providing more and improved personalized care though rules derived from patients, data collected by apps.

Correspondence:
Shararaeh R. Niakan Kalhori
Tehran University of Medical Sciences, Tehran, Iran
sh-rniakank@sina.tums.ac.ir

New and Emerging Mobile Technologies for Healthcare (mHealth): A Horizon Scanning Review

Hosna SALMANI[1], Azar KAZEMI[2], Alireza SHAKIBAFARD[3], Farhad FATEHI[4]

1. School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran
2. Transplant Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
3. Shiraz University of Medical Sciences, Shiraz, Iran
4. Centre for Online Health, The University of Queensland, Brisbane, Australia and Australian eHealth Research Centre, CSIRO, Queensland, Australia

Background/Objectives
Recent advancement of mobile technology have shown opportunities for reform in health care provision. The aim of this news-based horizon scanning study was to explore and identify new and emerging mobile technologies that are likely to impact the future of health and medical care.

Materials and Methods
We conducted a systematic search on top ranking health technology websites, according to Alexa Ranking, to identify health-related mobile-based technologies that were published in 2016. The websites were msn.com, theguardian.com, techcrunch.com, cnet.com, telegraph.co.uk, mashable.com and theverge.com. We followed the EuroScan methodological steps that include identification, filtering, prioritisation, evaluation and conclusion. Technologies of interest were mHealth technologies which have a potential impact on health care regardless of their maturity level (i.e. under development, prototype, under control trial study or pilot study).

Results
Five hundred news articles were identified through electronic search and screened. After comparing against selection criteria, one hundred fourteen mHealth innovative products/interventions were included in this review. At the stage of prioritisation, the importance of technologies in four areas were identified: user, technology, safety and cost were scored. Several wearable devices such as watches and wrist-worn bands were introduced for mental coaching, physical activity, fertility, fitness, sleep, blood pressure and vital sign tracking. Numerous reports on smartphone connected appliances for medication adherence monitoring, baby tracking, woman's health including menstruation and pregnancy monitoring were identified. Smartphone apps for body changes visualisation, pre-hospital care, sleep screen, birth control, eye examination, rehabilitation, disease diagnosis and prescription, mental health services and organ donation were also introduced.

Conclusion
This study demonstrated that personalised and consumer-centered medical monitoring through mobile health technologies such as wearable and connected appliances are emerging that will be accessible for a higher proportion of patients and health providers in near future.

Keywords: mHealth, Innovation, Horizon scanning.

Correspondence:
Hosna Salmani
School of Health Management and Information Sciences, Iran University of Medical Sciences, Tehran, Iran
hosnasalmani@gmail.com

Telehealth Medication Reviews: What is the Evidence?

Leila Shafiee HANJANI[1], Christopher FREEMAN[2], Liam CAFFERY[3], Nancye PEEL[4]

1. The University of Queensland, Queensland, Australia
2. Pharmacy Australia Centre of Excellence, School of Pharmacy, The University of Queensland, Queensland, Australia
3. Centre for Online Health, The University of Queensland, Queensland, Australia
4. Centre for Research in Geriatric Medicine, Faculty of Medicine, The University of Queensland, Queensland, Australia

Aim
Telehealth may be able to provide a mechanism to overcome the practical difficulties associated with performing timely and efficient medication reviews particularly for regional, rural and remote settings where access to these services is generally poor. We aimed to undertake a scoping review of the published literature to investigate timeliness and cost-effectiveness of telehealth-enabled medication reviews in comparison with non-telehealth medication reviews.

Method
Pubmed, Embase, Cochrane Library and CINAHL databases were searched to June 2017 using multiple Boolean searches comprised of medical subject heading (MeSH) terms and keyword search terms.

Results
From 410 publications resulting from our database search, 25 were eligible for full-text screening. To be included, the studies should have a medication review process which has been conducted through a telehealth modality. The medication review process can be performed by pharmacists, physicians or any other healthcare professionals. Studies of any settings such as aged care facilities, community or hospitals in any countries will be included.

Conclusion
Although telehealth may have the potential to deliver timely and efficient medication review services especially to remote areas, we anticipate that the evidence supporting this is scarce and further studies comparing telehealth medication reviews to usual ones are necessary.

Correspondence:
Leila Shafiee Hanjani
The University of Queensland, Queensland, Australia
leila.shafieehanjani@uq.net.au

The Lady Cilento Children's Hospital Teledermatology Service - Successes and Challenges Faced by a Novel Queensland Telehealth Service.

