



eTELEMED 2014

The Sixth International Conference on eHealth, Telemedicine, and Social Medicine

March 23 - 27, 2014

Barcelona, Spain

eTELEMED 2014 Editors

Lisette Van Gemert-Pijnen, University of Twente - Enschede, The Netherlands

Marike Hettinga, Windesheim University of Applied Sciences, Netherlands

Åsa Smedberg, Stockholm University/The Royal Institute of Technology, Sweden

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (4236) by International Academy, Research, and Industry Association (IARIA)
Please refer to the Copyright Information page.

Printed by Curran Associates, Inc. (4236)

International Academy, Research, and Industry Association (IARIA)
412 Derby Way
Wilmington, DE 19810

Phone: (408) 893-6407
Fax: (408) 527-6351

petre@aria.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

ETELEMED 1: EHEALTH SYSTEMS AND COMMUNICATIONS I

Wearable Recognition System for Sports Activities	1
<i>A. Khan, M. Lawo</i>	
Towards Unified Tooling for Easing the Qualification of Medical Normed Environments	6
<i>A. Gelibert, S. Jean, D. Genon-Catalot, G. Santailler, I. Parisis</i>	
Emergency Web App for Accessing the Medical Emergency Services	10
<i>B. Gomez, C. Juiz</i>	
A Quantitative Survey About the Interest of Digital Natives in Second Opinion and Quality/Trust in Online Health Information	17
<i>R. Baranyi, D. Binder, N. Lederer, T Grechenig</i>	

ETELEMED 2: TELEMEDICINE/EHEALTH SERVICES I

Field Testing of Remote Teledentistry Technology.....	23
<i>R. Marino, P. Marwaha, R. Collmann, M. Hopcraft, M. McCullough, A. Stranieri, K. Clarke, E. Ozanne, D. Manton, I. Blackberry</i>	
Organising Videoconferencing for Collaborative Medical Diagnosis: Pre-Planned and Acute Practice	29
<i>L. Warth</i>	
Effects of Telemonitoring on Heart Failure Patients' Quality of Life and Depression Scores: A Randomised Controlled Trial	35
<i>J. Boyne, A. Gorgels, M. Spreeuwenberg, H. Vrijhoef</i>	
Play for Health 2.0: Evolving P4H to a Web Environment Using HTML5 and JavaScript.....	44
<i>P. Monserrat, F. Llull, M. Velado, M. Aguiló, J. Terrassa, R. Sanso, M. Balcells, E. Martínez, B. Pena</i>	

ETELEMED 3: EHEALTH TECHNOLOGY AND DEVICES

The Eve of 3D Printing in Telemedicine: State of the Art and Future Challenges.....	49
<i>P. Giacomelli, A. Smedberg</i>	
Digital WHO Hemoglobin Color Scale: Analysis and Performance.....	53
<i>R. Kumar, H. Misra, S. Hiwale, M. Ramachandra</i>	
Remote Camera-based Pulse Oximetry	59
<i>U. Freitas</i>	

ETELEMED 4: TELEMEDICINE/EHEALTH SERVICES II

Telememonitoring in Cystic Fibrosis: Treatment's Adherence and Economical Evaluation in a Period of Three Years.....	64
<i>S. Bella, F. Murgia, I. Tagliente, P. Romano, B. Corona, E. Renzetti, M. Cilli</i>	
Implementing Transnational Telemedicine Solutions	68
<i>L. Eadie, D. Heaney, L. Dowie, L. Glynn, M. Casey, P. Hayes, M. Matero, U. Knarvik, S. Hun, K. Alrutz</i>	
Videoconferencing Solution: Through Innovation Extension to Attain and Support Pre-Alzheimer Patients in Their Daily Activities.....	74
<i>M. Zamikhaya, P. Walt, S. Thierry, M. Phatle</i>	
Ontology- and Model-Based Quality Indicators Designing Framework.....	80
<i>O. Takaki, N. Izumi, I. Takeuti</i>	