Alexander TEDMAN[1], Stephen ANDREWS[1], Nerilee WALL[1], Lisa BYROM[1], Tania ZAPPALA[1]

1. Lady Cilento Children's Hospital, Queensland, Australia

The paediatric population in Queensland, Australia is approximately 1 million children, spread across an area of approximately1.8million km2. The Lady Cilento Children's Hospital in South Brisbane was established in 2014 to provide public tertiary medical services (including dermatology) to this broad paediatric population. For primary care providers and regional hospital and health services in Queensland, access to equitable and timely paediatric dermatology care has proven to be challenging.

In recent years, the delivery of remote dermatology has evolved exponentially with the use of electronic devices (smart phones, digital cameras, email communication).

The roll-out of the new Lady Cilento Children's Hospital teledermatology platform occurred in February 2017 in response to this need for increased, and more equitable access to paediatric dermatology services state-wide. Although similar platforms have been established in the adult population, this service is unique as it is purely for paediatric patients (0-18yrs).

The service aims to provide a gold-standard means for remote practitioners to seek advice regarding diagnosis, management, and follow-up of paediatric dermatological conditions. Further to this, it allows more efficient use of the finite number of face-to-face appointments available, and an education opportunity for both dermatology trainees and referring practitioners. Most importantly, the service aims to support remote practitioners and allow patients to remain in their own community while still receiving tertiary-level cares.

We present an overview of our service: its rollout, evolution and learnings gained from the first eight months of operation. We also present some initial statistics surrounding referrals.

Correspondence:
Alexander Tedman
Lady Cilento Children's Hospital, Queensland, Australia
alexander.tedman@uqconnect.edu.au

Technical Troubles in Medical Videoconference and How to Prevent Them

Shunta TOMIMATSU[1], Kuriko KUDO[1], Yasuichi KITAMURA[1], Tomohiko MORIYAMA[1], Tomoaki TAGUCHI[1], Shuji SHIMIZU[1]

1. Kyushu University Hospital, Fukuoka Prefecture, Japan

Purpose
Regular videoconference is useful for physicians to learn many cases without moving from their institutions. However, this benefit cannot be realized when met by technical troubles. This paper analyzed factors causing technical troubles in regular medical videoconference and how to address them in order to provide high quality videoconferences that will meet the demands of physicians.

Methods
The investigation focussed on the monthly Japanese domestic medical videoconferences, which were held 30 times between September 2014 and January 2017. Two kind of technical tests were conducted before each videoconference: previous-week test and last-hour test. For the purpose of analyzing technical troubles, chi-square test was used for three factors: previous-week test, last-hour test and engineer's attendance for videoconference in each participating institution. A questionnaire survey about quality of videoconference, difficulty of the preparation for event and necessity of previous-week test was held between the first to the sixth event.

Results
Attending last-hour test (P=0.002) and presence of engineer (P=0.049) significantly decreased overall technical trouble. Individually, last-hour tests decreased disconnection (P=0.015) and audio (P=0.019) trouble while presence of engineer decreased content-sharing trouble (P=0.027). The total number of "very good" and "good" were more than 90% at audio quality (92%, 109/118) and visual quality (96%, 105/110). Eighty three percent (82/99) of answers were "very easy" or "easy" for preparation. Regarding previous-week test, 61% (63/103) of answers were "unnecessary".

Conclusion
It is essential for all participants to attend a technical test to check their transmission and reception before the event. To avoid technical trouble, it is strongly recommended to arrange with an engineer in addition to the physicians. Decreasing technical trouble makes videoconference more beneficial for all participants.

Correspondence:
Shunta Tomimatsu
Kyushu University Hospital, Fukuoka Prefecture, Japan
s-tomi@tem.med.kyushu-u.ac.jp

Middle East Respiratory Syndrome: Readability of Online Resources

Saeideh VALIZADEH-HAGHI[1], Shahabedin RAHMATIZADEH[1], Farhad FATEHI[2]

1. Shahid Beheshti University of Medical Sciences, Tehran, Iran
2. Australian eHealth Research Centre, CSIRO, Queensland, Australia

Aim
Middle East Respiratory Syndrome (MERS) is a fatal disease that had several outbreaks over the past few years. With each outbreak, a large number of people try to get quality information about the diagnosis, prevention and treatment of this disease from online resources. However, the readability of health related websites has been a concern as they are not always being easily understood by ordinary users. The aim of this study was to evaluate the readability of the most likely visited websites containing information on MERS.

Methods
This cross-sectional study was performed in May 2017. We searched Google, Yahoo and Bing using the keyword 'MERS'. The readability of the first three pages for each search engine was evaluated using Flesch-Kincaid and Flesch Reading Ease tests. The Kruskal-Wallis test was used to identify readability differences between the websites that were returned by the search engines.

Results
The average readability score was at the College grade reading level. The current sample grade level exceeds recommended readability according to the best practices. No significant difference in Flesch Reading Ease (P-Value =0.666) and Flesch-Kincaid Grade Level (P-Value =0.415) was observed between the web pages of different domains using The Kruskal-Wallis test.

Conclusion
The readability test revealed that most MERS-related websites were too complex for the general public to understand. This finding indicates that the general public may struggle to fully comprehend most of the readily available Internet information on MERS. Internet information on MERS is poorly written and we suggest that Webpages providing information must be made more readable. Furthermore, Health professionals should recommend Web sites that are easy to read.

Correspondence:
Saeideh Valizadeh-Haghi
Shahid Beheshti University of Medical Sciences, Tehran, Iran
saeideh.valizadeh@gmail.com

Feasibility of Home Based Telehealth Speech Pathology and Dietetic Services for Patients in the Acute Phase Post Head and Neck Cancer Treatment

Elizabeth WARD[1], Annette COLLINS[2], Clare BURNS[2], Elizabeth WARD[3], Tracy COMANS[4], Claire BLAKE[4], Jane CROMBIE[4], Teresa BROWN[4], Lisbeth KENNY[4], Phillip GREENUP[5], Daniel BEST[5]

1. Queensland Health and The University of Queensland, Queensland, Australia
2. Royal Brisbane & Womens Hospital, Queensland, Australia
3. Centre for Functioning and Health Research, Queensland, Australia
4. Metro North Hospital and Health Service, Queensland, Australia
5. Telehealth Support Unit Qld Health, Queensland, Australia

Introduction
Following completion of (chemo)radiotherapy for head and neck cancer (HNC), patients at the Royal Brisbane and Women's Hospital (RBWH) attend regular joint speech pathology (SP) and nutrition and dietetics (ND) clinics to support their swallowing rehabilitation and nutritional management. Travelling to these appointments can cause additional patient burden due to acute illness, work commitments, transport issues and financial costs. A homebased telehealth service could provide patients with more convenient access to SP and ND services.

Aim
The aim of this study was to examine the service outcomes, costs, and clinician and consumer satisfaction of the new telehealth model in comparison to standard care.

Methods
Thirty patients consented to the study with 15 patients receiving intervention via standard care and telehealth care respectively. Both groups were matched for medical diagnosis and tumour staging. For standard care, patients attended face to face appointments. The telehealth intervention was provided via live videoconferencing link using the Queensland Health Telehealth Portal. Connection was made between the RBWH clinicians and patients in their home, via PC/mobile devices. For both models of care service data, patient and service costs and patient/carer/clinician satisfaction questionnaires were completed. Outcomes for the two service models were then compared.

Results
The telehealth model provided greater service efficiency with a significant reduction in the number ($p = .003$) and duration ($p = .002$) of appointments. This resulted in cost savings for both the patients and the health service in comparison to standard care. Consumers were equally satisfied with both models with high levels of satisfaction reported by all participants attending the telehealth service.

Conclusion
A home based telehealth service supports efficient delivery of swallowing and nutrition intervention for patients following HNC treatment.

Correspondence:
Elizabeth Ward
Queensland Health and The University of Queensland, Queensland, Australia
liz.ward@uq.edu.au

Evaluation of Telenursing Practical Seminars for Health Professionals Focusing to Older Adults with Chronic Disease in Japan

Yuko YAMAMOTO[1], Tomoko KAMEI[2], Takuya KANAMORI[2], Yuki NAKAYAMA[3], Nobuaki KAMEI[4], Ikuo TOFUKUJI[5], Noritaka NAKAJIMA[4]

1. Musashino University, Nishi-tokyo, Japan
2. St. Luke's International University, Graduate School of Nursing, Tokyo, Japan
3. Tokyo Metropolitan Institute of Medical Science, Tokyo, Japan
4. Meisei University, School of Engineering, Hino, Japan
5. Takasaki University of Health and Welfare, Takasaki, Japan

Aim
In Japan, ICT (information and communication technology) for monitoring home patients and telenursing support improves self-care in older, homeadults with chronic diseases. This study aimed to analyze the seminar satisfaction of nurses who participated in a telenursing practice seminar, while clarifying Japanese telenursing system-related issues, to guide future practice.

Methods
The telenursing seminars comprised seven contents involving lectures and telecommunication practice sessions. We designed the curriculum based on the International Council of Nurses model and advanced foreign guidelines. All participants completed a self-administrated questionnaire survey. The questions gauged participation satisfaction levels using a 10-point numerical rating scale, wherein 1 indicated "not satisfied at all" and 10 indicated "highly satisfied." In addition, the questionnaire examined the participants' opinions on future tasks and difficulties and provided opportunity for free response. Participants included 92 nurses, physicians, nursing graduate students, business sectors, and other health professionals. Data collection occurred over six, one-day seminars from 2012 to 2016.