ETELEMED 5: TELEMEDICINE/EHEALTH APPLICATIONS I

Towards Patient-Centered Telemedicine.....	88
<i>J. Puustjarvi, L. Puustjarvi</i>	
Prescient Profiling – AI Driven Volunteer Selection within a Volunteer Notification System.....	94
<i>J. Elsner, P. Meisen, D. Ewert, D. Schilberg, S. Jeschke</i>	

A Health Virtual Community Model: A Bottom Up Approach.....	99
<i>C. Morr, S. Saleh, W. Ammar, N. Natafqi, K. Kazandjian</i>	
Experiences of the Elderly, their Relatives, and Volunteers of a Social Media Applications in Monitoring of Wellbeing	105
<i>I. Alakarppa, E. Jaakkola, K. Paykkonen, J. Vantanen</i>	

ETELEMED 6: EHEALTH DATA RECORDS

Protecting the Privacy with Human-Readable Pseudonyms: One-Way Pseudonym Calculation on Base of Primitive Roots	111
<i>U. Roth</i>	
If They Designed It, Why Don't They Want It? The Lack of Acceptance of an ehealth Data Records System.....	116
<i>A. Glascock</i>	
Security Analysis and Performance Evaluation of the Linkable Access Protocol of the Electronic Patient Records	123
<i>R. Addas, N. Zhang</i>	
An Ontology-Driven Information Model for Interoperability of Personal and Electronic Health Records	130
<i>P. Plastiras, D. O'Sullivan, P. Weller</i>	

ETELEMED 7: EHEALTH INFORMATION PROCESSING

Medical Images Enhancement with Pseudo-HDR Method	134
<i>V. Gueorguiev, D. Georgieva</i>	
Patient's Rationale: Patient Knowledge Retrieval from Health Forums	140
<i>S. Melzi, A. Abdaoui, J. Aze, S. Bringay, P. Poncelet, F. Galtier</i>	
Context-Oriented Data Processing for Homecare Application.....	146
<i>M. Makssoud</i>	
User-Centered and Persuasive Design of a Web-Based Registration and Monitoring System for Healthcare-Associated Infections in Nursing Homes.....	152
<i>N. Jong, A. Eikelenboom-Boskamp, A. Voss, L. Gemert-Pijnen</i>	

ETELEMED 8: CLASSICAL MEDICINE AND EHEALTH INTEGRATION

Fuzzified Clustering and Point Set Continuous Approximation in Prognosticating Gastric Cancer Surgery	158
<i>E. Rakus-Andersson, H. Zettervall</i>	
Reduced Elective Surgery Cancellations through Patient Involvement in Pre-Operative Planning in Norway	164
<i>C. Granja, S. Bolle, K. Dyb, G. Hartvigsen</i>	
The Uptake and Impact of a Personal Health Record for Patients with Type 2 Diabetes Mellitus in Primary Care: A Research Protocol for a Backward and Forward Evalution	170
<i>F. Sieverink, S. Kelders, L. Braakman-Jansen, J. Gemert-Pijnen</i>	
Antibiotic Information App for Nurses: Development and Preliminary Effects.....	174
<i>J. Wentzel, J. Gemert-Pijnen</i>	

ETELEMED 9: EHEALTH SYSTEMS AND COMMUNICATIONS II

Interruption Management for Hospital Communications Systems: A User Requirements Study	180
<i>B. Talsma, T. Solvoll, G. Hartvigsen</i>	
Nursing Professionals' Roles in Terms of Communication with Patients Using Electronic Devices	186
<i>M. Koivunen, M. Hupli, A. Niemi</i>	
Intravenous Drip Infusion Monitoring System with Body Area Communication Tag	191
<i>Y. Murata, K. Yoshida</i>	
Are Mobile Devices Ready for Telementoring? A Protocol Design for Randomized Controlled Trials	197
<i>A. Budrionis, G. Hartvigsen, J. Bellika</i>	