Results
Lecture topics included trends in Japanese telemedicine; literacy information for nurses involved in telenursing; practices based on available patient data and established guidelines; protocol-based home monitoring and telenursing; information technology and data security; overseas tele-monitoring centers, telenursing activities, application in Japan; and telecommunication practices. Total response ratio was 94.6% (n = 87), with 64 (73.6%) females and 63 (72.4%) with no telenursing experiences. Participants' program satisfaction was 8.9/10 (SD 1.25). Participants cited financial issues (35.3%), human resources (33.8%), and system development (30.9%) as barriers to telenursing practice implementation. Participants felt they could learn and perform highly demanding telemedicine tasks.

Conclusion
Our results indicated that telenursing lectures and practice sessions provided acceptable and appropriable training. Future seminars should include topics such as telenursing reimbursement, human resource development, and telehealth system development.

Correspondence:
Yuko Yamamoto
Musashino University, Nishi-tokyo, Japan
yuyamamo@musashino-u.ac.jp

Importance of Frequent Participation in Obesity Management Through Mobile Health Care Programs

Ga-Hye YI[1], Bumjo OH[1], Jong Seung KIM[1], Min Kyu HAN[2], Chang-Hee LEE[3]

1. SMG-SNU Boramae Medical Center, Seoul, Korea
2. SK International Medical Center Fenghuang Hospital, XinWu District, Wuxi, China
3. Software Engineering Part, Convergence Center, Seoul, South Korea

Aim
For managing obesity, a prophylactic approach is more important than a therapeutic approach. In our randomized controlled study conducted in 2015, when we tried to control weight by using SmartCare service in patients with metabolic syndrome, a significant weight loss effect was confirmed. In that study, we used a mobile smart phone to record anthropometric measurements of participants every day. In addition, a health consultation service using smart phone was available once a week. As this was not compulsory, compliance varied from person to person. Because there is not much research on the effect of compliance on outcomes of SmartCare service, we approached the weight loss effect of SmartCare service in terms of compliance.

Methods
We classified participants into three groups according to their compliance (active participants, less active participants, and control group who do not use SmartCare service). The classification criteria are as follows. 1) whether an anthropometric measurement was entered into a mobile smart phone more than three times a week 2) whether a health consultation was performed more than 5 times during a total of 24 weeks. We compared the changes in body weight, body mass index, body fat percentage, waist circumference, and lipid profile among the three groups.

Results
There was a statistically significant difference in the improvement of weight, body mass index, body fat percentage, and waist circumference, active participants were superior to less active participants and control group. However, there was no significant difference in the changes of the lipid profile.

Conclusion
In order to maximize the effectiveness of the SmartCare service, it is important to encourage active participation by informing that the better compliance, the better improvement of health.

Correspondence:
Ga-Hye Yi
SMG-SNU Boramae Medical Center, Seoul, Korea
129cherish@naver.com

Working in Sweden from Australia: Using Robotic Telepresence for Leadership and Consultation in a Dermatology Department

Virginia Zazo HERNANZ[1], Patrik BJÖRNFOT[1], Robyn SCHIMMER[1], Farhad FATEHI[2]

1. University Hospital, Umeå; Umeå University, Sweden
2. Centre for Online Health, The University of Queensland, Queensland, Australia

The skills and experience of a senior consultant and head of department are difficult to replace. This report is about how a chief physician from Sweden who has moved to Brisbane can continue working in her role using telepresence. Getting the opportunity to work abroad (in Australia) this chief physician at a Dermatology unit made arrangements so that she can still be 'present' and continue working in her unit in Sweden.

This consultant is tele-present by using two kinds of remote presence robots, one telepresence mobile robot (Double robotics ®) so she can move around and meet her colleagues and at occasions also patients and the second one is a desktop meeting robot (Kubi ®) which enables attending round-table meetings from a distance. These robots are only parts of a bigger system for supporting the chief physician's remote collaboration needs. In order to get the full picture, we also consider other technologies such as voice calls, instant messaging, videoconferencing and email.

The chief physician has two main roles: a) head of the department, b) specialist consultant. When acting as the head of department, she is expected to attend staff meetings and discuss matters related to the organization and wages. When working as a consultant, she is mainly a support for junior doctors in form of a second opinion. There are thus three groups of people to interact with: staff, junior doctors and patients.

In this presentation, we will discuss the enablers and challenges of robotic telepresence for clinical purposes and will demonstrate a routine telepresence session from Australia to a dermatology department in Sweden. We also will explore the implications of telepresence for patients in terms of trust and power relationship.

Correspondence:
Virginia Zazo Hernanz
University Hospital, Umeå; Umeå University, Sweden
virginia.zazo@vll.se

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