ETELEMED 10: PERSONALIZED EHEALTH

Can Assessment of Health on an ICT-platform Improve Optimal Functionality and Lead to Participatory Care Among Older Adults?	201
<i>S. Algilani, A. Langius-Eklof, A. Kihlgren, K. Blomberg</i>	
Lifestyle Log Based Blood Glucose Level Prediction for Outpatient Care	205
<i>I. Szabo, P. Gyuk, I. Vassanyi</i>	
Let us Get Real! An Integrated Approach for Virtual Coaching and Real-time Activity Monitoring in Lifestyle Change Support Systems	211
<i>O. Kulyk, R. Akker, R. Klaassen, L. Gemert-Pijnen</i>	

ETELEMED 11: CHALLENGES OF EHEALTH SYSTEMS

Critical Success Factors for Inter-Organizational Process Collaboration in eHealth	217
<i>N. Garmann-Johnsen, T. Eikebrokk</i>	
Does Telecare have an Economic Effect when Used by Patients with Chronic Diseases in the Long Run? Based on Nine-Year Data from Nishi-Aizu Town, Fukushima Prefecture, Japan	224
<i>M. Tsuji, Y. Akematsu</i>	
Using Models and Simulation for Predicting Efficiency as a Measure of Success of Different Telemedicine Deployments	230
<i>C. Alexandru</i>	
Security Challenges and Solutions for Telemedicine over EPON	236
<i>Y. Yan, L. Dittmann</i>	

ETELEMED 12: TELEMEDICINE/EHEALTH APPLICATIONS II

Expectations of Middle-aged and Elderly Persons towards using Telecare Technologies and eHealth Applications in Primary Care	241
<i>M. Huygens, J. Vermeulen, L. Witte</i>	
Real-world Gyroscope-based Gait Event Detection and Gait Feature Extraction	247
<i>P. Fraccaro, L. Walsh, J. Doyle, D. O'Sullivan</i>	
Developing a Supportive Tool to Facilitate Shared Decision Making in Dementia: Involvement of End Users in the Design Phase	253
<i>M. Span, M. Hettinga, C. Smits, L. Groen-van de Ven, J. Jukema, M. Vermooy-Dassen, J. Eefsting</i>	

ETELEMED 13: SOCIAL AND FINANCIAL ASPECTS I

Preliminary Cost-Benefit Analysis of a Real-Time Telemedicine System	257
<i>F. Freixa, R Triunfo, F. Cabras, C. Mascia, G. Zanetti, S. Montis, R. Tumbarello</i>	
The Assessment of Differences in Acceptance of e-Health Applications Between Physicians and Patients with Chronic Diseases	263
<i>M. Dupлага</i>	
Open Source Home Care Technology: Technical Design and Development, User Research, Cost-benefit Analysis, and Business Modeling	267
<i>M. Hettinga, E. Gyaltzen-Lohuis, A. Keijzer, J. Nauta, R Balkenende, N. Donninger, G. Alphen</i>	
Approaching 2014: Is Telemedicine Assessed from The Social Perspective? A Brief 2013 Systematic Review	271
<i>F. Fusco, L. Trieste, G. Turchetti</i>	

ETELEMED 14: SOCIAL AND FINANCIAL ASPECTS II

The Future of e-Health	280
<i>I. Pirillo, G. Ricci, F. Amenta</i>	
Economic Impact of Remote Specialist Consultations Using Videoconferencing: An Economic Model Based on Data from Randomised Controlled Trials	285
<i>T. Bergmo</i>	

An eHealth Innovation Map for Small and Medium-sized Enterprises: Towards Feasible, Yet Convincing, Evidence	292
<i>R. Janssen, M. Hettinga, S. Visser, R. Menko, H. Prins, I. Krediet, T. Haaker, L. Bodenstaff</i>	
Assembling Goal Attainment and Collaboration: Videoconference in Clinical Practice.....	302
<i>A. Ekeland</i>	
Author Index	